CONCURRENT CAPITAL BUFFERS IN A BANKING GROUP

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In this article we simulate how much the capital of a parent bank must be increased above the minimum capital requirement applying to the parent alone as a result of a requirement being imposed on the banking group as a whole, and how the probability of failure of a subsidiary and the group changes after a capital buffer is imposed on the group as a whole and/or the subsidiary. The simulation takes into account the relative sizes of the parent and the subsidiary, the parent’s share in the subsidiary, the similarity between the business models of the parent and the subsidiary, and the preparedness of the parent to support the subsidiary if the latter is in danger of failing.

1. INTRODUCTION

One of the main innovations of the Basel III global regulatory framework for banks (BCBS, 2011) is the concept of capital buffers. In this context, “buffer” means a bank-specific capital requirement (in relation to the bank’s risk-weighted assets) imposed on top of the minimum requirement under certain conditions. If a bank’s capital falls below the sum of the minimum and the buffer, the bank has to observe certain restrictions on actions (such as the payment of dividends) that would further reduce its capital or hinder it in rebuilding its capital to the required level.

The general logic of any Basel III capital buffer is that if the imposition of a buffer on a banking group leads to growth in the group’s total capital adequacy, then – other things being equal – the probability of the bank incurring a loss that will fully deplete its capital will decrease, hence the probability of failure of the group will also be reduced. The same logic applies to the probability of failure of a subsidiary in the group if a buffer is imposed on that subsidiary. The imposition of a buffer on the group will also probably lead to growth in the parent’s capital above the minimum requirement imposed on the parent alone. This gives rise to issues regarding the impacts of a group or subsidiary buffer on the parent’s capital and on the probability of failure of the group and the subsidiary.1

In this article we examine the above issues using a set of simulations. We investigate how the answers change depending on the relative sizes of the two members of the group, on the size of the parent’s share in the subsidiary and on the similarity between the business models of the parent and the subsidiary. By contrast, we abstract from any changes in the parameters of the environment in which banks operate (such as borrowers’ ability to repay their loans) and from the effects of changing capital requirements on banks’ lending and other activities and on their profitability.

The existence of concurrent buffers in a group is clearly a relevant topic for macroprudential and microprudential policy-makers wherever a banking sector they regulate contains members of banking groups – parents, subsidiaries or both. Turning specifically to the Czech banking sector, subsidiaries of foreign banks account for the lion’s share of its assets, while most parent banks are based in other countries. The four largest Czech banks are subsidiaries of foreign parents; one (Komerční banka) is around 60% owned by its parent, while the remaining three (Česká spořitelna, ČSOB and UniCredit) are wholly or almost wholly owned by their parents. The four banks each account for between a few per cent and around one-sixth of the assets of the relevant banking group as a whole.

In these circumstances, frictions can arise between home and host regulators over what capital buffer rates should be set for the group as a whole and for the subsidiary so that the probability of failure of both falls to the desired level. For example, after imposing a global systemically important bank buffer on a group, the home regulator may conclude that this buffer in itself ensures that the subsidiary bank is also sufficiently stable. Consequently, it may put pressure on the host regulator not to impose any additional buffer on the subsidiary. By contrast, the host regulator, whose primary objective is to ensure that the subsidiary, not the group, is stable, may feel that the buffer imposed on the group does not in fact ensure that the subsidiary is sufficiently stable. The point of imposing a buffer on a subsidiary is to increase its resilience to the risks it faces, because the experience of recent years has shown that the parent’s capital may not sufficiently protect the subsidiary and so taxpayers in the country where the subsidiary operates may have to foot the

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1 For the sake of brevity, throughout this article a requirement applying to the group will mean a requirement applying to the group at the consolidated level, and a requirement applying to the parent alone (or to the subsidiary) will mean a requirement applying to the parent (or the subsidiary) at the stand-alone level.
The relevance of these issues to regulatory practice is illustrated in Skofepa and Seidler (2013), which describes the main features of the approach chosen by the CNB for determining the capital buffer rate based on banks’ domestic systemic importance. Some qualitative issues complementary to this article are discussed in Skofepa and Seidler (2014).

2 The relevance of these issues to regulatory practice is illustrated in Skofepa and Seidler (2013), which describes the main features of the approach chosen by the CNB for determining the capital buffer rate based on banks’ domestic systemic importance. Some qualitative issues complementary to this article are discussed in Skofepa and Seidler (2014).

3 In reality, however, this logic is significantly impaired by various implementation problems (see, for example, Kiema and Jokivuolle, 2013, and Zimper, 2013).
ll when the RWA level is underestimated in the growth phase of the financial cycle.

The buffer based on a bank’s systemic importance departs from the logic described above (i.e. the anchoring of the probability of failure for all banks at the level required under Basel II). The point of this buffer is to reduce the probability of future failure of a bank below the level required under Basel II. The main recommendation given in the relevant official documents (BCBS, 2012, 2013) is that the reduction in the probability of failure of a bank by means of this reserve should be commensurate with the bank’s systemic importance, i.e. with the costs that the bank’s failure would mean for the whole economy. BCBS (2013) calls this recommendation the “expected impact approach”: the buffer rate should be set so as to offset the expected impact of the bank’s failure, calculated as the probability of failure multiplied by the macroeconomic costs given failure.

We will assume for simplicity that RWAs are measured correctly. The arguments set out above imply that our simulations of the intra-group concurrence of capital buffers will relate primarily to the capital buffer based on systemic importance rather than on the conservation buffer or the countercyclical buffer.

The BCBS’s official document on D-SIB capital buffers (BCBS, 2012, p. 8) recognises the possibility of imposing one buffer based on systemic importance on the parent and another on the subsidiary within a (cross-border) banking group: “Home authorities should impose HLA [systemic importance-based capital] requirements that they calibrate at the parent and/or consolidated level and host authorities should impose HLA [systemic importance-based capital] requirements that they calibrate at the sub-consolidated/subsidiary level. The home authority should test that the parent bank is adequately capitalised on a stand-alone basis, including cases in which a D-SIB HLA requirement is applied at the subsidiary level.” This provision, however, is pitched at a general level. The aim of the following simulations is to examine this issue in more detail. Specifically, we will try to determine what impacts the imposition of a buffer on a group or subsidiary has on the parent’s capital and on the probability of failure of the subsidiary and the group. We will assume throughout that the competent regulators have all the necessary information.4

3. ILLUSTRATIVE SIMULATION

In the following simulations, values relating to the group, parent and subsidiary are denoted respectively by the subscripts g, p and s attached to the relevant symbol or abbreviation. The two capital buffer rates we study, Bg and Bs, will be expressed as a percentage of the risk-weighted assets of the bank, i.e. of $RWAg$ and $RWAs$, respectively. The parent’s share in the subsidiary, $w$, expressed as a percentage of $RWAg$, and the size of the subsidiary relative to the parent, $r$, expressed as a percentage of $RWAs$, will also influence the results. We will assume that compared to the size of the group, direct intra-group accounting exposures are negligible, so that $RWAg$ can be calculated simply as $RWAp + RWAs$. For the sake of simplicity, “minimum capital requirement” will mean a requirement that the bank’s capital cover the “conditional expected loss” (BCBS, 2005), i.e. the sum of the actual Basel II minimum capital requirement of 8% meant to cover unexpected losses and a requirement to hold loan loss reserves equal to expected losses.5 We abstract from qualitative differences between different types of capital, and in the case of total capital we will assume the properties of common shares. In all cases we will assume that the changes in the size or structure of balance sheets resulting from the imposition of capital buffers are so small, or are realised in such a way, that $w$, $r$ and RWA are constant for all three entities. The loan loss reserves actually held are equal to the expected loan losses.

We will start by examining the consequences of imposing buffers from the perspective of the necessary increase in capital (through subscription or retention of earnings). We will then move to the issue of the consequences of imposing buffers from the perspective of banks’ probability of failure.

3.1 Impact of buffers on the necessary increase in capital

We first need to clarify how the capital of the group, $Kg$, is derived from the capital of the parent and the capital of the subsidiary, $Kp$ and $Ks$. The consolidation principle implies that when determining $Kg$ we need to completely exclude the portion of $Kp$ held by the parent. The remaining portion of $Kp$ held by the minority shareholders is not controlled by the group. It should therefore be recognised in $Kg$ only to the extent to which it can be relied upon to meet the

4 The impacts of imperfect information on cross-border coordination of macroprudential policies at the general level are analysed in Derviz and Seidler (2012).

5 Definition of capital as including also loan loss reserves takes us back to the pre-Basel era. Here we use this definition purely for the sake of simplicity. Separation of loan loss reserves (which are assumed at the same level in all our simulations) from capital would not change our conclusions.
group’s loss absorption obligation by covering any losses incurred by the subsidiary or the parent. This idea is expressed in Basel III (BCBS, 2011, paragraphs 62–64) by a capital consolidation rule which says that $K_g$ should be calculated recognising the lower of the following two items:

(a) the portion of the subsidiary’s obligatory capital (including $B_g$) held by the minority shareholders, and

(b) the sum that we obtain if, within the group’s obligatory capital (including $B_g$) which relates to the subsidiary, we focus on the portion that is attributable to the subsidiary’s minority shareholders.

It is trivial to show that in our simple case (a) will be lower than (b) when $B_s < B_g$.

We will assume from here on that the total capital of the group $K_g$ is exactly equal to $B_g$ plus the minimum requirement applied to the group (where, as stated earlier, this requirement is taken to mean the sum of the actual Basel II minimum capital requirement of 8% and the requirement to hold reserves equal to expected loan losses); in other words, at the group level there is no “surplus” capital. For now let us also assume $B_g = 0$% and $B_s = 0$%. The above-mentioned capital consolidation rule implies that $K_g$ must be replenished through an increase in the parent’s capital above the minimum requirement applying to the parent alone. For example, let’s assume that the minimum requirement (including the requirement to hold reserves equal to expected loan losses) is 9% and that the parent owns 50% of the subsidiary, which is 10% of the size of the parent, so that $RWA_g = 1.1 \times RWA_s$ and the requirement applying to the group of 9% of $RWA_g$ corresponds to 9.9% of $RWA_s$. The subsidiary’s minority shareholders – in an effort to retain their 50% share in the subsidiary – have already satisfied half of the requirement applying to the parent (either by providing new capital or by using their share of the subsidiary’s retained earnings), thereby contributing capital equal to 4.5% of $RWA_s$, i.e. 0.45% of $RWA_s$ to $K_g$; the parent’s shareholders have already satisfied the requirement applying to the parent, thereby contributing capital equal to 9% of $RWA_s$ to $K_s$ (likewise in the form of new capital or retained earnings of the parent); to make up the remaining portion of $K_g$ of 0.45% of $RWA_s$, the parent’s shareholders must increase the parent’s capital (above the minimum requirement applying to the parent alone) by this 0.45% of $RWA_s$; the minority shareholders cannot make up this remaining portion of $K_g$ because even if they decided to provide the subsidiary with some capital beyond the requirement on the subsidiary, the above capital consolidation rule implies that this added capital could not be counted towards $K_s$. It is clear that if we increase $w$, i.e. the parent’s share in the subsidiary, the capital increase burden will shift further towards the parent.6

Let us now allow $B_g$ and $B_s$ to take non-zero values. Chart 1 shows, for $B_g = 1$% and for various levels of $B_s$, $w$ and $r$, by what amount (in % of $RWA_g$) the parent’s capital must be increased above the level the parent has to attain in order for the group to satisfy the $K_g$ requirement when both buffers are zero.

The results in the chart are intuitive. For $w = 100$% (a wholly owned subsidiary) the above-mentioned burden falls fully on the parent in all cases; this burden decreases somewhat as the share of minority shareholders in the subsidiary increases (as $w$ declines). The relative position of the curves corresponding to $B_s = 0$% and $B_s = 3$% for each level of $r$ (the size of the subsidiary relative to the parent) suggests that imposing $B_s$ will lead to growth in the volume of the subsidiary’s obligatory capital held by its minority shareholders, thereby relieving the parent of part of the burden of satisfying the capital requirements applying to the group.

Let us now look at the specific example where the parent’s share in the subsidiary is 60% (i.e. $w = 60$%), the size of the subsidiary is 5% of that of the parent ($r = 5$%) and the buffer required for the group is $B_g = 1%$. The imposition of $B_s = 3$% will result in an increase in the subsidiary’s capital held by minority shareholders (assuming that their percentage share in the subsidiary stays constant). The capital of the group will increase by the same amount, and thanks to this the parent’s capital held in the interests of fulfilling $B_g$ can be reduced by the same amount. Chart 1 shows that the capital held at parent level in the interests of satisfying the $K_g$ can be lowered specifically from 1.05% of $RWA_g$ to around 1.03%, i.e. by approximately 0.02 percentage point. If $RWA_g$ is at, say, EUR 200 billion, that would mean a decrease of EUR 40 million in the parent’s capital held in order to satisfy the $K_g$ requirement. Another (this time extreme) example would be a wholly owned subsidiary ($w = 100$%), in which case imposing $B_s$ does not lead to any change in the parent’s capital.

An important consequence of the above effect for regulatory practice is that the imposition of a buffer on the subsi-
any does not change the probability of depletion of capital at the group level (and therefore the desirable capital buffer rate for the group). This is because the increase in the group’s capital when the buffer is imposed on the subsidiary (if the buffer leads to a rise in the capital usable for the group at all) is exactly offset by a decrease in the group’s capital through a reduction in the parent’s capital.

Chart 2 assumes that the parent’s share in the subsidiary, \( w \), is 60% and that the relative size of the subsidiary, \( r \), is either 5% or 20%, and illustrates how the necessary level of capital of the parent changes as we change the two buffer rates. With rising \( B_s \), each of the curves in Chart 2 initially declines; a higher \( B_s \) therefore reduces the amount of capital of the parent needed to ensure that the group satisfies \( B_g \). However, beyond the kink at \( B_s = B_g \) each curve is horizontal, meaning that a further increase in \( B_s \) will not generate any further decrease in the necessary level of capital of the parent. This is because under the capital consolidation rule described above, growth in \( B_s \) above \( B_i \) leads a switch from (a) to (b).

3.2 Impact of capital buffers on a bank’s probability of failure

The simulations in this part will build on a formula for calculating the probability of any given bank (the parent, the subsidiary or the group) recording a loss that exceeds the sum of its capital and loan loss reserves. The literature on the probability of bank failure works mostly with a single systematic risk factor model (Vasicek, 2002). While we will actually work with a pair of two-factor extensions of the single-factor model, we start by briefly outlining the main features of this basic model, including the expression it gives for the probability of failure of a bank. Further details can be found, for example, in Vasicek (2002), Céspedes and Martín (2002) and Martinez-Miera (2009).

First we introduce the following definitions, conventions and assumptions about the bank, be it the parent, the subsidiary, or the banking group as a whole:

- Let’s consider just one time period. The bank provides all its loans at the start of this period; at the end of the period the loans should be repaid.
- The bank’s loss is due solely to credit risk.

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7 Given the various differences in the way Basel II and III are applied in practice (Kiema and Jokivuolle, 2013; Zimper, 2013), the bank failure probabilities given below should be taken as lower estimates of the true values.
- The bank’s portfolio is composed of a large number \(N\) of small loans, each provided to a different obligor. The loans (and therefore the obligors) are indexed by \(i\).

- The profit \(A_i\) of obligor \(i\) is given by the value of a single systematic factor, \(X\), common to all obligors, and the value of the obligor’s idiosyncratic shock, \(\varepsilon_i\), according to the following formula:

\[
A_i = \sqrt{R} \cdot X + \sqrt{1 - R} \cdot c_i \tag{1}
\]

Higher values of \(X\) can be interpreted as a sign that the economy as a whole (i.e. all obligors) is enjoying "better times". For any two obligors \(i\) and \(j\), the square root of \(R\) captures the dependence of \(A_i\) and \(A_j\) on the systematic factor, and it can be shown that if (1) holds, \(R\) is equal to the correlation between \(A_i\) and \(A_j\).

- \(X\) and \(\varepsilon\) are normally distributed with zero mean and unit variance; \(X\) and \(\varepsilon\) are all mutually independent for all \(i\) and \(j\).\(^8\)

- Obligor \(i\) defaults if \(A_i \leq c\), for a certain constant \(c < 0\); hence

\[
PD_i = \text{prob}[A_i \leq c] \tag{2}
\]

Equation (1) implies that \(\text{prob}[A_i \leq c]\) will be lower for higher \(X\), i.e. in "better times".

- The exposure at default \(EAD\), the loss given default \(LGD\), \(R\) and \(c\) are constants and each takes the same value for all \(i\).

- The interest and other income accruing to the bank from a loan granted to obligor \(i\) is contained in the nominal value of the loan, which from the bank’s perspective is equal to the exposure at default (EAD) with respect to obligor \(i\).

- We measure the bank’s capital \(K\) as a percentage of its RWA. As indicated above, \(K\) denotes the portion of the liabilities in the bank’s balance sheet intended to absorb both unexpected and expected losses.

- \(EAD\) for the entire portfolio of the bank is equal to the sum of \(EAD\) over all \(i\) and is equal to the RWA of the bank; apart from loans, the bank has no actual or conditional (off-balance sheet) assets. The value of RWA is normalised to 1.

If we use \(F\) and \(G\) to denote the standard normal cumulative distribution function and its inverse, it can be shown (see Martinez-Miera, 2009) that the above assumptions lead to the following expression for the probability of bank failure, \(PBF\):

\[
p_F = \frac{c_i - G(K/LGD_i) \cdot \sqrt{1 - R}}{\sqrt{R}} \tag{2}
\]

This probability is increasing in \(LGD\), \(c\) (and therefore also \(PD\)) and \(R\), and decreasing in \(K\).

In order to be able to at least roughly estimate the probability of bank failure (2) for various combinations of the two capital reserve buffer rates, we make some further assumptions. For \(K_0\), \(K_r\) and \(K_e\) we will initially assume a level of 9%, which we obtain as the sum of an expected loan loss of 1% (roughly in line with the long-term average given in Moody’s, 2011) and the Basel II minimum capital requirement of 8%. In order to focus on one of the many possible and realistic combinations of values, we will assume that \(r\) (the relative size of the subsidiary) equals 5% and \(w\) (the parent’s share in the subsidiary) equals 60%. We will also assume for simplicity that if the subsidiary is at risk of failure as a result of incurring a loss exceeding \(K_e\), the parent will either cover the necessary difference fully (even though it is not the sole owner of the subsidiary, because \(w < 100\%\)), or – if such assistance would cause it to fail itself – provide no assistance and let the subsidiary fail. As for the opposite situation, in our model the subsidiary is not capable of helping to cover the parent’s loss and therefore cannot be forced to do so by the parent, because any reduction in \(K_r\) (for example through a share repurchase) will automatically lead to an equal reduction in the value of the parent’s investment in the subsidiary. In other words, a drowning parent has no mechanisms available by which it would increase its chances of survival at the expense of its subsidiary.\(^9\)

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\(^8\) Assuming that \(A\) has a non-zero expected value would give rise to no change, because in fact the key parameter in the following calculations is not the expected value itself, but rather its distance from the level \(c\) that leads to failure of the obligor. The assumption of normality (and independence between \(X\) and \(\varepsilon\)) is in line with most of the literature. Other probability distributions that would better capture the fat tails observed for actual asset returns are investigated, for example, by Chen et al. (2008). Like relation (2), the Basel II internal ratings-based (IRR) approach is based on a normal one-factor model. As actual asset returns deviate from the normality assumption, Basel II contains some features aimed at offsetting the impact of those deviations. For example, the required probability of bank failure is anchored at the very low level of 0.001. This implies one failure every thousand years, which in itself would probably be viewed as an excessively strict solvency standard (Thomas and Wang, 2005).

\(^9\) The subsidiary is therefore not capable of reducing the parent’s loss by “transferring” part of its assets to the parent and reducing its capital to the corresponding extent. ”Bottom-up” intra-group support from the subsidiary to the parent can also take other forms (European Commission, 2008; The Joint Forum, 2012). For example, the subsidiary can supply the
We will determine $PBF_s$ by extending relation (2) to the case of two systematic, mutually more or less correlated factors $X_p$ and $X_s$ (instead of one factor $X$ as in relation (2)), which co-determine the NPL ratios separately for the parent and the subsidiary. The chosen extension of (2) will moreover take into account the fact that the parent is prepared to support the subsidiary in the sense described above. We will achieve this extension by adjusting the two-factor model derived by Céspedes and Martín (2002) in the context of one bank with two portfolios.\(^{10}\) We will assume correlation $\rho$ between the systematic factors $X_p$ and $X_s$. This correlation can be interpreted as expressing the extent to which the financial results of the parent and the subsidiary are influenced by the same risk factors as a consequence of similari-

\(^{10}\) This two-factor extension of (2) takes the form of an integral over the values of $X_p$ while the (minimum relevant) value of $X_s$ is given by the level of $X$; thanks to the assumption that the parent will provide assistance to the subsidiary only if it is capable of doing so, i.e. if $X_s$ is sufficiently high in relation to the value of $X$ (the lower is $X$, and hence the worse is the situation of the subsidiary, the higher $X_s$ has to be in order for the parent to be capable of rescuing the subsidiary). The integral is solved numerically.

\(^{11}\) An evaluation of empirically relevant values of this correlation is beyond the scope of this article, but we can obtain a rough estimate by looking, for example, at data on the correlation of pre-tax profits. As regards the three largest subsidiaries active in the Czech Republic (Česká spořitelna, ČSOB and Komerční banka), the correlations of the quarterly pre-tax profits of these subsidiaries and their parents over the last decade range approximately between $-0.25$ and $+0.4$ (according to data from the Bankscope database and the banks’ websites).
we choose slightly more than half of the level with no buffer. If instead based on systemic importance is targeted directly at re-
types of capital buffers introduced in Basel III, only the buff-
of banking groups. First, we explained that of the three
regulate a banking sector containing parents or subsidiaries
subsidiary in such a group. This is a highly relevant topic for
imposition of capital buffers on a banking group and/or a
1% with a parent that hesitates to provide support to a subsidi-
examine a banking group with more than one subsidiary or
 obligors’ asset yields is normal. Another option would be to
change the assumption that the probability distribution of
failure and if fairly realistic parameter values are considered
the minority shareholders to increase the amount of the
subsidiary’s capital they hold (as long as they want to keep
their percentage share in the subsidiary constant), and
thanks to that the amount of capital the parent’s share-
holders have to hold in order to satisfy the group require-
ment falls. Given the Basel III rules for calculating the con-
solidated capital of the group, however, this shift of the
capital increase burden stops increasing in size when the
buffer rate for the subsidiary exceeds the buffer rate for the
group. The probability of failure of the group (and therefore
the desirable buffer rate for the group) is not affected by
the level of the buffer for the subsidiary, because the in-
crease in capital usable at group level due to the imposition
of the buffer on the subsidiary (if such an increase occurs at
all) is exactly offset by a decrease in the group’s capital as a
result of a reduction in the parent’s capital held in order to
satisfy the group requirement.

4. SUMMARY AND CONCLUSIONS

In this article we investigated selected consequences of the
imposition of capital buffers on a banking group and/or a
subsidiary in such a group. This is a highly relevant topic for
all macroprudential and microprudential policy-makers who
regulate a banking sector containing parents or subsidiaries
of banking groups. First, we explained that of the three
types of capital buffers introduced in Basel III, only the buff-
er based on systemic importance is targeted directly at re-
ducing the probability of bank failure (below the Basel II
standard).

Second, by way of example we investigated the situation
where only the Basel II minimum capital requirement is im-
posed on the group, i.e. no capital buffers are imposed on
the group or the subsidiary. We demonstrated that given
the Basel III group capital calculation rules the group is in
this case capable of satisfying the minimum capital require-
ment imposed on it only if the parent’s shareholders in-
crease the parent’s capital above the level it would have to
report if it were a stand-alone bank. Of course, a side-effect
of this increase is a decrease in the parent’s probability of
failure (below the Basel II standard).

Third, if we assume the imposition of a buffer on the group,
the capital increase burden falling on the parent’s share-
holders shifts partially to the subsidiary’s minority share-
holders when a buffer is announced for the subsidiary as
well. The reason is that the buffer for the subsidiary forces
the minority shareholders to increase the amount of the
subsidiary’s capital they hold (as long as they want to keep
their percentage share in the subsidiary constant), and
thanks to that the amount of capital the parent’s share-
holders have to hold in order to satisfy the group require-
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crease in capital usable at group level due to the imposition
of the buffer on the subsidiary (if such an increase occurs at
all) is exactly offset by a decrease in the group’s capital as a
result of a reduction in the parent’s capital held in order to
satisfy the group requirement.

Fourth, if the parent is prepared to help the subsidiary avert
failure and if fairly realistic parameter values are considered
(the subsidiary’s size is 5% of the parent and the parent’s
share in the subsidiary equals 60%), the probability of fail-
ure of the subsidiary turns out to be similarly sensitive to the
buffer rate for the subsidiary as to the buffer rate for the
group. This finding speaks tentatively in favour of keeping
the power to set capital requirements for subsidiaries at
national level. This is because if the group’s home regulator
does not impose impose a group buffer that would be suffi-
cient from the point of view of the subsidiary’s higher re-
quired degree of resilience, she – unlike the subsidiary’s host
regulator – may not be sufficiently motivated to ensure that
an adequate buffer is announced for the subsidiary.

This finding also casts doubt on the rationale for the CRD IV
requirement that the buffer imposed on a subsidiary on the
basis of its systemic importance should not exceed the buff-
er imposed on the group as a whole.

The results described above are based on a number of sim-
plifying assumptions. Consequently, there are many ways in
which future research might make our analyses more realis-
tic and our conclusions more robust. For example, one could
change the assumption that the probability distribution of
obligors’ asset yields is normal. Another option would be to
examine a banking group with more than one subsidiary or
with a parent that hesitates to provide support to a subsidi-
ary in distress.

13 The chart ignores changes in , because the Basel III rules for calculating
consolidated capital described above imply that does not react to &
we assume here that the amount of group capital to which these rules
lead is the truly relevant amount of capital for determining .
REFERENCES


