Quantifying the potential impact of a green supporting factor or brown penalty on European banks and lending

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Abstract

Purpose – The European Parliament and Commission are considering introducing a green supporting factor (GSF) or brown penalty (BP) for capital reserve requirements. This paper aims to estimate the potential impact such a policy intervention may have on both capital reserves of European banks and the cost and availability of capital to “green” and “brown” investments.

Design/methodology/approach – The paper draws on the existing empirical and theoretical literature on the impacts of changes to capital reserve requirements on the real economy. It applies these estimates on the particular policy intervention currently being discussed at EU level to estimate the potential range of impacts on the cost of capital – measured in basis points – and the availability of capital – measured in per cent changes to lending.

Findings – A GSF would have a limited effect on overall capital requirements of banks compared to a BP – given the larger universe of assets on which such a penalty would be applied. The estimated effect is a reduction in capital requirements associated with a GSF of around €3-4bn based on baseline “green” definitions. In terms of cost of capital, the paper estimates a reduction of 5 to 26 basis points for green projects (with inverse expected effects for a BP). In terms of availability of capital, analysing a BP suggests a potential reduction in lending to brown assets of up to 8 per cent.

Originality/value – The paper provides direct evidence, with the first quantitative analysis of the potential impact of the current policy proposition discussed at EU-level.

Keywords Sustainability, Basel, Asset pricing, Banking regulation, EU law, Green supporting factor

Paper type Research paper

1. Introduction

With the adoption of the ten-point action plan on “Financing Sustainable Growth” in March 2018, the European Commission (EC) has sought to establish a framework for integrating sustainability considerations in the European Union’s (EU) financial policies. Action 8
provides the incorporation of sustainability in prudential regulation requirements, envisaging the potential introduction of a green supporting factor (GSF) that adjusts the capital requirements for “green” financial instruments. The desired outcome is to set free “the critical mass of investments needed to close the gap for the transition to a more sustainable economy” (European Commission, 2018[1]).

As a first step, the EC’s Vice-President for the Euro and Social Dialogue, also in charge of Financial Stability, Financial Services and Capital Markets Union, Valdis Dombrovskis, proposed “lowering capital requirements for certain climate-friendly investments, such as energy-efficient mortgages or electric cars” (Dombrovskis, 2017). The model should be based on the existing supporting factor for small- and medium-sized enterprises (SMEs), effective since 2014 to support the financing of SMEs (European Union, 2013). While various proposals have been discussed, one concrete application that has been tabled by the European Parliament (EP), proposes a reduction in the risk weights used to calculate the capital requirements by 25 per cent for “green” investments below €1.5m, and by 15 per cent for investments exceeding €1.5m (Moody’s Investor Service, 2017).

Think tanks and non-governmental organisations have broadened the discussion by advocating for a “brown penalty” (BP) on carbon-intensive assets. Here, the logic is the inverse of the GSF, where “brown” (i.e. carbon-intensive) assets are penalised with a relatively higher risk-weight when calculating capital requirements. Opponents of the GSF claim that “the extra risk of ‘brown’ does not make ‘green’ extra safe” (Boot and Schoenmaker, 2018). The BP, they argue, would increase lenders’ resilience to energy transition-related risks as well as render investment in assets contributing to climate change less attractive (Boot and Schoenmaker, 2018; Matikainen, 2017).

In contrast to the EC’s target to shift capital, the introduction of a BP addresses the ratio of “green” and “brown” assets on banks’ balance sheets – an endeavour to enhance the financial system’s consideration of its exposure to transition risk and turn to long-term investments for greater resilience (Carney, 2015). A GSF, on the other hand, may weaken banks’ stability, according to Moody’s (Moody’s Investor Service, 2017). At the same time, the real risks associated with “green” investments may not be lower than for “traditional” investments, given immature technologies as well as regulatory and policy risk. Lower capital requirements for “green” investments may thus lower lenders’ credit ratings (Moody’s Investor Service, 2017) and may undermine Basel III reforms designed to increase banks’ resilience towards external shocks (BIS, 2011). The European Banking Federation (EBF) considers lower capital requirements for “green” investments legitimate because of their contribution to the economy’s transition by creating “better chances for future winners” (Mijs, 2018). It opposes the introduction of a BP given the lack of a clear definition of “brown” and of “reliable data on the way that ‘brown’ companies affect the climate” (Mijs, 2018[2]). The EBF also does not recognise the BP’s potential for strengthening banks’ balance sheets.

The on-going debate emphasises the need for an impact assessment of a GSF and a BP. This paper seeks to simulate the potential impact of a GSF or a BP in terms of both the potential policy benefits and costs. These are defined here as the effects on the cost and availability of capital for “green” and “brown” assets, as well as the estimated increase or decrease of capital requirements. The analysis will focus on European banks as the target of the policy intervention.

The article does not address the broader political question of whether the policy instrument in question should be used at all for policy objectives not directly related to micro- or macro-prudential policy considerations. Instead, it focuses on quantifying the
potential policy effects – should policymakers decide to implement the policy – using historical case studies as a basis, outlined in the literature review.

The paper is organised as follows: Section 2 very briefly provides background on regulatory capital requirements and the concept of risk-weighted assets (RWAs) under Basel III and the application of the SME supporting factor for readers not familiar with the broader policy framework under review. Section 3 reviews the existing literature on capital requirements and considerations of risk mispricing with regard to “green” and “brown” assets. Section 4 introduces the methodology used to simulate the impact of introducing a GSF or a BP. Section 5 seeks to quantify the potential subsequent absolute changes in capital among European banks, while Section 6 translates these effects into basis points and percentage change in lending. Section 7 concludes.

2. Regulatory capital requirements under Basel III and the application of the small- and medium-sized enterprises supporting factor

The capital requirements framework, under which a GSF would potentially be implemented, forms part of the Basel III Accords and is implemented via the Capital Requirements Directive (CRD) IV in Europe. Basel III has been introduced as a response to the 2007-2009 financial crisis, to “strengthen the regulation, supervision and risk management of banks” (BIS, 2011) by introducing new capital and liquidity standards.

Under Basel III, regulatory capital consists of first, the Common Equity Tier 1 (CET1), including common shares, retained earnings and other reserves; second, the Additional Tier 1, covering capital instruments with no fixed maturity; and third, Tier 2, which includes subordinated debt and general loan-loss reserves. Required capital ratios are obtained by dividing the regulatory capital by the volume of RWAs[3]. Credit institutions are required to hold a minimum risk-based capital ratio of 4.5 per cent for CET1 and of 6 per cent for Tier1. Additionally, Basel III requires a capital conservation buffer (CCB) of 2.5 per cent, financed by CET1 only, to counterbalance losses deriving from financial and economic stress. The total common equity requirement thus totals to 7 per cent [4.5 per cent (CET1) + 2.5 per cent (CCB)]. The minimum ratio for Tier 1 is 6 per cent, composed of a minimum of 4.5 per cent CET1 and a maximum of 1.5 per cent Additional Tier 1. The minimum required capital ratio (entire Tier 1 and Tier 2 Ratio) remains at 8 per cent. However, by adding the 2.5 per cent CCB, the total capital must hold to 10.5 per cent of RWAs, a Basel III regulation that will become effective as of January 2019. 8.5 per cent of this so-called capital adequacy ratio, i.e. a credit institution’s capital expressed as a percentage of its RWAs, must be Tier 1 capital. During periods of high credit growth, a countercyclical buffer may be imposed, requiring banks to hold up to an extra 2.5 per cent of capital, increasing total capital adequacy ratio from 10.5 per cent to up to 13 per cent (Figure 1) (BIS, 2017; King and Tarbert, 2011).

A supporting factor reduces the described capital requirements by leveraging credit institutions’ capital ratios. The SME supporting factor, implemented in 2013 under Article 501(1) of the EU Regulation No 575/2013 on prudential requirements for credit institutions and investment firms is equal to 0.7619, or 8 per cent divided by 10.5 per cent.. It is applied after an institution’s calculation of risk-weighted exposure amounts[4]. This so-called capital discount (EBA, 2016) reduces the capital requirements for exposure to SMEs from 10.5 per cent (minimum required capital ratio plus the CCB) to 8 per cent ((8 per cent + 2.5 per cent) * 0.7619 = 8 per cent). It thus cancels out Basel III’s CCB (Figure 1).

3. Literature review

As aforementioned, the EP’s proposal targets calibrating capital requirements as a way to mobilise capital to contribute to mitigating climate change. The need for mobilising both
private and public capital to facilitate the transition to a low-carbon economy and close the current investment gap is widely acknowledged and potential channels are being discussed in the literature (European Commission, 2018; OECD, 2017; Owen et al., 2018; Polzin, 2017; UNEP FI, 2009).

According to the academic literature, capital requirements serve two core functions. First, the literature argues that capital functions as a buffer to counter deficits and second, that it may limit risk-taking as the banks’ capital becomes equivalent to shareholders’ potential losses in case of insolvency (Hellmann et al., 2000; Holmstrom and Tirole, 1997, and Jensen and Meckling, 1976, as cited in Perotti et al., 2011)[5]. Overall, there is a broad consensus, backed by empirical evidence, that higher capital requirements can increase financial stability as banks’ assets have lower riskiness (Martinez-Miera and Suarez, 2014; Santos, 1999; De Jonghe, 2010). Of course, this may hypothetically be offset where expectations of future capital requirements adjustments increase risk-taking today or increase franchise value that in turn increases funds that can be used for risky investments.

The literature on the potential effects of capital requirements on banks’ lending largely focuses on incidents of increases in capital requirements, notably summarised in a report by the international monetary fund (Dagher, 2016). Dagher concludes that an increase in capital requirements by 1 percentage point has an impact of about 2 to 20 basis points on lending rates (2016). The findings are based on 13 studies that assessed the steady-state impact of higher capital requirements on the cost of bank credit. The same report finds that the transitional impact of higher capital requirements on the cost and volume of bank credit is more significant, according to the findings of 12 papers with varying geographic focus, type of intervention, time series and methodology (mainly distinguished by the degree to which the Modigliani and Miller [MM] premises hold). These studies draw from banks’ experiences of “sudden changes in bank capital, events that mostly characterise banks that are in some state of distress” (Dagher, 2016). The results of studies that inform this paper’s analysis are summarised in Tables I and II.

To review implications for European banks following the introduction of a supporting factor the preliminary evaluation of the SME supporting factor serves as a reference. The European Banking Authority (EBA) concluded that the impact of the SME supporting

![Figure 1. Capital ratios under Basel II and Basel III](image-url)
factor on banks’ capital reserves remained limited, resulting cost savings accounted for about €12bn (EBA, 2016); however, impact varies across EU member states (Izquierdo et al., 2017). Further limitations of the SME supporting factor are highlighted by Mayordomo and Rodriguez-Moreno (2017). Their analysis indicates that European banks may benefit from the SME supporting factor by adjusting their regulatory capital and credit exposures. Specifically, this means lending to the “safest” options among SMEs, namely medium-sized enterprises as opposed to micro/small enterprises. Moreover, the authors put emphasis on banks’ risk perception with regard to regulatory uncertainty about such a policy instrument’s duration. The risk to face an increased quantity of RWAs on their balance sheet given a termination of the supporting factor, may limit banks’ lending, as they would subsequently require more capital in the future to meet the regulatory standards for capital reserves (Mayordomo and Rodriguez-Moreno, 2017).

So far, this literature review focussed on the effects of capital requirements on cost of capital and lending trends and implications of the SME supporting factor for European banks in terms of capital savings and risk-taking. These findings are relatable to the GSF and the EC’s target to shift capital towards sustainable investment. There is equally evidence that despite higher capital requirements, large banks in Europe and the USA increased their average risk-weighted capital ratios by about 5 per cent between 2004 and 2014 (Dagher, 2016). The observation leads to this article’s review of the literature on risk-assessment and -pricing with regard to climate-related or transition risks.

Over the past decade, a range of academic and “grey” literature has explored the question of economic and financial risks associated with the transition to a low-carbon economy (Caldecott et al., 2015; Leaton et al., 2013; Meinshausen et al., 2009; Robins, 2014). The literature identifies so-called “transition risks”, and their impact on assets’ financial viability. Indeed, academic evidence suggests that a sudden tipping point in climate policies can create sudden, unexpected transition risks (Aghion et al., 2014). However, such literature does not directly question how actors may or may not already be pricing probabilities of

| Table I. |
| Steady-state impact on cost of capital: estimates for changes in lending rates because of a one-percentage point increase in capital requirements (CET1) |

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<tbody>
<tr>
<td>Effect on lending rates (measured in basis points)</td>
<td>6.9</td>
<td>13</td>
<td>2.5-4.5</td>
<td>15</td>
<td>14.4</td>
</tr>
<tr>
<td>Modigliani and Miller assumption holds</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

| Table II. |
| Transitional impact on cost of capital: estimates for lending reduction because of a one-percentage point increase in capital requirements (CET1) |

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<tbody>
<tr>
<td>Lending reduction (measured in %)</td>
<td>1.4</td>
<td>3.5</td>
<td>1.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Sample</td>
<td>15 Countries</td>
<td>UK</td>
<td>UK</td>
<td>UK</td>
</tr>
</tbody>
</table>
such “surprises”. Thomae and Chenet (2016) link theoretical evidence from market failure literature to transition risk, providing theoretical evidence of potential mispricing of such risks. Based on the theoretical evidence, the authors suggest a case for policy intervention to counter asset mispricing and related market failure (Thomae and Chenet, 2016). The literature thus highlights the lack of certainty regarding climate- and transition-risk-adjusted asset pricing. To prevent a potential materialisation of these risks, a policy intervention in the form of a BP may be justified, as higher capital requirements for “brown” assets may counterbalance such presumed risks. While there is both evidence of economic and financial risks in practice, and theoretical evidence that these risks may be mispriced, there is no – and indeed unlikely to be firm – concrete evidence that these risks are actually mispriced in practice. However, this issue exists for all type of supervisory interventions seeking to correct failures in market pricing mechanisms.

4. Methodology
This section describes the methodology. As a first step, the asset breakdown on banks’ balance sheets by type of instrument (corporate lending, equity, bonds, etc.) was estimated. Estimates are based on the information available from the European Central Bank (2017) (Table III). The analysis excluded fixed, remaining and external assets.

As a second step, the share of “green” and “brown” assets within each of these instruments was estimated. The proposal from the EP and the EC suggests a preliminary focus on mortgages and loans for electric and hybrid vehicles. This would imply that only mortgages and consumer credit would be eligible. Currently, hybrid and electric vehicles make up roughly 5 per cent of global car sales with a targeted growth of around 15 per cent over the next five to ten years (IEA, 2017). The composition of consumer credit in turn is somewhat uncertain, given the lack of European data on this question. Using USA household debt data as a proxy (Federal Reserve Bank of New York, 2017), bar student loans which play a marginal role in European household debt relatively to the USA, as well as mortgage debt which is covered in a different asset class, roughly 35 per cent of non-mortgage consumer credit can be linked to car loans. Assuming a 35 per cent share of car loans in consumer credit and up to 15 per cent share of hybrid and electric vehicles, this suggests that up to 5 per cent of consumer credit may eventually be affected over the next ten years.

For mortgages, the estimates may of course differ widely. When considering buildings rated with an Energy Performance Certificate of A or B, around 10 per cent of mortgages may be eligible, based on European statistics regarding buildings’ energy performance (European Commission, 2014).

While the current focus may be on mortgages and car loans, the GSF could eventually be expanded to a broader set of assets, notably related to corporate credit and equity. The challenge is quantifying the potential share of “green” that may be eligible. Estimates suggest that the “green” revenue share of a corporate portfolio is around 3-4 per cent (Financing the Future Consortium, 2015). This of course also includes companies that are only partially “green”. Reflecting this uncertainty, the estimates applied here used an “optimistic” assumption of up to 2 per cent of corporate loans, debt, and equity portfolios that may qualify for the GSF.

In terms of the “brown” share, estimates suggest a 10-15 per cent “brown” share (focused on fossil fuels, the carbon-intensive power sector, and the carbon-intensive transport sector) (Financing the Future Consortium, 2015). Analyses however vary and estimates are somewhat outdated; more recent estimates focus on the lower bound of the 10-15 per cent “brown” share (Thomae et al., 2015). A more conservative assumption of 10 per cent was taken, given that a number of assets within these sectors and across sectors would not ultimately be labelled “brown” to avoid a too broad penalisation of economic activity.
Table III. Estimated ownership of European banks of selected financial instruments, as well as the potential share of "Green" and "Brown" assets.

<table>
<thead>
<tr>
<th>Type of instrument</th>
<th>Total (in billion €)</th>
<th>Green share (in %)</th>
<th>Brown share (in %)</th>
<th>Risk-Weight (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Baseline</td>
<td>Potential</td>
<td>Baseline</td>
</tr>
<tr>
<td>Loans financial corporations</td>
<td>1,047</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Loans non-financial corporations (large)</td>
<td>2,848</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Loans non-financial corporations (SMEs)</td>
<td>1,500</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Consumer credit</td>
<td>654</td>
<td>5</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Loans - house purchase</td>
<td>4,220</td>
<td>10</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Other loans - household</td>
<td>723</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Loans government</td>
<td>1,016</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Loans non-euro area residents</td>
<td>2,898</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Equity funds</td>
<td>1,532</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Government debt securities</td>
<td>1,505</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MFI debt securities</td>
<td>970</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Debt securities - non-euro area residents</td>
<td>2,151</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>21,064</td>
<td></td>
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</tbody>
</table>
To estimate the potential effect of a BP, two potential policy models were applied. The first policy model involves a “partial” penalty, applied above a certain concentration threshold for carbon-intensive assets, set here at 5 per cent in any individual asset class. In this iteration, a penalty is only applied to the part of the exposure that exceeds the 5 per cent. The alternative is a “total” penalty, applied to the entire carbon-intensive exposure.

The final challenge in the application lay in defining the baseline risk-weight for the asset class, which will differ within an asset class based on different parameters (e.g. ratings). For this paper, the baseline assumption in terms of capital requirements applied is 7 per cent, i.e. the total common equity required under Basel III, focussing exclusively on Pillar I of Basel III and assuming no countercyclical buffer (BIS, 2017). Alternatively, one could increase the capital requirements applied to 8 per cent, i.e. the minimum capital adequacy ratio that credit institutions must hold under Basel III; yet, it has a limited effect on the analysis’ results.

Table III summarises the data basis applied in this paper. Of course, figures may look significantly different for any individual bank.

On this basis, a GSF and BP on the risk-weight were applied to first estimate the impact on capital reserves. The factor applied in the analysis ranged from 0 per cent to 50 per cent, with an emphasis on the 15-25 per cent range suggested by the EP.

As a second step, the adjustments of the risk-weights were translated into an implied equivalent adjustment of the capital charge. In other words, the authors estimated the extent to which the capital requirement would have to be adjusted to achieve the equivalent studied effect of the adjusted risk-weight. Next, the impact factors – in terms of cost and availability of capital – identified in the academic literature (Tables I and II) were applied. However, the literature focuses on adjustments of capital requirements only and was thus translated to a de facto percentage change in capital reserves for reasons of comparison.

5. Results: green supporting factor and brown penalty
This section seeks to quantify the potential implications of implementing a GSF or BP for European banks.

Based on current definitions (covering mortgages, as well as hybrid and electric vehicle finance), the total impact of a GSF in the range suggested by the EP (15-25 per cent) is estimated to be between €3-4bn in capital savings (Figure 2). The risk-weighted value of the respective assets is estimated at roughly €244bn[7], implying a current total capital charge of €17bn (assuming a 7 per cent total capital charge).

Assuming the definition of “green” assets could be meaningfully and appropriately extended to a broader suite of assets – as described above – the GSF generates between €5-8 billion in capital savings. Figure 2 sets the estimated impact of both the limited and extended application of a GSF in relation to approximately €12bn in estimated capital savings for the SME supporting factor (EBA, 2016). The estimate assumes no “green” instruments by sovereign issuers. So-called green bonds have been issued by, for example, Poland and Belgium, and municipalities at sub-national level. However, these instruments are not ringfenced and are thus legally basically identical to “traditional” instruments. It is necessary to ensure that a capital supporting factor finances specifically green activities and not a balance sheet more generally (even if a virtual ringfencing takes place); green bonds are thus not considered as eligible. Indeed, an expansion of these instruments would likely create a significant regulatory quagmire and legal risk, as well as potentially significantly increase the risks for abuse more generally - while not addressing the fundamental logic of supporting “green” financial instruments. The overall volume excluded here is unlikely to increase dramatically the overall “potential” green universe, which in these estimates reaches €585 billion share of European banks balance sheets.
The alternative is instituting a BP factor.

The results suggest that a BP could create total additional capital charges for the EU banking sector of up to €14bn for an application to a limited suite of assets and up to €22bn to a broader suite of assets if the EP proposal was reversed. Increasing the penalty to 50 per cent would create €44 billion of extra capital charges. At a 25 per cent increase in the risk-weight, the results for a limited BP application would roughly align with an aggregate increase of 0.1 per cent in the capital requirements of banks. The analysis clearly demonstrates that a BP is likely to have more pronounced effect on capital reserves than a GSF. This is somewhat intuitive since the universe of “brown” assets – even given a partial application – is larger than the universe of “green” assets. Figure 3 shows the potential capital shortfall in billion euros under various levels of “penalty” applied either partially or totally.

Of course, here, too, a definitional issue may be a challenge. There is no consensus on one taxonomy, although the taxonomies that do exist tend to more directly respond to financial assets. Examples are the environmental risk classification by Moody’s, or the models applied by the Sustainable Energy Investing metrics project. Where it becomes particularly challenging is identifying “brown” assets in carbon-intensive sectors with no clear transition pathway – notably industrial and non-road transport – although a simple short-term solution would be to exclude them.

6. Results: volume and cost of capital

The previous section highlighted the potential impact of adjusting capital requirements on total capital reserves. The associated question then of course is on the impact on the cost of capital and overall lending levels. Forecasting such effects is notoriously difficult, given the myriad external effects influencing these levels and the non-linearity of the interplay between these factors. Nevertheless, such forecasts can build on the body of literature reviewed (Tables I and II) regarding the impact of changes on capital requirements more generally. Here, these estimates are used to simulate the potential impact of a GSF on the cost (measured in basis points) and availability (measured in percentage changes in lending volume) of capital for “green” investments.

Applying the factors identified in the literature regarding the impact of changes in capital requirements following a one percentage point increase suggests a reduction in the
cost of capital for “green” projects by about 5-26 basis points. Figure 4 summarises these results, with the different estimates based on the factors from the literature. These estimates are based on the ranges implied in the academic literature in terms of the sensitivity of lending conditions on capital requirements. Here, the 15-25 per cent adjustment in the risk-weighted assets is translated into an “implied” adjustment of the level of capital requirements. In other words, a 15-25 per cent reduction in the risk-weight is the equivalent of a 1.05-1.75 per cent reduction in the capital reserve requirement itself (from 7 per cent to 5.25-5.95 per cent, assuming a 100 per cent baseline risk-weight). This reduction in basis points is at a similar level to the “Green Bond Premium” (Ehlers and Packer, 2017).
In absolute terms, an adjustment of 5-26 basis points, while meaningful, is unlikely to fundamentally change the financing conditions for “green” assets and their attractiveness. To put this number into context, the range of the weighted average cost of capital – expressed in basis points – for onshore wind projects in Europe is around 900 basis points. The analysis for a BP is then exactly the inverse, with a commensurate increase in basis points of around 5-26 basis points for “brown” assets.

Another potential impact may be on the lending volume. Here, the analysis represents the estimated lending impact in terms of percentage change in lending volume, building on former analyses from the literature (Table II). Interestingly, the literature does not suggest a one-to-one impact in all cases. Thus, a 1.05-1.75 per cent-point increase in the capital requirements implies a reduction in lending volume of roughly 1-8 per cent to “brown” assets (Figure 5).

In absolute terms, the BP would imply an “implicit” aggregate increase in capital requirements for European banks of around 0.1 per cent. This in turn would imply an aggregate lending reduction in the economy of around 0.1-0.5 per cent (Figure 6). Of course, such analysis would not consider any potential offsetting effects related to more stable balance sheets, which can have a positive impact on lending (Martynova, 2015). While the results presented here show the impact of a BP, they would seem identical assuming the inverse.

7. Conclusion

Current regulatory capital requirements are provided as a function of risk. Higher capital requirements are regarded as an instrument to assure financial stability, leading to the question to what extent capital reserves may be impacted by a GSF or a BP. This paper’s analysis has revealed that a GSF would unlikely significantly calibrate current capital reserves. In absolute terms, the total capital savings would likely be significantly lower (42-66 per cent) than those resulting from the SME supporting factor, a policy instrument that remained below expectations in terms of its effect on investment in SMEs. Presumptions that a BP may destabilise bank’s balance sheets and have negative implications for banks’ risk management
can be rebutted by this paper’s analysis. It shows that noticeable effects on capital would result from the introduction of such a policy instrument relatively to a GSF. The greater impact is because of the vaster amount of assets the BP would apply to. This may, in the long-term, potentially lower banks’ exposure to transition-risk if investment in “brown” assets would consequently be reduced. The authors acknowledge that effects for individual financial institutions may of course differ significantly. This paper provides an analysis based on a macro-prudential regulation; thus, some banks may remain unaffected by such policy interventions, while others may be more exposed. The ultimate exposure will be a function both of the asset allocation of a bank across asset classes, but also between high-carbon and low-carbon financial instruments. Understanding potential distributional effects would require further analysis. Further, without a legally established taxonomy on “green” and “brown” assets, asset classification to regulate the application of such policy instruments will remain difficult. Additionally, such taxonomy should include both physical and financial assets. If a BP was considered as an alternative policy instrument, a potential implementation within Basel III’s countercyclical buffer framework or under Pillar II could be discussed.

Notes
1. According to EU estimates, an annual investment gap of 180 billion Euro must be closed to meet the EU’s 2030 targets agreed at the COP21 United Nations (UN) Climate Change Conference in Paris in 2015. These investments shall target energy efficiency and renewable energy (European Commission, 2018).
2. Incidentally, this is an issue that of course also plagues “green assets”.
3. RWAs are calculated by weighting assets by their respective market, operational and credit risk (BIS, 2017).
4. Here, the SME supporting factor technically differs from the GSF supporting factor, which would reduce risk weights directly, according to the current proposal. However, both application models mathematically produce the same results.

5. However, this may depend on the quantity of a bank’s own equity at risk, the so-called “capital-at-risk effect” (Hellmann et al., 2000) and a bank’s capital level (Calem and Rob, 1999).

6. Izquierdo et al. emphasise the need for a harmonised definition of SMEs across EU member states - a measure that would potentially increase consistency and comparability (2017). It relates to the aforementioned discussion on a missing taxonomy for “green” and “brown” assets.

7. The estimates assume a 50% risk-weight on mortgages and a 100% risk-weight on consumer credit. Risk weights at a 100%-level for both the GSF and the BP were assumed, based on assumptions for risk-weighting commercial loans (Reserve Bank of New Zealand, 2007), the most relevant category for the policy instrument’s target.

References


Moody’s Investor Service (2017), “European commission proposal to lower capital requirements for banks’ green assets is credit negative”, 18 December, n.p.


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