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TECHNICAL ANNEX

Examining the impacts of prudential regulation on long-term financing

Michel CARDONA

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According to many analysts and financial actors, some prudential rules would penalise long-term investments or specialised finance. These rules are not specific to financing the low-carbon transition and apply to all financial activity. But financing for the transition would be particularly penalised by them given the high level of long-term financing required.

In this document, we perform a review – conducted in the context of the preparation of the report “Can financial regulation accelerate the low-carbon transition?” – of the main regulations targeted by these critics to determine whether the impact has been proven and empirically demonstrated. The regulations reviewed are the following ones: liquidity requirements for investment funds, liquidity ratios for banks, capital requirements for banks, solvency rules for insurance companies and prudential treatment of leasing operations.

This review does not find that prudential regulation is a significant obstacle to financing the transition, contrary to what financial actors themselves often argue.

1. Liquidity requirements in the regulation of financial markets

The principle of this regulation is to ensure that investment funds provide liquidity of units (i.e. the possibility for investors to leave the fund by selling their units) that matches the average duration of the funds’ assets. In other words, its aim is to ensure fund managers are capable – especially in periods of crisis – of meeting the “promise of liquidity” made to investors without penalising either investors (with a lower repurchase price) or the market as a whole (through sudden asset sales that are likely to disrupt asset prices).

Liquidity is important in regulations on consumer products for which the “promise of liquidity” is high (for commercial reasons, UCITS typically propose daily repurchase dates, which is not required by regulation¹). Thus, the UCITS V² Directive requires that 90 % of securities are considered to be liquid with regard to these criteria (to the detriment in particular of unlisted securities). These are not based on the duration of assets (when they have a term), but on their secondary market liquidity (the European Securities and Markets Authority - ESMA specified the criteria for assessing the real liquidity of assets). The regulations also require funds to carry out regular stress tests to ensure the characteristics of their portfolios are in line with their objectives and their strategy.

The other investment funds, alternative investment funds (AIFs), are not governed by rules defined at product level, but by rules concerning actors (asset management companies - AMCs). The AIFM directive delegates responsibility for setting these rules to the national authorities. In France, only AIFs offered to private customers have constraints similar to those of UCITS; for the others, the rules concern governance and risk management for AMCs. The latter must ensure a match between the liquidity of the assets and liabilities of AIFs through tailored repurchase rules (the possibility of blocking or delaying repurchasing, for example). Thus, if the AMCs propose open-ended real estate funds, they must ensure sufficient pockets of liquidity to meet redemption requests³. In addition, they must conduct liquidity stress tests. But these funds are also subject to high demands from institutional investors (especially insurance companies, themselves subject to their own prudential requirements⁴), which make it difficult to market products with limited repurchasing possibilities. This is why European long-term investment funds⁵ (ELTIFs) aimed at providing long-term financing

¹ This requires proposing a repurchase date at least twice a month.

² Directive 2014/91 of 23 July 2014 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS).

³ These funds must not have more than 60 % of their assets invested in real estate.

⁴ Among these constraints, insurance companies consider that the Solvency II regulation plays a significant role.

⁵ Introduced by the European regulation 2015/760 of 29 April 2015 on European long-term investment funds.

for infrastructure projects, unlisted companies and listed SMEs, have had limited success (since regulations impose heavy constraints on repurchasing possibilities given the duration of the funds' assets).

The COVID-19 crisis has led the European supervisors to closely monitor funds that engage in excessive transformation after the difficulties encountered by certain funds, especially British property funds whose dealing was suspended in March 2020. These difficulties should lead European regulators to increase the requirements for coherence between the liquidity of the funds' assets and liabilities, especially for UCITS.

These regulatory requirements govern the “maturity transformation” performed by investment funds to ensure the protection of investors and the stability of financial markets. They do not limit their capacity to move towards long-term investments, but require that the liquidity of liabilities is adapted to that of assets. It is the combination of commercial pressure to favour open-ended funds and regulation that leads funds to prioritise the most liquid securities on markets. This does not automatically penalise securities that are long-term by nature, but those with little or no liquidity (especially unlisted assets on markets such as capital securities of SMEs-SMIs or start-ups). The financing of investments in the transition is therefore concerned in proportion to the illiquid securities used.

2. Prudential regulations for banks

These regulations are often accused by banking actors, but also by some experts, of indirectly disadvantaging financing for the transition by penalising medium- and long-term credit. There are two main categories of rules that are likely to affect the distribution of credit by banks.

i. The bank liquidity ratio

In the context of Basel III, banks are subject to a liquidity coverage ratio and a net stable funding ratio.

Box 1 - Liquidity requirements for banks:

The Basel III accord - subsequently transposed into EU regulation – introduced two new rules requiring banks to hold minimum liquid assets:

1/ Liquidity Coverage Ratio (LCR):

This ratio requires banks to hold sufficient liquid assets to fund cash outflows for a 30-day period under conditions of market stress (depositors making withdrawals or creditors halting loan renewal). Banks must hold high-quality liquid assets (government securities, assets eligible for the central bank, etc.) covering at least 25 % of net cash outflows (calculated by weighting resources according to their expected stability).

2/ Net Stable Funding Ratio (NSFR):

This ratio requires that banks hold sufficient stable resources to fund outflows for the next 12 months. It aims to enable banks to withstand a prolonged period of stress that affects them directly, by ensuring that the transformation performed by banks is controlled. Weighting is applied to take account of the stability of resources and the liquidity of assets to determine the stable funding requirements.

These liquidity rules have been accused of encouraging banks to deform their assets in favour of “liquid securities” to the detriment of less liquid assets (corporate debt, stocks, etc.). For example, D’Orazio and Popoyan believe that these liquidity requirements undermine the financing of green activities, since the “Basel III liquidity rules are likely to make long-term financing more expensive, which will particularly affect ‘patient’ (i.e., long-term) green investments”⁶. The NSFR has been particularly targeted by banks, since it is aimed at limiting the transformation they perform and could thus reduce long-term financing because of the difficulty banks have finding long-term resources. According to supervisors, the NSFR has simply reduced excessive transformation, which is intrinsically risky, and underlined the fact that to finance long-term credit, stable resources are required (with these being defined in a very broad manner, since they must simply exceed a 12 month residual term).

The findings of empirical studies are very cautious about the impact of the new liquidity rules (see, for example, the research conducted by the IMF in 2012⁷). The 2019 work by the BIS⁸ identifies all studies on the effects of financial regulations; the BIS concludes that these studies find no empirical elements indicating that the increase in the liquidity coverage ratio (LCR) or the net stable funding ratio (NSFR) has reduced the distribution of credit. The NSFR nevertheless seems to have a countercyclical impact: banks with a higher ratio lend relatively more than others during periods of crisis, whereas they do not increase their credit as much in normal periods (based on a limited number of studies). Both the IMF and the BIS insist on the heterogeneity of results and therefore on the need for caution in their interpretation.

ii. Capital requirements

Banks are subject to international solvency standards set by the Basel Committee and subsequently adapted to the regional or national level (see Box 2).

Box 2 - Capital requirements for banks set by Basel III and CRD IV-CRR⁹

With the first Basel accord (1988), minimum capital requirements were introduced into international prudential standards. These requirements were successively increased in 1996, 2004 and 2010, and then introduced into EU regulations.

1/ Minimum capital requirements:

Capital requirements define rules to calculate the minimum level of own funds that banks must hold on their assets. These rules cover both the definition of “own funds” and the calculation of the minimum capital required. The latter depends on the amount of “risks” to which each bank is exposed. It is calculated either using the Basel III standard model (based on standard “risk weighting” applied to the different asset categories), or with banks’ internal models that use their own historical data on defaults and losses. The minimum capital ratio for banks – the ratio between own funds and

⁶ Paola d’Orazio and Lilit Popoyan, “Fostering green investments and tackling climate-related financial risks: which role for macroprudential policies?”, *Ecological Economics* 160 (2019) 25-37.

⁷ D. Elliot, S. Salloy and A.Oliveira Santos, “Assessing the Cost of financial regulation”, IMF Working paper WP/12/233 2012.

⁸ F. Boissay, C. Cantu, S. Claessens and A. Villegas, “Impact of financial regulations: insights from an online repository of studies”, *BIS Quarterly Review*, March 2019.

⁹ CRD IV: Capital Requirements Directive 2013/36 of 26/06/2013, and CRR: Capital Requirements Regulation 575/2013 of 26/06/2013.

risk-weighted assets (RWA) – is now 10.5 % (supplemented where necessary by a countercyclical capital buffer or a systemic buffer) with more rigorous risk-weighted calculations and a more demanding definition of own funds.

2/ Leverage ratio:

As a complement to the capital ratio, a leverage ratio was introduced in 2010 between total non-risk weighted assets (and certain off-balance sheet items) and better quality own funds (Tier 1). The Basel Committee finally set this ratio at a maximum of 3 % in January 2016 (with application from January 2018).

The first question concerns the impact of these solvency rules on the distribution of credit in general. The impact of an increase in capital requirements is confirmed by most of the studies conducted on this subject. An IMF study of 2012¹⁰ shows that the spread of results is relatively wide, but that the majority of estimates find a real but limited impact on the cost of capital (less than 25 bp for the estimates made by IMF) and therefore on the distribution of credit. The more recent study by BIS¹¹ analyses all studies conducted on the impact of financial regulation identified in the FRAME public database that it set up. This study confirms the order of magnitude of these results for the impact on the cost of capital, but finds a lower impact on the distribution of credit in the short-term, during the transitional phase, and greater uncertainty in the long term (in a certain number of cases, the impact even appears to be positive in the long term).

Other studies produce similar results (BoE 2014¹², London Economics 2016¹³, BIS-Macroeconomic Assessment Group 2010¹⁴, Cecchetti¹⁵ and Schoenholtz 2014¹⁶). In particular, in 2015 the European Central Bank conducted an impact study of European regulations setting prudential capital requirements for banks on the financing provided by these banks¹⁷. It indicates that the literature review and empirical studies suggest that a positive net impact will prevail in the long term, resulting from better solvency of banks, whereas the negative impact of these new rules on the distribution of credit is relatively moderate and limited to the transitional period during which banks adjust to the new rules.

More specifically concerning the leverage ratio, the European Banking Authority conducted a study on the calibration of this ratio based on 2015 data from a sample composed of 246 credit institutions¹⁸. The result of the simulations performed indicates that determining a ratio of 3 % would have a relatively low impact on the level of credit from institutions that do not meet the 3 % level (a reduction of around 0.1 % to 0.3 %). Moreover, this low impact would be partially offset by the increase in credit from institutions that already meet the 3 % level. The simulations indicate that this level would have the greatest impact on sovereign exposures and exposures to financial institutions,

¹⁰ D. Elliot, S. Salloy and A.Oliveira Santos.

¹¹ F. Boissay, C. Cantu, S. Claessens and A. Villegas.

¹² J. Bridges et al., “The impact of capital requirements on bank lending”, WP N°. 486, Bank of England, January 2014.

¹³ “Impact of the Capital Requirement Regulation (CRR) on the access to finance for business and long-term investments”, London Economics Europe, April 2016.

¹⁴ “Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements”, Macroeconomic Assessment Group – BIS, December 2010.

¹⁵ Stephen Cecchetti, “The jury is in”, CEPR Policy Insight No. 76, December 2014.

¹⁶ Cecchetti and Schoenholtz, “Higher capital requirements didn’t slow the economy”, December 15 2014, Money & Banking Post.

¹⁷ “The impact of the CRR and CRD IV on bank financing”, ECB, December 2015.

¹⁸ “EBA Report on the leverage ratio requirements under article 511 of the CRR”, August 2016.

securitisation and trading operations. The estimates do not suggest a substantial impact on credit to non-financial companies or private individuals (including mortgage loans).

The second question is whether certain types of financing are more specifically penalised by these capital requirement rules, which would have an adverse impact on financing for green activities.

According to some authors (see D’Orazio and Popoyan, 2019, for a review of these studies), the rules on capital (alone or combined with those on liquidity) potentially disadvantage long-term financing and thus have an impact on the financing of the low-carbon transition, which requires numerous green infrastructure projects, which are long-term by nature.

There are no empirical studies on the potential impact of capital requirements on long-term financing. It is nevertheless worth noting that some of the Basel III provisions explicitly target specific asset categories:

- Equity exposures (ownership securities) are assigned a risk weight of at least 100 % whatever the nature of the company, unlike obligations (debt securities), which are weighted according to the credit risk¹⁹.
- Assets with a particularly high risk are assigned a risk weight of 150 %²⁰. These include investments in venture capital and private equity.
- Moreover, the standard model for credit risk calculation was revised in 2018 to apply a weight of 100 to 130 % for project financing, except when projects meet strict quality conditions (BCBS 2017)²¹. This revision, which consists in considering project financing risks to be higher than equivalent unsecured loans, was disputed by banks on the grounds that it does not take account of the specificities of infrastructure (low historical losses, legal framework to monitor performance and anticipate difficulties, operational structure that guarantees creditors access to cash flows generated by financial assets in case of default, etc.).

There are few empirical studies on the impact of solvency rules on infrastructure financing. However, the studies available generally find a marginal impact of these rules on decisions concerning infrastructure financing – which are mainly affected by economic and political risks (CISL and UNEP FI, 2014)²² –, or a non-significant impact, even if the survey conducted suggests that prudential regulation has encouraged banks to shift towards the shortest and lowest risk projects (London Economic, 2016).

The European Commission nevertheless considered that there was a prudential barrier to the development of certain infrastructure loans. It thus decided to add new provisions to the CRR (article 501a) to give favourable prudential treatment to structured financing packages for infrastructure on “essential” public services (not necessarily green)²³. The prudential advantage consists in a 25 % reduction in capital charges for these projects. This provision has only just been implemented, and it is therefore too soon to judge its effectiveness. But it is unquestionably in line with support for infrastructure financing. Three points are worth noting:

¹⁹ Article 133 of the CRR.

²⁰ Article 128 of the CRR.

²¹ BCBS “Basel III: Finalising post-crisis reforms”, December 2017.

²² CISL and UNEP FI, “Stability and Sustainability in Banking Reform: Are Environmental Risks Missing in Basel III?”, 2014.

²³ These provisions entered into force on 28 April 2020 in the context of a “banking package” adopted by the Commission to facilitate bank lending in response to the COVID-19 crisis.

- The supporting factor (planned for an initial period of three years) will not be granted to all infrastructure projects: to benefit from it, they must comply with a set of conditions to reduce the risk of default (at least two thirds of the financing repayment amount must come from the projected revenue generated by the project financed).
- The eligibility conditions seem restrictive, especially because they exclude financing by direct bank lending and are not adapted to the diversity of existing projects. Thus, renewable energy financing, for which a part of the revenue depends on the market price of electricity, will not be eligible.
- Moreover, this provision reduces the capital charge, but does not totally offset the increase resulting from the Basel III accords.

3. Solvency rules for insurance companies

The EU Solvency II rules penalise stocks in relation to bonds. Thus, the capital requirements for stocks (39 % and 49 % respectively for type 1 and type 2 equities) are close to the weight assigned to a bond on a counterparty rated B (level “highly speculative”) with a maturity of five years (37.5 %) ²⁴.

However, several provisions of the Omnibus II Directive of 2014 amend these rules, in particular to take better account of the long duration of some insurance liabilities (introduction of an adjustment that takes account of the long duration of stocks against these long-term commitments) ²⁵.

Moreover, in 2015 the Commission introduced, through two delegated acts to Solvency II, amendments in favour of certain infrastructure financing: a reduction in own fund requirements for infrastructure by creating a new asset category, investments in “qualifying infrastructure”. This reduction (through the application of a lower “shock” of 30 %) applies to investments in the form of stocks or bonds made by insurers in entities or companies whose revenue is mainly derived from the use, financing or development of infrastructure assets.

4. Taking account of property and equipment leasing

Professionals consider that the characteristics of leasing are not adequately taken into account in the regulations. In particular, with regard to equipment leasing, the ownership of the asset financed – a central characteristic of leasing – is not recognised, even though it reduces the risks of this product (the regulations only consider it as collateral). This treatment results in an overestimation of the risk of these operations in relation to conventional loans.

However, this type of financing potentially has a role to play in the financing of the transition: for example, the financing of hybrid or electric vehicles through equipment leasing, or the financing of private housing renovation operations through consumer credit (boiler replacement, purchase of heat pumps, photovoltaic installations).

In the context of this review, a negative impact of this prudential treatment on the financing of the energy transition has not been established due to a lack of empirical studies to support its existence. This point merits further examination.

²⁴ “Osez le long terme : refonder l’investissement pour l’Europe de demain”, Task Force Investissement de long terme de la Place de Paris, 2018.

²⁵ Introduction of an adjustment to reduce the “shock” applied to equity to calculate capital requirements.

5. Summary of the impact of prudential requirements

The review of this raft of prudential regulations shows that these rules – as is their objective – impact the behaviour of financial actors. Indeed, they seek to influence the policy of transformation (short-term resources/longer term assets) of financial actors to reduce situations of excessive transformation that weaken their position in case of tension or crises. They change the behaviour of financial actors who, in view of investors’ preference for liquidity or the difficulty of mobilising long-term resources, tend to prioritise short-term assets and especially more liquid assets on financial markets. Similarly, solvency rules (for banks and insurance organisations), whose primary objective is to ensure the financial stability of these actors, generally penalise stocks as well as investments deemed to carry the highest risk (venture capital, private equity, project finance). The table below summarises the characteristics of these prudential regulations and their impact on the behaviour of financial actors.

Table 1: Summary of the review of potential regulatory obstacles

| Regulatory provisions | Impact analysis |
|--|---|
| <p>1/ <u>Liquidity requirements for investment funds (IFs)</u>:</p> <ul style="list-style-type: none"> - IFs must ensure coherence between the liquidity of units and the average duration of assets - the requirements are stricter for IFs open to individuals | <ul style="list-style-type: none"> - These requirements govern “transformation” in IFs - they do not hamper “long-term” investments, but limit the capacity of IFs to invest in assets with little or no liquidity when they are open to individuals or to meet the liquidity requirements of institutional investors themselves - the obstacle is mainly due to institutional investors’ preference for liquidity, when they should be the key financiers of illiquid securities |
| <p>2/ <u>Bank liquidity ratios</u>:</p> <ul style="list-style-type: none"> - the liquidity coverage ratio (LCR) to fund cash outflows for 30 days - the net stable funding ratio (NSFR) to cover financing needs for 12 months | <ul style="list-style-type: none"> - empirical studies do not identify any significant impact of the LCR on the distribution of credit in normal times (the implementation of the LCR had an adverse but temporary impact on corporate credit) - a small number of studies point to an adverse impact of the NSFR on the distribution of credit in general, but the IMF and the BIS urge caution in their interpretation |
| <p>3/ <u>Capital requirements for banks</u>:</p> <ul style="list-style-type: none"> - the minimum capital rules determine the minimum level of own funds required of banks according to their risk-weighted assets - the leverage ratio imposes a minimum level of own funds according to total non-risk weighted assets | <ul style="list-style-type: none"> - empirical studies establish a real but limited link between capital requirements and the distribution of credit in the short term (implementation phase for the regulation), but find far more uncertain results in the long term - some provisions deliberately penalise certain risky assets (stocks, venture capital and private equity, as well as project finance) - empirical studies find a marginal impact of capital requirements on infrastructure financing. The European Commission has nevertheless decided to reduce prudential requirements for some infrastructure projects |
| <p>4/ <u>Solvency rules for insurance companies</u>:</p> <ul style="list-style-type: none"> - solvency rules determine the minimum level of own funds required of insurance organisations | <ul style="list-style-type: none"> - the initial European rules penalised insurers’ stocks in relation to bonds. But they have been amended to reduce this impact. There are still few empirical studies on the real impact of the amended standards - the European Commission has introduced reductions in favour of certain infrastructure financing |

| | |
|---|---|
| <p>5/ <u>Capital requirements for leasing:</u> - for equipment leasing, ownership of the asset financed is only partially taken into account (as collateral)</p> | <p>- prudential banking regulations do not take full account of the specificities of leasing, which may lead to an overestimation of the risk of these operations in relation to conventional loans - the existence of a resulting impact on the financing of the energy transition has not been demonstrated by any empirical studies</p> |
|---|---|

The real impact of these regulations on the structure of financing in general, and especially on the financing of the transition, is difficult to quantify. Existing empirical studies (mainly for prudential banking regulations) show a limited impact of these regulations on the distribution of credit in general. By asking banks to provide buffers against the risks of losses, liquidity and transformation, prudential regulations also modify the cost of certain financing options (especially longer term ones) and the incentives for banks to provide them (FSB 2013). But these indirect effects on the distribution of credit are especially measured in transitional periods of adjustment, and appear far more uncertain in normal times, since banks have numerous means of adjusting over time. Indeed, some studies identify a positive effect of these regulations on the distribution of credit in the long term, once the adjustment period is over.

Several conclusions can be drawn from this review.

- Existing empirical studies do not find that prudential regulation is a significant obstacle to financing the transition, contrary to what financial actors themselves often argue;
- It is nevertheless essential to pursue robust empirical studies to continue to assess the impact of these different regulations in order to statistically document any unintended consequences that may emerge in the long term.