F I N A N C I A L S T A B I L I T Y C O M M I T T E E

Recommendation[1]

of 30 June 2015

on new instruments for regulating loans for the construction or purchase of residential real estate

AFS/2015/1

Part One

On the basis of section 3 (2) of the Act on Monitoring Financial Stability of 28 November 2012 (Federal Law Gazette I, page 2369), as amended by article 21 of the Act of 4 July 2013 (Federal Law Gazette I, page 1981) (hereinafter referred to as "Financial Stability Act"), the Financial Stability Committee (hereinafter referred to as "the Committee") has adopted the following recommendations.

Recommendation A – New instruments for regulating loans for the construction or purchase of residential real estate

The Financial Stability Committee recommends that the Federal Government

1. initiate the creation of a legal foundation for giving the German Federal Financial Supervisory Authority (*Bundesanstalt für Finanzdienstleistungsaufsicht*, hereinafter referred to as BaFin), the authority, taking any and all relevant recommendations by the Committee into account, to impose the following restrictions on commercial lenders with regard to the granting of loans to build or acquire domestic residential real estate secured by a mortgage, should such restrictions be necessary to curb the threat of a disruption to the functional viability of the financial system or any threat to financial stability in Germany.

[1] In the event of any conflict between the German and English versions of the Recommendation, the German version shall prevail.

a. Capping the quotient of the principal amount of the sum of all debt resulting from a residential real estate financing transaction and the market value of the property used as collateral when the loans are granted (hereinafter referred to as the “loan-to-value”, or LTV, ratio).

b. Setting a final deadline for the amortisation of a certain fraction of a loan or, for bullet loans, setting a maximum maturity (hereinafter referred to as “amortisation requirement”).

c. Capping the quotient of borrowers’ total financial burden resulting from the sum of all debt-funded projects, including the loan to be granted (hereinafter referred to as “debt service”), and their income (compliance with which shall hereinafter be referred to as “debt service capacity”) or, if the borrower is not a natural person, setting a floor for the quotient of inflows of funds and debt service (hereinafter referred to as “debt service coverage ratio”); for bullet loans, ongoing amortisation should be notionally assumed.

d. Capping the quotient of the sum of all debt-funded projects, including the loan to be granted, of borrowers and their income (hereinafter referred to as “debt-to-income ratio”) or, if the borrower is not a natural person, inflows of funds.

2. make provisions in the legal foundation to be initiated pursuant to Recommendation A1 that permit BaFin, when applying the restrictions set forth in that recommendation, to set

   a. a pro rata new loan quota which is exempted from the application of the restrictions listed under Recommendation A1 (hereinafter referred to as the “excess quota”);

   b. a cap on the volume of mortgage loans up to which one or multiple requirements pursuant to Recommendation A1 do not apply (hereinafter referred to as the “*de minimis* threshold”), with a cap being set on the share of loans below the de minimis threshold in a lender’s new residential real estate business.

3. include measures to prevent regulatory arbitrage in the legal foundation to be initiated;

4. stipulate in the legal foundation to be initiated that the effectiveness of the application of the restrictions listed under Recommendation A1 and its impact on financial stability in Germany and – where required – in Europe be reviewed regularly, albeit at intervals of no greater than two years. These reviews (hereinafter referred to as “impact analyses”) can be conducted by either the Deutsche Bundesbank, BaFin or independent third parties. The results, including the methods applied and – where permissible – the underlying data, shall be disclosed.

5. stipulate in the legal foundation to be initiated that the calibration of the instruments listed under Recommendation A1, letters a to d, and the application of the exceptions listed under Recommendation A2, shall be undertaken in agreement with the Deutsche Bundesbank.

Recommendation B – Data

The Financial Stability Committee recommends that the Federal Government

1. ensure the existence of a legal foundation enabling BaFin and the Deutsche Bundesbank to collect the data and information they require from commercial lenders for extended macroprudential analyses and monitoring purposes, as well as for the calibration, application and impact analyses of the instruments listed under Recommendation A1; in this context, it shall be ensured that these data can be combined with other information originating from different sources for the purposes of impact analyses, and, in addition, that they can be used for the aforementioned reasons by the independent third parties engaged under Recommendation A4;

2. ensure the existence of a legal foundation enabling BaFin and the Deutsche Bundesbank to collect data and information on the financing of commercial real estate for their analysis and monitoring activities, on the basis of which the Committee can then, should the need arise, make recommendations for requirements pertaining to the financing of commercial real estate.

Recommendation C – Sanctions

The Federal Government is advised to ensure that non-compliance with the restrictions laid down in Recommendation A1 can be appropriately penalised and, to that end, to initiate the adjustment of relevant sanctions, should the need arise.

Part Two

As part of its ongoing work, the Committtee analyses and evaluates systemic risks to the German financial system stemming from the residential real estate market. In this context, it also identified a need to review financial supervisory authorities' powers to intervene in order to avert such risks.[2] **It is the opinion of the Committee that the current macroprudential instruments related to the residential real estate sector are insufficient to avert potential systemic risks stemming from residential mortgage lending.** Under section 2 (2) number 5 of the Financial Stability Act, it therefore recommends that a legal foundation be created for new instruments aimed at regulating the issuance of residential mortgages.

In reviewing and, if necessary, supplementing the macroprudential toolkit, the Committee is acting on recommendations of the International Monetary Fund, Financial Stability Board and European Systemic Risk Board (ESRB) to national macroprudential authorities.[3] Moreover, **the instruments listed under Recommendation A1 are commonly used at the international level.** In addition to numerous emerging market economies[4], 17 EU member states are currently in a position to make use of caps on the LTV ratio and debt service capacity, as well as other similar instruments related to real estate lending.

The **Committee always acts in the public interest and has the sole aim of averting any potential disruption to the functional viability of the financial system or any threat to financial stability in Germany.** The global financial crisis revealed a considerable discrepancy between the costs to be borne by those that had caused the crisis – which were relatively low – and the significant financial burden on the general public resulting mainly from the extensive stabilisation measures taken by national and international public institutions to maintain the fundamental functions of the financial system. Such interventions, however, are at odds with the market economy principle that risk and return go hand in hand. Thus, in line with the objectives of the Financial Stability Act and the Committee's macroprudential strategy,[5] as well as international best practices, the sole purpose of taking macroprudential measures and using macroprudential instruments, including those listed under Recommendation A1, should be to strengthen the resilience of the financial system and counteract the cyclical build-up of systemic risks.

[2] See Financial Stability Committee (2014a), press release dated 12 December 2014.

[3] See International Monetary Fund (2014), Financial Stability Board (2014) and European Systemic Risk Board (2013).

[4] See Committee on the Global Financial System (2010), C H Lim, F Columba, A Costa, P Kongsamut, A Otani, M Saiyid, T Wezel and X Wu (2011).

[5] See Financial Stability Committee (2014b), pp 42 ff.

Based on its current assessment of the risks associated with the German residential real estate market, the Committee sees no need to either make use of existing instruments or activate new ones. Thus, the development of new instruments at the current juncture is precautionary, with the purpose of being prepared and ready to take action.

The quality of the analyses of the real estate market depends on the data on which they are based, be it in the field of identifying risks, calibrating potential instruments or evaluating measures taken. Many of these questions can be answered satisfactorily using data that BaFin and the Deutsche Bundesbank already have at hand. However, it should not be assumed that this is true for every question. In order to close the data gaps and collect the relevant data at the minimum possible cost, the Committee recommends making use of existing initiatives such as Analytical Credit Datasets (AnaCredit). Ultimately, this will help to make European statistics more efficient and effective. The costs and benefits should be analysed, and due regard should be given to the principle of proportionality and to data protection requirements.

The Committee is aware that systemic risks stemming from mortgage lending can arise in both the residential and commercial real estate sectors. However, as in the case of residential real estate sector, there is currently no evidence that mortgage lending in the commercial real estate sector[6] is posing a serious threat to financial stability. The bulk of mortgages granted by German credit institutions are for residential real estate. At the end of 2014, the outstanding amount of commercial real estate loans granted by credit institutions in Germany stood at almost €300 billion, which corresponds to around 25% of their domestic real estate loan portfolio.[7] Finally, the data currently being used for analysing systemic risks that may arise from the commercial real estate sector is decidedly inadequate. The Committee therefore recommends providing a legal foundation for improving the availability of data for this sector and making it clear that the responsible bodies can also combine the available data to the extent necessary in order to gain new insights that go beyond a simple data collection exercise. This will enable it to carry out more in-depth analyses that it could then use as a basis for identifying any potential need for action. Given the large share of cross-border financing[8], it would make sense, more in respect of commercial real estate than residential real estate, to establish a coordinated or standard procedure at the European level. In the event that a need for action is identified at the national level, the Committee, on the basis of new information gained at a later stage, could, if necessary, recommend the creation of a legal foundation for new macroprudential instruments aimed at regulating lending in the commercial real estate market.

[6] See Financial Stability Committee (2014b), p 20.
[7] See Deutsche Bundesbank (2015a).
[8] The share of cross-border financing in the commercial real estate market is around 50%. See Deutsche Bundesbank (2012), p 58 and Deutsche Bundesbank (2013), p 61.

1. Financial stability and macroprudential policy in the residential real estate market

1.1 Financial stability and objectives of macroprudential policy

Financial stability is the financial system's ability to perform its key macroeconomic functions, and particularly so in periods of stress and upheaval. Under the traditional microprudential supervisory and regulatory framework, there is only limited opportunity to curb the **systemic effects of financial crises,** because the focus is primarily on the solvency and liquidity of *individual* market participants. However, it provides inadequate information on the impact on overall systemic stability of multiple market participants' behaviour and their interconnectedness. Unlike traditional single-entity supervision, the role of **macroprudential oversight and policy** is characterised by its role of identifying and averting the threat of a disruption to the functional viability of the financial system or any threat to its stability, as well as by its toolkit, which is essentially based on the tools of financial sector regulation and supervision.

The Committee's **macroprudential strategy** explicitly states that the purpose of its measures is to strengthen the resilience of the financial system and counteract the build-up of systemic risks.[9] Macroprudential measures in the sense of a precautionary policy are therefore aimed primarily at strengthening the resilience of lenders and/or their debtors to sudden adverse events, or "shocks". Typically, they are intended to secure the shock-absorption capacity of market participants, ie by ensuring the capital base of lenders and safeguarding or strengthening borrowers' debt service capacity. They are also aimed at limiting the cyclical build-up of systemic risks and, in turn, preventing an erosion of credit standards. The aim of such measures is to curb the transmission of shocks through the financial system (contagion effects) and the negative feedback loop between the financial system and the real economy (second-round effects). It is by no means the intention of the Committee to fine-tune the economy, and therefore neither the real estate market as a whole nor specifically the acquisition of residential property. Nevertheless, activation of the instruments would impair the ability of lenders and borrowers to conclude lending agreements. However, such intervention would be imperative if the instruments are to have their intended effect. It is a question of carefully weighing the costs of such intervention against the economic costs of a potential systemic crisis.

1.2 Relevance of residential real estate markets in terms of financial stability and the real economy

Looking back, the **trigger for systemic financial crises** has often been an **overvalued real estate market** accompanied by a marked increase in the issuance of real estate loans.[10] In many cases, it was a self-reinforcing process whereby, at first, increasing prices and debt levels mutually amplify one another: in anticipation that prices will rise further, there is an increase in residential real estate loans, which, in turn, puts more pressure on prices. When this happens, there is often an erosion of credit standards, ie borrowers' creditworthiness is based on (over)optimistic expectations regarding the value of the financed property and

[9] See Financial Stability Committee (2014b), pp 42 ff.
[10] See M Brunnermeier and I Schnabel (2014), A M Taylor (2015). (In der deutschen Fassung ist nur von M Taylor die Rede; dies ist die richtige Version.

borrowers' debt service capacity. These expectations can prove to be unrealistic if market conditions change.

A correction of an overvalued real estate market may occur for various reasons; it will happen sooner or later, although it is difficult to predict precisely when. Heavily indebted borrowers are at greater risk of reneging on their financial obligations. As a result, there is an increase in defaults, which tends to intensify the price corrections on the real estate market. Experience has shown that this leads to greater write-downs in banks' loan portfolios and subsequently constraints on their lending capacity, which can then result in a period of persistently slow economic growth.[11]

There is **empirical evidence** of the general pattern of this process and the **negative correlation between non-performing real estate loans and economic growth.**[12] Prior to the subprime crisis in the United States, there was an increase in lending alongside a relaxation of credit standards, particularly in the case of "subprime" borrowers.[13] The ensuing slump in prices in the US residential real estate market in conjunction with a higher default rate among debtors had a considerable impact on banks' balance sheets, both in the USA and abroad. Similar correlations were also observed during the European financial crisis. In Spain, the share of non-performing residential real estate loans rose from below 1% to over 5% between 2007 and 2014,[14] while real economic output shrank by around 5% during the same period.[15] In Ireland, the share of non-performing residential real estate loans stood at 20% in 2013.[16] At the same time, real economic output fell by almost 7% between 2007 and 2013.[17] In Germany too, a period of crisis-like developments which affected parts of the real estate market was visible in the mid-1990s, but it had no systemic consequences. This mainly affected eastern Germany and was driven by investors' profit expectations as a result of Germany's reunification and government-induced tax incentives.[18] However, analyses carried out by the Bundesbank on the basis of current data show that the losses of domestic credit institutions stemming from mortgage lending to households could rise significantly in severe stress scenarios.[19]

As is the case in many other countries, the **residential real estate market in Germany** plays an **important role in macroeconomic terms**. For example, residential real estate constitutes around two-thirds of household wealth in Germany.[20] Furthermore, the construction industry is one of the main contributors to the country's overall economic output, with loans for housing constituting around 70% of total liabilities of the domestic household sector in 2014. In the German banking sector, the share of loans for housing construction in

[11] See Deutsche Bundesbank (2012), pp 55 ff; International Monetary Fund (2012), pp 89 ff.
[12] See R Beck, P Jakubik and A Piloiu (2013).
[13] See Financial Crisis Inquiry Commission (2011), A Mian and A Sufi (2010).
[14] See Banco de España (2014).
[15] See European Commission (2015).
[16] See Central Bank of Ireland (2015).
[17] See European Commission (2015).
[18] See Deutsche Bundesbank (2002), German Council of Economic Experts (*Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung*) (2000), p 123.
[19] See Deutsche Bundesbank (2014), pp 57 ff.
[20] See Household Finance and Consumption Survey (2013).

banks' total loans to domestic enterprises and households is around 50%. Loans to housing enterprises constitute around 16% of total loans for housing construction.[21]

However, the residential real estate market in Germany has a number of specific features. Therefore, owing to differences in market structures and financing practices, it is not always possible to draw directly on the experience of other countries. For example, the rental market in Germany is bigger than in other countries, which in essence means that decisions on whether to rent or buy can largely come down to economic considerations and personal preferences. Furthermore, in Germany – unlike in some US states – the liability of borrowers extends beyond the pledged collateral to their total assets.[22] More often than not, it is also the case in Germany that loans are issued with a long-term interest-rate lock-in period, which should have a stabilising effect on the real estate cycle. Nevertheless, despite these stabilising attributes, Germany is not assured of being immune to developments on the residential real estate market that could threaten financial stability and necessitate the activation of macroprudential instruments. For one thing, the experiences of other countries show that a combination of low interest rates and high liquidity can lead to price exaggerations on real estate markets that may have a severe impact on financial stability. For another, a structural change in the financial system along with a systematic easing of the existing conservative credit standards is by no means off the table.

2. Existing macroprudential instruments for the residential real estate market

2.1 Macroprudential instruments for credit institutions

The macroprudential instruments currently available to Germany relate primarily to the banking sector and are laid down in the German Banking Act (*Kreditwesengesetz*), which transposes the provisions of the EU's Capital Requirements Directive[23] (CRD), and in the Capital Requirements Regulation[24] (CRR). Their main point of focus is the capital base of credit institutions, which makes sense, as a larger capital base can not only ensure the solvency of an individual institution, but also reduces systemic risks.[25]

In particular, the existing regulations provide for **variation in risk weights** for exposures secured by real estate in the event that such exposures entail greater risks. This means that they have an impact on the capital base of credit institutions: the higher the risk weight, the greater the amount of capital to be held against the residential mortgage loan. Increasing the risk weights is therefore particularly helpful in enhancing a credit institution's capacity to absorb losses in its real estate lending business. Owing to the effect this could have on credit institutions' overall financing costs, it may also help to counteract the build-up of systemic

[21] See Deutsche Bundesbank (2015).

[22] The European countries hardest hit by the real estate crisis (Spain and Ireland) are those where the liability of borrowers extends to their total assets. In Spain, the regulation of personal bankruptcy is very restrictive; it does not always involve a complete write-off of all debts.

[23] Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC.

[24] Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 646/2012.

[25] See Scientific Advisory Committee to the Federal Ministry for Economic Affairs and Energy (*Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft und Energie*) (2009, 2010).

risks in the residential real estate market.[26] However, there is a **limit to the macroprudential effects** of varying risk weights. The empirical literature[27] indicates that the impact of capital requirements on the lending rate and hence the demand for loans is marginal. Furthermore, it is practically impossible to set the risk weight of an exposure fully secured by residential real estate[28] (currently 35%) so that it exceeds the risk weight for unsecured loans (75%); otherwise, lenders could be incentivised to issue loans that, from a regulatory perspective, are unsecured. Ultimately, it is unclear how increasing risk weights would affect credit institutions' *ex ante* risk-taking. For example, if, owing to strong competition, lenders are unable to pass on their higher capital costs to the borrower in full, they could be tempted to take greater risks in order to avoid a drop in profit margins.[29]

In addition to varying risk weights, the capital requirements imposed on credit institutions can be increased by adjusting the **countercyclical capital buffer** or activating the **systemic risk buffer.** However, the **effectiveness** of these two instruments in **reducing specific systemic risks** stemming from residential mortgage lending is also **limited.** It should be noted, in addition to the above-mentioned general characteristics of capital-based measures, that their scope cannot be restricted to individual risk categories.[30] Any activation of these instruments would increase the capital requirements for all risk exposures, which could hinder lending either in sectors or for purposes that do not entail any systemic risk.

In principle, Pillar 2 measures can be used, under section 10 (4) of the Banking Act for example, to tackle systemic risks stemming from residential mortgage lending. However, these measures consist in instruments that are tailored to individual institutions by the supervisor.

In addition to these macroprudential instruments for credit institutions, there are other regulatory measures for containing systemic risk stemming from residential mortgage lending. For example, prior to issuing a loan, credit institutions are obliged to conduct a **credit assessment** of potential borrowers[31] by measuring their debt service capacity and the recoverable value of their collateral.[32] This helps to reduce the probability of default on residential real estate loans. However, such credit assessments are difficult to measure or quantify precisely, which means they cannot be used as a macroprudential instrument. Furthermore, there is a **loan-to-value limit** for loans to be funded through the issuance of Pfandbriefe (covered bonds).[33] However, only Pfandbrief banks can fund real estate loans in this way. In 2014 only around 10% of residential real estate loans issued by domestic credit institutions were secured by Pfandbriefe,[34] highlighting that there is little potential for using

[26] It is often the case that the constant risk weights in the standardised approach for credit risk (CRSA) do not have a dampening effect on the credit cycle. Risk weights determined on the basis of an internal ratings-based (IBR) approach can even be procyclical. See European Banking Authority (2013), J Saurina and C Trucharte (2007).

[27] For studies based on European – including German – data, see D Miles, J Yang and G Marcheggiano (2012), D Elliott and A O Santos (2012), G Junge and P Kugler (2012), M R King (2011), J Schanz, D Aikman, P Collazos, M Farag, D Gregory and S Kapadia (2011), Basel Committee on Banking Supervision (2010), P Slovik and B Cournède (2011), Macroeconomic Assessment Group (2010).

[28] See article 125 (2) of the CRR.

[29] For a discussion of the link between low yields and investors' appetite for risk, see C Borio and H Zhu (2008).

[30] See sections 10d and 10e of the Banking Act.

[31] See section 18 (2) of the Banking Act.

[32] See BTO 1.2.1, Circular 10/2012 (BA) issued by BaFin, Minimum requirements for risk management (MaRisk).

[33] See section 14 of the Pfandbrief Act (*Pfandbriefgesetz*).

[34] See Deutsche Bundesbank (2015). According to a study carried out by the Association of German Pfandbrief Banks, the average debt financing ratio for owner-occupied houses in a representative sample of residential real estate loans granted by

the loan-to-value limit as a macroprudential instrument. Loans issued by building societes are also subject to a loan-to-value limit (80%)[35], but barely 10% of German credit institutions' residential real estate loans are with building and loan associations.[36]

With the exception of the macroprudential instruments that are codified in the CRR/CRD and the Banking Act, the **existing instruments** are aimed primarily at ensuring the solvency and liquidity of *individual* credit institutions. Thus, they are of **limited use** in averting risks to the functioning of the financial system. Furthermore, in managing the risks in the financial system in order to ensure financial stability, risks in the household sector must also be taken into account.

2.2 Rules for insurance corporations and asset management companies having a macroprudential effect

Insurance corporations and asset management companies also grant residential real estate loans. They are subject to microprudential regulations, which include measures that may also counteract the build-up of systemic risks in the residential real estate market. However, that is not the primary purpose of those regulations.

Under the framework of Solvency I, insurance corporations are subject to the provisions of the Investment Regulation[37] when investing restricted assets. A BaFin circular also states that only genuine property loans are eligible for inclusion in the restricted assets.[38] These are loans that are secured by a lien and whose interest payments and principal repayments are secured at all times by the mortgaged property, regardless of the nature of the borrower. The mortgage may not exceed 60% of LTV.[39]

Like Basel II, Solvency II is based on a three-pillar approach. Mortgage loans are covered by Pillar 1 as part of market risk and counterparty credit risk. Under Pillar 2[40], insurance and reinsurance corporations may only invest in instruments whose risks the undertaking concerned can "properly identify, measure, monitor, manage, control and report". All assets are to be "invested in such a manner as to ensure the security, quality, liquidity and profitability of the portfolio as a whole".[41]

Until the change in BaFin's administrative practice in 2014, **asset management companies**, with one exception[42], were only permitted to purchase loans that were already in the secondary market for the account of certain investment funds. In the meantime, owing to a change in BaFin's administrative practice, it became possible for them to also grant

Pfandbrief banks was 71%. For freehold apartments, it was 79%. See Association of German Pfandbrief Banks (*Verband deutscher Pfandbriefbanken*) (2012).

35 See section 7 (1) of the Building and Loan Associations Act (*Bausparkassengesetz*).

36 See Deutsche Bundesbank (2015).

37 Published by the Federal Government. See sections 217 (1), number 6, 219 (1), 235 (1) number 10, 240 number 8 of the Insurance Supervision Act (*Versicherungsaufsichtsgesetz*) in the version in force from 1 January 2016.

38 See section 4 of Circular 4/2011 – Guidance Notes on the Investment of Restricted Assets of Insurance Undertakings.

39 See section 2 (1) (1) of the Investment Regulation (*Anlageverordnung*) in conjunction with section 14 (1) of the Pfandbrief Act (*Pfandbriefgesetz*).

40 See Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (hereinafter "Solvency II").

41 See article 132 (2) of Solvency II.

42 The only exception was the granting of loans to real estate companies for the account of real estate special funds under section 69 of the Investment Act (*Investmentgesetz*) or section 240 of the German Investment Code (*Kapitalanlagegesetzbuch*).

shareholder loans, and then from May 2015 also loans to third parties, for the account of certain other investment funds.[43]

In order to **avoid regulatory arbitrage,** it should be possible for the new macroprudential instruments to cover all commercial lenders in the residential real estate sector, ie credit institutions (including building and loan associations), as well as insurance undertakings and asset management companies. The implementation of the Recommendation should take into account the restrictions contained in the relevant regulatory frameworks for the enterprises concerned and mandatory provisions enshrined in Union law.

3. The recommended new macroprudential instruments – how they work and what their purpose is

All in all, the regulatory instruments currently available in Germany are insufficient to quickly contain or curb any future systemic risks stemming from the residential real estate market. The Committee therefore recommends that additional instruments be created which address the interface between the borrower and the lender at the time of the **new loan** or which impact on the **design of credit standards and conditions** and thus directly on credit supply and demand.

Specifically, the Committee recommends the following instruments.[44]

- A cap on the loan-to-value ratio (LTV)
- Mandatory amortisation requirements
- Debt service requirement in the form of a cap on the debt-service-to-income ratio (DSTI) or a floor on the debt-service-coverage ratio (DSCR)
- A cap on the debt-to-income ratio (DTI).

What these instruments have in common is that their stabilising effect is unleashed by correcting misguided incentives and by reducing the **probability of default (PD) of the loan** or reducing the **loss given default** (LGD). These new instruments, unlike capital-based measures, go *directly* to the interface between the contracting parties.

An **LTV** cap represents a ratio of the loans taken out to fund a residential property purchase to the market value of the residential property being used as collateral. LTV thus prescribes the minimum equity that a borrower has to raise in order to purchase a residential property. This decreases the expected loss in the event the property has to be realised. On the whole, the financial system tends to be better at absorbing a rise in default rates, especially in connection with sliding residential real estate market prices.

A mandatory amortisation requirement means that a loan has to have been repaid in whole or in part by a given deadline. For a bullet loan, mandatory amortisation sets a maximum maturity; this means that full amortisation is mandatory for bullet loans.[45] The speedier repayment of the loan associated with mandatory amortisation reduces the outstanding loan amount more quickly than in the absence of such a measure, thus reducing the lender's potential LGD. In addition, mandatory amortisation can help prevent maturities

[43] In a letter dated 12 May 2015, BaFin provides details of the change in its administrative practice regarding the granting of loans, etc. for the account of investment funds.

[44] An overview of the features and functioning of these instruments in table form is contained in the annex.

[45] For amortising loans, the percentage to be amortised could be set at 100%. In this case, the prescribed deadline for repaying the loan would serve as a maximum maturity.

from being excessively extended. Long maturities are, in isolation, not a threat to financial stability. However, an (excessive) deferral of repayment is one way of enabling borrowers with a poor credit rating or a high risk premium to borrow. Furthermore, deferring repayment can also be used to circumvent other instruments.

A mandatory amortisation requirement is essentially a standalone instrument. For the foreseeable future, however, its character means that, when applied, it is more likely to be used as a complement to other instruments recommended here, boosting their efficacy. Mandatory amortisation, at the same time, also increases flexibility when calibrating the other instruments. For instance, authorities could set a higher LTV cap but at the same time demand faster amortisation.

The purpose of **income-related instruments** is to ensure that a borrower can sustainably service his financial obligations. They set minimum standards for debt sustainability and prevent debt from exceeding the borrower's financial capacity *a priori*. For the borrower, these instruments provide scope to cushion (temporary) negative income shocks or unexpected interest rate rises in the case of variable-rate loans, which, however, are of only lesser importance in Germany. Owing to the cap, individual debt or individual debt service should not force the borrower to refrain too massively from consumption in times of financial distress. Macroeconomically, this can temper negative feedback effects (second-round effects), increase the resilience of the economic system as a whole to shocks and dampen macroeconomic cycles.[46] Much like the LTV, income-related instruments strengthen the structural resilience of the financial system in this manner. The Committee recommends two types of income-related instruments.

– First, a cap on the ratio of **debt service,** being the ratio of a borrower's total debt service obligations to his income (debt service to income, or **DTSI**) or his inflows of funds (debt service coverage ratio or **DSCR**), which can reduce the probability of default (PD)[47] on a loan. For bullet loans, DSTI (DSCR), in isolation, is non-binding owing to the absence of regular amortisation payments. In this case, therefore, a regular hypothetical amortisation payment is established and used to calculate DSTI (DSCR), bearing in mind the life of the loan or, if applicable, the loan's maximum time to maturity as defined by the mandatory amortisation requirements. This notional debt service for bullet loans ensures, when applying a DSTI (DSCR), that such loans are treated the same as amortisation loans by regulators. If necessary, a benchmark interest rate which is different from the rate in the loan agreement can be used as a basis for the ongoing payments to be applied for calculating the debt service payment.

  In low-interest-rate periods, or for agreements with a short interest rate lock-in period, the interest rate agreed at the outset can cause the debt service payments due when the interest rate is increased to be understated. It should therefore be made possible to assume a benchmark interest rate (see above) to calculate the debt service arising from the loan even in the case of amortisation loans. This interest rate stress test, which is

[46] See A Mian and A Sufi (2010).

[47] The features of DSTI and DSCR as a risk measure and indicator of PD are also recognised by the Basel Committee on Banking Supervision (BCBS). A consultation document on ways to strengthen the regulatory framework proposes using DSTI (DSCR) alongside LTV as a parameter with which to calculate risk weights in order to set capital charges for exposures fully secured by residential real estate in the standardised approach for credit risk. See Basel Committee on Banking Supervision (2014).

inherent in DSTI (DSCR), could already cover the impact of a potential general increase in interest rates when the agreement is concluded.

– Second, a cap on the **debt-to-income ratio (DTI)**, which represents the debtor's total liabilities over income or inflows of funds[48] and is an antidote to excessive debt, thus allowing the loan's PD to be limited.

DTI is related to debt service capacity (DSTI) and the debt service coverage ratio (DSCR). A restriction on DSTI (DSCR) simultaneously defines an implied DTI which automatically varies over time (in line with the general level of interest rates). It is thus not necessary to apply both instruments at the same time. Whereas DSTI (DSCR), unlike DTI, implicitly recognises that not only the absolute level of debt but also the interest rate and the life of the loan are relevant to debt service payments, putting this ratio into operation can also involve challenges above and beyond those in DTI.[49] DSTI (DSCR), for instance, provides broader scope for regulatory arbitrage and could thus require the use of additional instruments.

Which of the two instruments (DSTI/DSCR or DTI) is to be used depends on the specific nature of the threat to financial stability. In order to respond in a manner commensurate with the cause, it would make sense to lay the legal foundation for using both instruments.

The proposed instruments **interact** with one another and have **mutually complementary aspects**. Regulatory standards for DSTI (DSCR) and DTI ought to reduce the probability that the collateral posted will need to be realised. Should recourse to the collateral posted be necessary nonetheless, LTV can help limit the lender's LGD. In addition, mandatory amortisation can prevent an extension of the loan's lifetime from impairing the efficacy of the DSTI (DSCR). It would also enhance flexibility when calibrating other instruments, too.

Given the interaction described above, it would make sense to lay the **legal foundation for all instruments listed in Recommendation A1** so that authorities can respond to a specific risk situation in the residential real estate market by using a suitable combination of instruments while at the same time countering any evasive action.

4. Application

4.1 Principles of activation

In Germany, it is **BaFin** which takes the **decision** on whether or not to apply macroprudential instruments. This should therefore also apply to decisions on applying the instruments which are the subject of this recommendation. However, when fleshing out such a policy decision, BaFin should avail itself of the expertise of the Deutsche Bundesbank, which contributes to maintaining financial stability. It therefore seems appropriate that decisions on the calibration of instruments and the application of exemptions (excess quota and *de minimis* thresholds) should be taken **in agreement with the Deutsche Bundesbank.**

[48] DTI refers to the sustainability of a borrower's total debt. For borrowers which are not natural persons, other parameters, such as profit, could naturally also be used to calculate DTI. However, the metric calculated using inflows of funds is more commonly used and is referred to in corporate financing as "dynamic leverage".

[49] As explained above, it could be necessary, for instance, to assume a hypothetical amortisation payment for bullet loans.

Irrespective of this, the Financial Stability Committee remains free to issue recommendations on the application of instruments in the residential real estate market, too. Such recommendations could refer, for instance, to the application of certain instruments or to the modalities of such application.

4.2 Scope

In order for the recommended instruments to be able to effectively contain the systemic risks stemming from the residential real estate market, they must, if possible, capture in full the granting of loans to build or purchase residential real estate situated within Germany. The instruments listed in this recommendation should therefore, in principle, be capable of covering **all commercial lenders relevant** to residential mortgage lending, irrespective of which sector they belong to and provided there are no statutory EU provisions that state otherwise.

For risk management reasons, the vast majority of lending for building or purchasing residential real estate situated in Germany is collateralised by real estate.[50] This recommendation therefore defines collateralisation by real estate as a criterion for coverage.

4.3 Design

Every new loan granted to build or purchase residential real estate situated in Germany must, in principle, comply with all restrictions pursuant to recommendation A1 valid at the point in time when the loan is granted ("regulatory-compliant loan"). The flip side of the coin, the **prohibition** on non-regulatory-compliant loans, can curb the build-up of systemic risk. Nonetheless, such a prohibition could perceptibly restrict lenders and borrowers in their freedom to conclude lending agreements and thus represent undue interference in the freedom of contract between contracting parties. In addition, under certain circumstances, such as if additional collateral is posted, it might also be acceptable from a financial stability standpoint to grant loans at terms which do not meet one or several of the conditions in force at the time of the loan.

The legal foundation for the new macroprudential instruments should therefore authorise commercial lenders to also grant non-regulatory-compliant loans for residential real estate within an **excess quota.** Once a commercial lender has exhausted its excess quota, it may then only grant regulatory-compliant loans. The size of a commercial lender's individual excess quota shall be defined as a share of the volume of new residential real estate loans granted by this commercial lender within a defined period, that percentage being uniform across all commercial lenders. At the same time, supervisors should be able to vary this percentage over time depending on the financial stability situation. This can enable the intensity of regulatory intervention to be adapted such that the principle of proportionality is always taken into account. The total volume of new residential real estate loans granted by the respective lender in the previous period could be used as the basis for calculating the excess quota.

[50] Alternatively, credit risk could be compensated for – at least in theory – by raising interest rate premiums accordingly. In the literature, however, it is pointed out that borrowers who are ready to accept excessively high interest rates are generally at increased risk of default; see Bester (1987). For this reason, lenders often forgo unsecured lending instead of demanding appropriate risk premiums in the interest on debt. In addition, the preferential regulatory treatment of loans secured by real estate collateral represents an additional incentive to hedge risk exposures accordingly.

In addition, small-volume loans should be exempted from application of the above-mentioned instruments (**"*de minimis* threshold"**). Since these small loans are expected to cause only relatively small losses to commercial lenders, their impact on financial stability will also remain contained. However, care would have to be taken to ensure that the *de minimis* threshold is not used to circumvent the imposed restrictions by concluding multiple loan agreements below the *de minimis* threshold. This would water down the effect of the recommended instruments. Therefore, a cap on the share of such loans in the volume of the lender's new residential real estate loans, in particular, would need to be set.

In order to keep the rules for using macroprudential policy instruments clear, simple and transparent, **further exemptions** for the instruments proposed here should **not be envisaged.** The danger with exemptions is that they can impair the effectiveness of macroprudential measures and serve as a gateway for circumventing these rules. In addition, the recommended instruments can be combined in a variety of ways, which gives them a high degree of flexibility so that they allow policymakers to respond effectively and properly to a given risk situation. This is also true in combination with the existing macroprudential instruments for the real estate sector.

4.4 Analyses and data

Decisions on whether to **activate** and **deactivate** regulatory measures are usually taken amid considerable **uncertainty**. Given that the instruments recommended here are not yet available in Germany and that there is therefore no practical experience of their application here in this country, uncertainty is especially pronounced. This uncertainty also necessitates a regular review of the instrument's use with regard to achieving the desired outcome.

This also presents the challenge of defining metrics which are suited to identifying ***ex ante* the necessity** and ***ex post* the efficacy** of deploying an instrument. The aims of macroprudential policy – to strengthen the resilience of the financial system and limit the cyclical build-up of systemic risk – have to be operationalised in regulatory practice, and the effects of the use of instruments have to be reviewed systematically.

It is in just such an environment of heightened uncertainty that, **prior to the deployment of a regulatory instrument,** authorities should therefore first conduct ***ex ante* analyses** in order to get an idea of its specific design (choice of instrument and calibration) and the expected implications for the financial and real sectors. **Theoretical considerations and/or quantitative modelling** of the credit market would be used here to gauge the instruments' expected impact on the resilience of the financial system and the credit cycle. At the same time, such analyses should identify which **indicators** or **methods** are suited to identifying the need to **activate** a macroprudential instrument. Particularly suitable indicators in the area of residential mortgage lending include price movements, credit volumes and certain measurable features of credit standards, as well as the use of (early warning) models or stress tests. Given, however, that data gaps in the real estate lending market will remain for the time being, *ex ante* analyses as well as decisions on the use of macroprudential instruments will have to make do with the available data for now. Data availability will improve going forward. As long as the requisite time series are still in the process of being created, other countries' experience of the relevant instruments can be used at least as a guideline, though the specific characteristics of the individual countries and markets need to be taken into special account.

The motivation behind *ex post* impact analyses is to clarify (i) whether macroprudential measures are achieving their targets, (ii) whether or not and which evasive reactions can be seen and (iii) whether any side-effects are occurring. The insights gained through *ex post* impact analyses following the use of an instrument need to be taken into account the next time macroprudential instruments are used. The framework conditions needed to conduct an *ex post* impact analysis already have to be created as the instrument is being introduced. In order to gauge the impact of macroprudential instruments as accurately as possible, the **objective of each measure** has to be **defined *ex ante***. Therefore, even before a measure is taken, authorities need to be clear about what **indicators** are to be used as a benchmark for measuring **target achievement** (qualitative dimension), the threshold above which the measure may be declared a success (quantitative dimension) and the deadline for achieving this threshold (time dimension). The indicators should be largely identical with those used for the *ex ante* analysis.

For all measures, it is necessary to use **aggregated macroeconomic variables** as well as **disaggregated microeconomic information** and to link together data from a variety of sources. A particularly important role in these analyses is played by microeconomic data: They help to quantify changes in lending which are relevant to financial stability and which cannot be derived from aggregated data.[51] Though such improvements in the early detection of unwelcome developments are not an absolutely fail-safe method of crisis prevention, they can aid in finding the right time to activate the instruments and thus in avoiding the macroeconomic costs of activating instruments too early or too late. When creating the legal foundation for the use of such instruments, access to the data required has to be assured at the same time. This is the only way to be in a position to gauge the expected impact of the instruments *ex ante* and to identify the cause-effect relationship in a reliable manner *ex post* using suitable empirical methods.

The microeconomic data required for the analyses could fall back on data collection projects which have already been conceived and which are envisaged under EU law, not least in order to minimise the costs of regulation. As part of the planned data collection and analysis system known as **Analytical Credit Datasets** (hereinafter referred to as **AnaCredit**) of the European System of Central Banks, the collection of **loan-level data** at the **household** level is also planned. However, the exact time at which this survey will begin is still under discussion. Should the implementation of AnaCredit be delayed, the starting time for a similar survey in Germany could be brought forward by way of the already-existing power to issue statutory orders or regulations pursuant to section 6 of the Financial Stability Act. Reporting requirements which have been moved forward under national legislation in this manner should be based on the reporting requirements already envisaged under EU law within the framework of AnaCredit and should incorporate the results of a cost-benefit analysis as well as aspects of the principle of proporationality and data protection. AnaCredit also envisages the collection of data on loans to finance **commercial real estate**.

Following a decision by the Committee, the impact analyses shall be conducted by the Deutsche Bundesbank, BaFin or commissioned independent third parties; an analysis by a

[51] As explained above, expanding lending to subprime borrowers was one of the main causes of the recent financial crisis in the United States and other countries. This type of development is impossible to identify merely on the basis of aggregated data. It is therefore indispensable to combine multiple sources and types of data in order to implement the new instruments effectively. See A Sufi (2014).

third party prevents any conflict of interest. The results, together with the methodologies used and – provided this is not prohibited by any statutory regulations such as section 9 of the German Banking Act – the underlying data, shall be published.

4.5 Effectiveness and regulatory arbitrage

Transparency about the outcome of impact analyses is necessary not least in order to identify any evasive reactions by lenders and/or borrowers and to adapt regulation appropriately as and when necessary. As early as the calibration or design stage, authorities should therefore make sure that the inherent incentives to circumvent regulatory requirements do not end up being capable of **undermining the use of the instruments pursuant to Recommendation A1.** It is very much up to microprudential supervisors of lenders to identify and, if necessary, punish such violations.

In particular, both regulators and supervisors alike need to pay attention to securitisation activities. The possibility of securitising, selling or acquiring real estate loans is an important instrument in credit institutions' risk management.[52] Regulation should therefore be designed to limit impairments to this function to a minimum. The modalities of accounting for securitisation activities or counting them towards the excess quota, however, should not lead to a situation in which lending, **securitising** and subsequently selling the credit claim lead to a circumvention of the recommended restrictions.

When monitoring potential evasive action, but also when using macroprudential instruments in general, it is necessary to bear in mind the high level of **real economic integration, the highly interconnected nature of the financial markets** and the financial stability situation in Europe. One type of evasive reaction to the use of the instruments described here could be the shifting of lending business to **non-resident lenders**. In such cases, national authorities have limited options for direct intervention. In order to combat this, the Committee's member institutions could, via the ESRB, request other member states to adopt, where permitted by their national laws, the German measures for the lenders in their jurisdiction regarding their loans used to finance the purchase of residential real estate situated in Germany.

4.6 Sanctions

Where the restrictions set out in this recommendation are applied, violations of the relevant orders issued by supervisors should be punishable by the appropriate sanctions. Existing and established sanction mechanisms could be applied and adapted as and where necessary.

[52] See Bank of England and European Central Bank (2014).

Part Three

Pursuant to Section 3 (4) of the Financial Stability Act, the Federal Government is required to notify to the Committee, by

31 December 2015,

Of how it intends to implement the recommendation, as well as to subsequently notify the Committee regularly on the status of implementation. The recommendation should be fully implemented by

31 March 2016

at the very latest, ie the creation of the appropriate legal foundations should have been initiated. Up until this date, the Committee should be notified in writing of what has already been implemented and the further procedure.

The Chairman of the Committee

Berlin, 30 June 2015

[signed]

Dr Thomas Steffen

List of sources

Association of German Pfandbrief Banks (2012), *Strukturen der Eigenheimfinanzierung* 2012, December 2012.

Banco de España (2014), Financial Stability Report, November 2014.

Bank of England and European Central Bank (2014), The case for a better functioning securitization market in the European Union, May 2014.

Basel Committee on Banking Supervision (2010), An Assessment of the Long-term Economic Impact of Stronger Capital and Liquidity Requirements, Bank for International Settlements, August 2010.

Basel Committee on Banking Supervision (2014), Revisions to the Standardised Approach for Credit Risk, Consultation Document, December 2014.

Beck, R, Jakubik, P and A Piloiu (2013), Non-performing loans: what matters in addition to the economic cycle?, ECB Working Paper No 1515.

Bester, H (1987), *Die Anreizfunktion von Kreditsicherheiten*, in: D Schneider (ed), Kapitalmarkt und Finanzierung, Schriften des Vereins für Socialpolitik, Vol 164, Berlin, 225–236.

Borio, C and H Zhu (2008), Capital Regulation, Risk-Taking and Monetary Policy: A Missing Link in the Transmission Mechanism?, BIS Working Paper No 268.

Brunnermeier, M and I Schnabel (2014), Bubbles and Central Banks: Historical Perspectives, GSME/IPP Discussion Paper No 1411.

Central Bank of Ireland (2014), Macro-prudential policy for residential mortgage lending, Consultation paper CP87.

Central Bank of Ireland (2015), Household Credit Market Report, H1 2015.

Committee on the Global Financial System (2010), Macroprudential instruments and frameworks: a stocktaking of issues and experiences, CGFS Papers No 38.

Deutsche Bundesbank (2002), Monthly Report, January 2002.

Deutsche Bundesbank (2012), Financial Stability Review, November 2012.

Deutsche Bundesbank (2013), Financial Stability Review, November 2013.

Deutsche Bundesbank (2014), Financial Stability Review, November 2014.

Deutsche Bundesbank (2015), Monthly Report, January 2015.

Deutsche Bundesbank (2015a), Financial Soundness Indicators, available online at https://www.bundesbank.de/Redaktion/DE/Standardartikel/Statistiken/fsi.html.

Elliott, D J and A O Santos (2012), Estimating the Costs of Financial Regulation, IMF Staff Discussion Note No 12/11.

European Commission (2015), Annual Macroeconomic Database (AMECO), available online at http://ec.europa.eu/economy_finance/ameco.

European Systemic Risk Board (2013), Recommendation on intermediate objectives and instruments of macroprudential policy, ESRB/2013/1, April 2013.

European Banking Authority (2013), Report on the pro-cyclicality of capital requirements under the Internal Ratings Based Approach, December 2013.

Financial Stability Committee (2014a), press release dated 12 December 2014.

Financial Stability Committee (2014b), *Erster Bericht an den Deutschen Bundestag zur Finanzstabilität in Deutschland*, June 2014.

Financial Crisis Inquiry Commission (2011), The Financial Crisis Inquiry Report, Angelides, P, Born, B, Georgiou, B, Graham, B, Murren, H, Thompson, J W, Hennessey, K, Holtz-Eakin, D, Thomas, B and P J Wallison (eds), February 2011.

Financial Stability Board (2014), Peer Review of Germany, Review Report, April 2014.

German Council of Economic Experts (2000), *Jahresgutachten* 2000/2001.

Household Finance and Consumption Survey (2013), The Eurosystem Household Finance and Consumption Survey. Methodological Report for the First Wave, ECB Statistics Paper No 1.

International Monetary Fund (2012), World Economic Outlook, April 2012.

International Monetary Fund (2014), Germany, Article IV Consultation – Staff Report, Country Report No 14/216, July 2014.

Junge, G and P Kugler (2012), Quantifying the Impact of Higher Capital Requirements on the Swiss Economy, WWZ Discussion Paper No 13.

King, M R (2011), Mapping Capital and Liquidity Requirements to Bank Lending Spreads, BIS Working Paper No 324.

Lim, C H, Columba, F, Costa, A, Kongsamut, P, Otani, A, Saiyid, M, Wezel, T and X Wu (2011), Macro-prudential Policy: What Instruments and How to Use Them?, IMF Working Paper No 11/238.

Macroeconomic Assessment Group (2010), Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements – Interim Report, Bank for International Settlements, December 2010.

Mian, A and A Sufi (2010), Household Leverage and the Recession of 2007-09, IMF Economic Review 58, 74-117.

Miles, D, Yang, J and G Marcheggiano (2012), Optimal Bank Capital, The Economic Journal 123, 1-37.

Saurina, J and C Trucharte (2007), An Assessment of Basel II Procyclicality in Mortgage Portfolios, Banco de España Documentos de Trabajo No 0712.

Schanz, J, Aikman, D, Collazos, P, Farag, M, Gregory, D and S Kapadia (2011), The Long-Term Economic Impact of Higher Capital Levels, BIS Papers No 60, 73-81.

Slovik, P and B Cournède (2011), Macroeconomic Impact of Basel III, OECD Economics Department Working Paper No 844.

Sufi, A (2014), Detecting “Bad” Leverage, in: Brunnermeier, M and A Krishnamurthy (eds), Risk Topography: Systemic Risk and Macro Modelling, University of Chicago Press, Chicago and London.

Taylor, A M (2015), Credit, Financial Stability, and the Macroeconomy, NBER Working Paper No 21039.

Wissenschaftlicher Beirat beim Bundesministerium für Wissenschaft und Technologie (2009), *Zur Bankenregulierung in der Finanzkrise*, Committee letter to the Federal Minister, January 2009.

Wissenschaftlicher Beirat beim Bundesministerium für Wissenschaft und Technologie (2010), *Reform von Bankenregulierung und Bankenaufsicht nach der Finanzkrise*, Report 03/10, April 2010.

Annex

Overview of the features and functioning of macroprudential instruments for the residential real estate market*

Action	*Sectoral capital requirements*	*LTV*	*DTI*	*DSTI/DSCR*	*Mandatory amortisation requirement*
Definition		$\frac{\textit{Lending volume}}{\textit{Market value}}$	$\frac{\textit{Total lending volume}}{\textit{Income/Inflows}}$	$\frac{\textit{Total debt service}}{\textit{Income/Inflows}}$	–
Legal foundation	Art 124, 125, 164, 458 CRR, Art 103 *CRD* IV (Pillar II)	None	None	None	None
Starting point	Lender	Borrower	Borrower	Borrower	Borrower
Flow or stock variable	Existing and new business	New business	New business	New business	New business
Design	Increase lenders' own funds	Increases borrower's equity stake, thus reducing LGD	Limits ratio of debt to income/inflows of funds. Debt service capacity is maintained in the event of a (temporary or permanent) drop in income (reduction in *PD*)	Limits ratio of debt service to income/inflows of funds. Enhances the debt service capacity even if income is reduced (temporarily or permanently). In addition to DTI, DSTI takes account of the interest rate level (reduction in *PD*).	Limits maximum maturity or time to achievement of certain targets (eg "sustainable" LTV) and, implicitly, lending volume. Prevents evasive action such as reducing repayment instalments by extending maturities as a consequence of using income-related instruments (reduction in *LGD*, if used in isolation possibly increase in *PD*)
Countercyclical impact	Empirically unproven	Empirical evidence of efficacy, yet danger of cyclical distortion if real estate prices and lending volumes expand simultaneously	Countercyclical impact empirically confirmed since incomes regularly rise more slowly than real estate prices	Fundamentally the same as DTI. However, no calculations based on "realistic" interest rate scenarios available thus far	Countercyclical impact only in combination with DSTI(DSCR)/DTI
How it works/advantages	• Direct impact on resilience of financial system • Measures act potentially via (i) total funding costs or lending rate and (ii) constraining of credit supply *ceteris paribus* • Relatively low intervention intensity	• Functions intuitively; therefore communication relatively easy • Activation is flexible / quick • Extensive protection against evasive action if introduced as package of measures • Lower "crowding out" risk compared with risk-weighting • Broad base of experience from other countries • German sustainable LTV ratio (similar to	• Countercyclical impact potentially stronger than LTV • Less susceptible than LTV to cyclical distortions	• Countercyclical impact potentially stronger than LTV • Covers different types of risk factors (interest rates, income, loan volumes) • Evasive reaction to LTV cap can be avoided	• Reduces latitude for influencing contractual parameters • Mandatory amortisation can make other instruments more effective by constraining evasive reaction

		LTV) already used for Pfandbriefe			
Disadvantages and side-effects	• *CRSA* Scope for tranche above privileged threshold only 40 percentage points • *IRB* Uncertainty about final risk weights • Delayed impact owing to announcement period (6 months) makes countercyclial design more difficult • Impact only on institutions or risk exposures falling under *CRR*/*CRD* IV • Risk dimension (lending dynamics, prices, lending standards) influenced only indirectly • Capital-based measures hardly effective in the case of voluntary buffers • Danger of "crowding out" other risk exposures	• No consistent definition of concept of value • No consistent definition of concept of credit (single loan vs total lending volume with regard to a collateral instrument)	• No generally applicable definition of income available • Requires credit register or self-assessment for extensive recording of total debt • Disposable income at time of loan provides no information on solvency over life of loan	• No generally applicable definition of income available • DSTI neglects the fact that absolute level of income is also decisive factor in PD (owing to minimum consumption) • Requires credit register or self-assessment for extensive recording of debt service • Partly circumvented by extending life of loan	• Excessive borrowing possible without additional income-related instruments • Funding still possible without equity or with only small equity contribution
		Evasive shift towards unsecured loans possible if confined to land registry collateral			

* *PD* = probability of default, *LGD* = loss given default, *CRD*: Capital Requirements Directive, *CRR*: Capital Requirements Regulation, *KWG*: Kreditwesengesetz (German Banking Act); *CRSA*: standardised approach for credit risk, *IRB*: Internal Ratings Based Approach; *LTV:* loan-to-value ratio (ratio of lending volume to the value of the real estate), *DTI:* debt-to-income ratio (ratio of total debt to income), *DSTI*: debt-service-to-income ratio (a measure of debt servicing capacity), *DSCR*: debt service coverage ratio.