InterSciencePlace
International Scientific Journal – ISSN: 1679-9844
Nº 3, volume 18, article nº 09, July/September 2023
D.O.I: http://dx.doi.org/10.6020/1679-9844/v18n3a9
Accepted: 10/04/2022 Published: 20/09/2023

CYCLICALITY OF FIRMS, BANKS AND INFORMATION: AN INTEGRATED REVIEW

CICLICIDADE DE EMPRESAS, BANCOS E INFORMAÇÃO: UMA REVISÃO INTEGRADA

Johnny Barrelli Schlömer
PhD student at Brazilian School of Public and Business Administration, Getulio Vargas Foundation, Brazil
schlomer.johnny@gmail.com
ORCID: 0000-0001-6483-2912
Lattes: 8899047126318093

Lars Norden
Full Professor of Banking and Finance at Brazilian School of Public and Business Administration, Getulio Vargas Foundation, Brazil and EPGE Brazilian School of Economics and Finance, Getulio Vargas Foundation, Brazil
lars.norden@fgv.br
ORCID: 0000-0002-2222-7797
Lattes: 7017802459850019

Abstract – In this study we review the literature on how macroeconomic fluctuations unfold for firms, banks, and information. As firms' most important decisions related to capital investment, which determines a firm´s long-term prospects and shareholder value creation are directly affected by the cycles, our research reviews how firms are affected by business cycles. Moreover, as banks represent the link between macroeconomic conditions and the real economy through credit, we also review the influence of cycles on banking activity. This additional approach is necessary because of the uniqueness and specialness of banks. Based on the literature that identifies recessions as periods of flight to quality and with credit as the financial accelerator of crises, it is important to consider a review that encompasses both firms and banks. Similarly, as the credit process and lending standards are grounded in information production, we also shed light on the behavior of hard and soft information through cycles. Thus, we

provide a comprehensive and integrated view of business cycles and their effects on credit origination and banking until borrowing firms. With this review, we broaden investors' understanding of different firms' behaviors across business cycles and go beyond by including banks in the research. Moreover, concerning the welfare costs associated with ramps and hollows of economic output along the cycles, our research allows the establishment of policies intending to smooth cycles. Thus, based on this integrated literature review, our main conclusion indicates that smoothing cycles is beneficial to the real economy. For policymakers, this result indicates that moderate macroeconomic fluctuations and cyclicality are preferred from a welfare perspective when economic agents are risk-averse, which is in line with policies, rules, and regulations that reflect this preference and aim at reducing the volatility or cyclicality of economic variables.

Keywords: Business Cycles, Macro-Economic Fluctuations, Firm Performance, Banking, Information

Resumo – Neste estudo revisamos a literatura relacionada aos desdobramentos das flutuações macroeconômicas para empresas, bancos e informação. Como a decisão empresarial de investimentos, que determina as perspectivas de longo prazo e a criação de valor para os acionistas são diretamente afetados pelos ciclos de negócios, nossa pesquisa fornece uma revisão da literatura sobre como as empresas são afetadas pelos ciclos. Além disso, como os bancos representam a ligação entre a macroeconomia e a economia real através do crédito, também analisamos a influência dos ciclos na atividade bancária. Esta abordagem adicional é necessária devido à singularidade e especialidade dos bancos. Com base na literatura que identifica as recessões como períodos de fuga para a segurança e o crédito como acelerador financeiro das crises, é importante considerar uma revisão que contemple tanto as empresas quanto os bancos. Da mesma forma, como o processo de concessão de crédito se baseia na produção de informação, também lançamos luz sobre o comportamento da informação ao longo dos ciclos. Assim, fornecemos uma visão abrangente e integrada dos ciclos e seus efeitos na originação de crédito e no sistema bancário até chegar às empresas. Com esta revisão, ampliamos a compreensão dos investidores sobre o comportamento das empresas e bancos ao longo dos ciclos econômicos. Além disso, no que diz respeito aos custos de bem-estar associados às flutuações da economia, nossa investigação permite o estabelecimento de políticas que visem suavizar os ciclos. Assim, com base nesta revisão integrada da literatura, nossa principal conclusão indica que a suavização dos ciclos é benéfica para a economia real. Para os reguladores, este resultado indica que as flutuações macroeconômicas e ciclicidade moderadas são preferidas numa perspectiva de bem-estar, em linha com políticas, regras e regulamentos que refletem esta preferência e visam reduzir a volatilidade ou ciclicidade das variáveis econômicas.

Keywords: Ciclos de Negócios, Flutuações Macroeconômicas, Performance de Empresas, Atividade Bancária, Informação

1. Introduction

One of the most important issues in Economics and Finance is related to business cycles and their characteristics and consequences. We observe that the literature related to cyclicality identifies recessions as periods of “flight to quality” (BERNANKE, GERTLER & GILCHRIST, 1996) due to credit shocks so that credit is considered the financial “accelerator” (BERNANKE, GERTLER & GILCHRIST, 1996; MOORE & KIYOTAKI, 1997; DIAMOND & RAJAN, 2001). These credit constraints unfold to the borrowers so that firms' most important decisions related to capital investment, which determines a firm´s long-term prospects and shareholder value creation are directly affected. Not to mention that capital investment is also a fundamental driver of economic growth (DANGL & WU, 2016).

However, the detrimental effects of cycles are not restricted to economic downturns. Booms also can give room to undesirable effects that reduce allocative efficiency in the economy. Therefore, during upturns asset growth does not mean value creation. The expectations are that firms invest in all available positive net present value projects. However, if firms deviate from the optimal strategy because of agency problems, managerial entrenchment, behavioral biases, or other reasons, then high corporate growth can become unhealthy and detrimental to shareholders (JENSEN & MECKLING, 1976).

Additionally, recent literature identifies huge welfare costs associated with business cycles (BAI & ZHANG, 2022). This indicates the importance of studying cyclicality, as not only during recessions but also during booms, there are widespread negative consequences to firms, stakeholders, and the economy. Therefore, moderate macroeconomic fluctuations and cyclicality are preferred from a welfare perspective when economic agents are risk-averse (NORDEN, YIN & ZHAO, 2021). As identified by those authors, many economic policies, rules, and regulations (e.g., fiscal and monetary policies, financial market regulations, accounting standards, and banking regulations such as capital adequacy standards) reflect this preference and aim at reducing the volatility or cyclicality of economic variables.

Therefore, we conduct a literature review of the cyclicality of firms, banks, and

information. We aim to provide an integrated view of the research on cyclicality. First, we focus on cyclicality and firms, as the cycles have several implications for them. However, as several studies on firms exclude the financial sector from the analysis, our review includes banks and credit. This is important because banks represent the link between macroeconomic conditions and the real economy through credit. This additional approach is necessary because of the uniqueness and specialness of banks. Important to mention that the literature refers to credit as the financial accelerator of crisis, thus indicating the importance of a literature review linking those two topics, firms and banks. Finally, as the credit origination process is mainly based on information, we also bring some important literature that relates hard and soft information with business cycles. Consequently, our review intends to provide a comprehensive and integrated view of business cycles and their relationship with firms, banks, and information.

This analysis contributes to the literature by presenting an integrated view of cyclicality effects on firms' accounting and stock market performance, bank performance and risk, and the hard and soft information. Consequently, we can broaden investors understanding of different firms' performance across business cycles. For policymakers, we can provide a concise and integrated view of bank risk and performance, together with its effects on firms. Additionally, we also offer a vision of how the information process unfolds to firms through bank credit in good and bad times. Consequently, this can help governments and regulators establish the best policies that would be effective in recession periods when soft information might make a difference in the credit lending process. Finally, concerning the welfare costs associated with ramps and hollows of economic output along the cycles, our review allows an integrated view of the establishment of policies intending to smooth cycles.

Therefore, we begin by reviewing the literature about the effects of cycles on the real economy focusing on the research about firm performance through the cycle. Second, we consider banks, which represent a link between the economy and firms through credit. Thus, we review cyclicality effects on bank risk and performance. In sequence, as the credit process and lending standards are grounded in information production, we shed light on the behavior of hard and soft information through the cycles.

The remainder of this article is organized as follows. Section 2 exhibits the theoretical background related to cycles and firm performance. Section 3 considers the literature related to bank risk and performance concerning cycles. Section 4 sheds light on the information production process by banks, relating hard and soft information importance through cycles. Finally, section 5 summarizes and concludes this literature review.

2. Firms and Cycles

Some of the characteristics and consequences of business cycles can be captured by firm cyclicality, which can refer to the sensitivity of firm growth or revenues to the growth of the entire economy when considering accounting performance. Additionally, by using stock market valuation we can also calculate the sensitivity of a firm stock market performance to the economy.

According to the corporate finance literature, there is evidence that corporate expansion (contraction) is followed by periods with abnormally low (high) stock returns (COOPER, GULEN & SCHILL, 2008; MORTAL & SCHILL, 2015). That would indicate that after booms corporate performance tends to deteriorate. The opposite happens in the periods following recessions.

From the literature on asset pricing models, an intuitive result is that discount rates vary with business cycles so that they are high during economic downturns (CAMPBELL & COCHRANE, 1999). This would mean that few investors would be interested in buying risky stocks or risky long-term bonds, resulting in a higher discount rate. According to this reasoning, it seems reasonable to expect higher stock returns following a recession period.

Theoretical research indicates that adverse shocks to the economy may be amplified by worsening credit-market conditions. Acting as the financial “accelerator” (BERNANKE, GERTLER & GILCHRIST, 1996), the credit channel is strongly associated with recessions. The authors Bernanke, Gertler, and Gilchrist (1996) conclude that at the onset of recessions, borrowers facing high agency costs would receive a lower share of credit, which in turn should account for a decline in economic activity. This fact is well

known as “the flight to quality”. Other significant theoretical literature suggests that credit supply is important in explaining the evolution of the business cycle (MOORE & KIYOTAKI, 1997; DIAMOND & RAJAN, 2001).

At the same time, empirical research indicates that recession periods are characterized by tight lending standards, depressed aggregate lending, poor bank performance, and tight monetary policy (BECKER & IVASHINA, 2014). This means that in recession periods, not much new credit is issued, indicating a highly pro-cyclical behavior.

Concerning borrowing firms, one of their most important corporate decisions is investment, which determines a firm´s long-term prospects and shareholder value creation. Not to mention that capital investment is also a fundamental driver of economic growth (DANGL & WU, 2016). So, economic downturns in association with higher credit constraints tend to feedback on a spiral slowdown in the economy, constraining even more firms´ investments. According to Dangl and Wu (2016), what is particularly puzzling is that capital investment tends to decline sharply when an economy enters a recession, and to recover slowly as economic conditions improve. Therefore, by taking into consideration this asymmetry of capital investment, we can infer how harmful and costly a recession may be to the firms and their stakeholders in general.

By looking not only at recessions but also at booms, concerning bank lending, Behr, Foos, and Norden (2017) point out that credit cyclicality may create undesirable feedback effects that reduce allocative efficiency in the economy. According to the authors, too few firms may obtain credit in a recession and too many firms in a boom, which are both undesirable. Although in general recessions raise concerns, also booms can be detrimental for firms. As mentioned in Norden, Yin, and Zhao (2021), in good times, many firms grow fast or even excessively, increase risk-taking, and have stronger incentives for strategic default. During booms, the higher market and firm performance facilitate– through a pooling equilibrium - access to credit for both high and low-quality firms, which may lead to unhealthy credit and growth (DELL’ARICCIA & MARQUEZ, 2006; BECKER, BOS & ROSZBACH, 2020). This reasoning is in line with the old bankers´ wisdom that “bad loans are made in booms, not in recessions”.

Moreover, it is important to stress that high firm growth over the business cycle does not mean firm value creation. The expectations are that as firms invest in all available positive net present value projects, higher corporate growth creates more value. However, if firms deviate from the optimal strategy because of agency problems, managerial entrenchment, behavioral biases, or other reasons, then high corporate growth can become unhealthy and detrimental to shareholders (JENSEN & MECKLING, 1976).

Thereby, moderate macroeconomic fluctuations and cyclicality are preferred from a welfare perspective when economic agents are risk-averse (NORDEN, YIN & ZHAO, 2021). As identified by those authors, many economic policies, rules, and regulations (e.g., fiscal and monetary policies, financial market regulations, accounting standards, and banking regulations such as capital adequacy standards) reflect this preference and aim at reducing the volatility or cyclicality of economic variables. Important to mention that the potentially detrimental effects on financial stability and the real economy have been also tackled by regulatory authorities' efforts at lowering the cyclicality of bank lending, such as countercyclical capital buffers (Basel III Accord) and stressed value-at-risk requirements (INTERNATIONAL MONETARY FUND, 2011).

In addition to the previously mentioned studies and in line with the efforts and conclusions regarding the importance of smoothing fluctuations, the recent literature indicates huge welfare costs (BAI & ZHANG, 2022) associated with the business cycles. All those researches point out the importance of studying the sensitivity of firms' assets or revenues to GDP. That is because not only during recessions but also during booms, there are widespread negative consequences to firms, stakeholders, and the economy.

Important to mention that besides the sensitivity previously mentioned, factors might influence firm performance in addition to cyclicality. First, an obvious factor to be considered relates to the firm size. According to the imperfect capital market theories (BERNANKE, SCHOOL & GERTLER, 1986; GERTLER & GILCHRIST, 1994; MOORE & KIYOTAKI, 1997), market conditions can have very different effects on small and large firms´ risk. Due to agency costs induced by asymmetric information, firms must use collateral when borrowing. Therefore, small firms are more adversely affected by lower liquidity and higher short-term interest rates. In addition, the theories also identify

asymmetries in the effect of tighter credit market conditions on risk during recessions and expansions. Small firms are subject to stronger adverse effects in recessions than during an expansion, On the other hand, large firms are less likely to face such asymmetries over time as they tend to present a uniformly higher collateral across economic states (BERNANKE & GERTLER, 1989).

As argued by Gertler and Gilchrist (1994), informational asymmetries that increase the cost of external capital are most important to young firms, and that do not present higher collaterals, typically smaller firms. Additionally, Fama and French (FAMA & FRENCH, 1995) also hypothesize that firm size matters in determining stock returns because it acts as a proxy for some unobserved, omitted risk factors. Associated with size are credit constraint issues and capital market access differences. So, by using size we are also considering other implicit factors.

Based on those theories, Perez-Quiros and Timmermann (2000) identify that small firms exhibit the highest degree of asymmetry in their risk across recession and expansion, which translates into a higher sensitivity of their expected stock returns relative to variables used to measure credit market conditions. In sum, the authors analyze how the sensitivity of risk and expected returns concerning variables measuring credit market conditions depends on firm size. Not only because of different degrees of access to credit and sources of financing between small and large firms but also because credit constraints are more severe during recessions, small firms are more affected during a recession state (PEREZ-QUIROS & TIMMERMANN, 2000).

Both book-to-market and Tobin´s q are described in the literature as proxies for firm value (FAMA & FRENCH, 1993, 1995; CHUNG & PRUITT, 1994; NARAYANAN & UZMANOGLU, 2018). According to Fama and French (1993, 1995), consistent with rational pricing, high book-to-market signals persistent poor earnings and a low ratio indicates strong earnings. Regarding profitability, low book-to-market, which indicates a high stock price relative to book value, is typical of firms with high average returns on capital. The same happens to firms with a high Tobins´q, so that they are considered growth stocks, with investment opportunities. On the other hand, a high book-to-market ratio as well as a low Tobins´q is more related to relatively distressed firms. Therefore,

regarding the importance of book-to-market ratio as well as Tobins´q to firm performance, we also consider those variables in our analysis of accounting as well as stock market performance, aiming to make firms comparable. The literature (PASTOR & VERONESI, 2003) also indicates that the inverse of book-to-market, representing investment opportunities (similar to Tobins´q), is predicted to decline over a firm´s lifetime and that younger firms present higher values. This way, we observe that factors mentioned above, such as size, book-to-market, or Tobins´q also play an important role when considering the effects of cycles on firms.

Additionally, lower sensitivity to cycles tends to reduce overinvestment because during booms the firm growth is smaller. Consequently, it also tends to reduce debt overhang. However, during recessions, the lower cyclicality allows firms to keep with the positive NPV investments, thus avoiding underinvestment. This way, both during recessions and expansions, a lower cyclicality is associated with higher firm performance.

Together with the welfare costs associated with ramps and hollows of economic output along the cycles, our review collaborates with the establishment of policies intending to smooth cycles. Indirectly, by smoothing firm cyclicality it is possible to restrict unhealthy growth and increase firm value and profitability.

3. Banks and Cycles

The cyclical behavior of privately owned banks has been documented in a series of studies (BERNANKE, GERTLER & GILCHRIST, 1996; MOORE & KIYOTAKI, 1997; BECKER & IVASHINA, 2014), and is generally considered to be harmful to the economy because the amplification of credit lending during economic booms is also associated with severe credit constraints in economic downturns. This way, this cyclical behavior in credit lending tends to harm economic recovery.

At first glance, the main concern might be related to downturns, when too few firms obtain credit. However, during booms, many firms may obtain credit, which also may create undesirable feedback effects. Therefore, some studies (JENSEN & MECKLING, 1976; BEHR, FOOS & NORDEN, 2017) related to firm financial constraints, managerial entrenchment, and agency problems also indicate that credit lending cyclical behavior can

reduce allocative efficiency in the economy, so that even in upturns cyclicality can be seen as detrimental, generating unhealthy corporate growth.

Besides, the very recent literature identifies huge welfare costs associated with business cycles (BAI & ZHANG, 2022). This indicates the importance of studying cyclicality, as not only during recessions but also during booms, there are widespread negative consequences to firms, stakeholders, and the economy. Therefore, moderate macroeconomic fluctuations and cyclicality are preferred from a welfare perspective when economic agents are risk-averse (NORDEN, YIN & ZHAO, 2021).

As identified by those authors, many economic policies, rules, and regulations (e.g., fiscal and monetary policies, financial market regulations, accounting standards, and banking regulations such as capital adequacy standards) reflect this preference and aim at reducing the volatility or cyclicality of economic variables.

Regarding credit and cycles, the literature generally describes the procyclicality of credit lending, as together with recessions it is also observed a reduction in bank lending. In this context, Bernanke and Gertler (1989), Moore and Kiyotaki (1997), and Gorton and He (2008) indicate the importance of credit supply in explaining the evolution of business cycles. However, because of endogeneity reasons, it is difficult to ascertain if the procyclicality of credit is due to banks that are not willing to lend, or the result of firms' reduction in their demand for credit, and so investment, because of a slowdown in the economy. The first scenario corresponds to a supply shock in credit, and the latter to a demand shock.

Several papers have used exogenous shocks to bank credit supply to establish a causal relationship between credit and firm activity. For instance, the Japanese bank crisis was used as a natural experiment to test whether a loan supply shock can affect real economic activity through construction activity in U.S. commercial real estate markets (PEEK & ROSENGREN, 2000). The authors exploited variation across geographically distinct commercial real estate markets to establish that loan supply shocks emanating from Japan had real effects on economic activity in the United States. In line with that research, a more recent one (CHAVA & PURNANANDAM, 2011) provided causal evidence that adverse capital shocks to banks affect their borrowers' performance

negatively. For that, Chava and Purnanandam (2011) used an exogenous shock to the U.S. banking system during the Russian crisis of 1998 to separate the effect of borrowers' demand for credit from the supply of credit by the banks. The authors found that firms that primarily relied on banks for capital suffered larger valuation losses during this period and subsequently experienced a higher decline in their capital expenditure and profitability as compared to firms that had access to the public debt market. Additionally, consistent with an adverse shock to the supply of credit, crisis-affected banks decreased the quantity of their lending and increased loan interest rates in the post-crisis period significantly more than the unaffected banks.

Regarding the cyclicality of bank debt and public debt at the aggregate level, research indicates that bank credit is both more volatile and cyclical than public debt (BECKER & IVASHINA, 2014). Besides, several recessions exhibit rapidly shrinking bank debt. Becker and Ivashina (2014) show that between 1953 and 2013:Q2, there were 53 quarters where bank debt was lower in real terms than it had been four quarters earlier, but in no single quarter, did this happen with the outstanding stock of bond finance. Analyzing a time series of bank and bond loans, the authors observe a substitution between bank debt and public debt. However, as previously mentioned, the cyclicality of bank debt can reflect cyclical variation in the relative demand for bank debt or in the relative supply, so they consider firm-level data research.

To isolate the loan supply and rule out demand shock, Becker and Ivashina (2014) have examined the substitution between bank credit and public debt at the firm level, conditional on firms raising new debt financing. The firms considered were large and rated, for which the two forms of financing can be considered close substitutes. By limiting the sample to new debt issuances, the authors support that selected firms have a non-zero demand for credit so the substitution from bank debt to public debt is interpreted as evidence of a shift in bank-credit supply. Although the authors reveal that firms getting a bank loan are likely to stay with that form of debt in the near future, the less constrained firms switch from bank loans to bonds in times of tight lending standards, reduced aggregate lending, poor bank performance, and monetary contraction. Additionally, their study advances the measurement of bank-credit supply contraction, based on the

implementation of a loan-to-bond substitution measure, in a business cycle context (BECKER & IVASHINA, 2014). In sum, the research gives evidence of the cyclicality of credit supply based on a firm-level study of the least financially constrained one. However, their loan-to-bond substitution measure might also serve to predict a contraction in credit for small and non-rated firms, as those tend to be even more subject to financial constraints.

Analyzing small and medium-sized enterprises (SMEs), which represent the vast majority of all firms and contribute significantly to overall employment and growth in many countries, the literature indicates that they are subject to stronger informational asymmetries, more affected by legal and financial constraints to investments, and more bank-dependent than public firms (BECK, DEMIRGÜÇ-KUNT & MAKSIMOVIC, 2005). Financial institutions with special business objectives have emerged to overcome this market failure, such as local savings banks and credit cooperatives in Europe, credit unions in the U.S., and domestic or international development banks. In addition, government lending programs including direct subsidies or guarantees, like the Small Business Administration (SBA) in the U.S. were also created to cope with market frictions. Finally, special lending technologies, such as small business credit scoring and relationship lending, help overcome the constraints related to SMEs.

As banks are the main providers of credit to SMEs, Behr, Norden, and Noth (2013) examine whether and how differences in bank lending behavior affect firms´ financial constraints. According to the authors, the differentiation of banks by ownership is interesting because it drives their business models. Privately owned banks typically are profit-oriented, while state-owned banks tend to follow social welfare objectives, deviating from strict profit maximization (BEHR, NORDEN & Noth, 2013; BEHR, FOOS, & NORDEN 2017). Additionally, several studies document that bank lending, deposit taking, and liquidity creation of state-owned banks are less cyclical than private profit-oriented ones (FOOS, 2009; BERGER et al., 2021). As in (BEHR, NORDEN & NOTH 2013), this evidence implies that a heterogeneous financial system with different business models exhibits lower cyclicality. Based on a study of German savings banks and cooperative banks, Behr, Foos, and Norden (2017) conclude that the cyclicality of SME lending by

banks that follow a public mandate is on average 25% less cyclical than that of other banks from the same location. They also identify that this effect is related to credit supply and not to demand. Finally, the research also rules out that lower cyclicality comes with additional risk-taking(BEHR, FOOS & NORDEN, 2017).

Regarding the regulatory environment and its effects on cyclicality, risk-sensitive capital requirements like the Basel II Accord may increase cyclicality and affect lending behavior. That is because in a recession the general increase of borrowers´ risk induces higher capital requirements under risk-sensitive capital rules, thus leading to a decrease in credit supply and tightening of credit standards. This mechanism lowers corporate investments and consumer spending, thereby amplifying the recession. On the other hand, during economic booms, the overheating of the economy may reduce allocative efficiency, so that even in upturns cyclicality can be seen as detrimental, generating unhealthy corporate growth. Additionally, the 2007 subprime and the following 2007-2009 financial crisis underscore the importance of banking regulation and supervision to build up resilience against severe crises and to ensure the stability of the entire financial system. As described in the literature (LINDQUIST, 2004), capital buffers may be considered as insurance against failure to meet capital requirements. In the same direction, research on the Canadian banking system (GUIDARA et al., 2013) recognizes that capital requirements should be higher during booming economic periods because this is when banks can accumulate more capital. Conversely, according to Guidara et al (2013), a reduction in capital requirements during recessionary periods would be welcome since this may provide more room for banks to operate. Consequently, policymakers and regulators have undertaken efforts to reduce cyclicality due to its potentially detrimental effects on financial stability and the real economy. These comprise macro-prudential policy tools, such as dynamic loan loss provision rules (Spain, Colombia, and Peru), loan-to-value caps (Japan), and stressed value-at-risk requirements (IMF, 2011; LIM et al., 2011). Besides, we can not forget the Basel III Accord, based on countercyclical capital buffers, designed to generate reserves during economic upturns to promote financial stability in economic downturns. This is also intended to align banks´ risk-taking with their capital base.

Additionally, in recent years, many countries introduced capital surcharges on global systemically important banks (GSIBs). GSIB surcharges are an amount of capital that these banks must hold in addition to minimum risk-based capital requirements. GSIB surcharges aim to attenuate the risks that these banks pose to financial stability. According to Berry, Khan, and Rezende (2021), it represents a major innovation in bank capital regulation because, while risk-based capital regulation has for decades incentivized banks to reduce the risk of their assets, these surcharges increase with indicators of banks' systemic importance, and thus also motivate banks to lower their systemic footprints. The incentives that GSIB surcharges create may promote financial stability, but may also adversely affect the economy, for example, if banks supply sub-optimal amounts of credit and liquidity to reduce surcharges (BERRY, KHAN & REZENDE, 2021).

In the United States, the Federal Reserve Board adopted a rule in 2015 imposing risk-based capital surcharges on the largest and most interconnected U.S. bank holding companies (BHC). This rule requires that a bank whose measure of systemic importance exceeds a certain threshold be identified as a GSIB and be subject to a risk-based capital surcharge. The GSIB surcharge was introduced on January 1st, 2016, and became fully phased in on January 1st, 2019. Since the introduction of the surcharge, eight U.S. banks were GSIBs: Bank of America, Bank of New York Mellon, Citigroup, Goldman Sachs, JP Morgan Chase, Morgan Stanley, State Street, and Wells Fargo.

Thus, the introduction of a surcharge to capital requirements for the eight Global Systemically Important Banks (GSIB) banks in the US (FAVARA, IVANOV & REZENDE, 2021; BERRY, KHAN & REZENDE, 2021), whose implementation was stepwise in percentages of the exact surcharges, represented a capital shock for those banks.

Finally, although the literature identifies that GSIB surcharges create incentives that may promote financial stability, there is a gap regarding whether it may also adversely affect the economy, for example, if banks supply sub-optimal amounts of credit and liquidity to reduce surcharges (BERRY, KHAN & REZENDE, 2021). One might argue that, as we are studying cyclicality, we should analyze how the introduction of countercyclical capital buffers (CCyB - Basel III) in the US in 2019 affected firms. However, until this

moment, the CCyB effective rate is zero percent. That is why our review focused on GSIB surcharges.

Therefore, based on the previous literature that relates credit cycles to business cycles, and banking lending to firm constraints, we observe that lower cyclicality of credit could be beneficial to financial stability and the real economy, including aspects related to welfare costs (BAI & ZHANG, 2022). Additionally, smoothing cyclicality might have a positive impact on bank risk-adjusted performance. In this case, banks' objectives can be aligned with the real economy´s goals. This would represent an alignment of the aim at lowering cyclicality in the real economy with the banks´ objective of better risk-adjusted performance.

4. Information and Cycles

When we consider that the essence of banking is related to the ability to determine whether a potential borrower is creditworthy, we observe that information is critical. According to information availability, a loan officer identifies whether a potential borrower meets the bank´s credit standards. In its turn, information is linked to each bank's lending standards, which take into consideration not only hard information, public and available to everyone but also soft information, which relies on relationship transactions. We will focus on the cyclicality of hard and soft information in the remainder.

Information production is one of the main activities performed by banks. Based on the information, banks decide whether a prospective borrower will effectively receive a loan or not. Besides, it is also used to define loan terms and conditions, which might include collateral, covenants, and certainly its term and interest rates. This way, information production and analysis in the banking sector can be considered the fundamental stone of the credit process, which in turn will become funding for firms´ investments. Similarly, as credit supply is considered one driver of economic growth, information is linked to real economic activity through the banking sector. Thus, we observe the importance of studying topics related to information production in the banking system. In the previous sections, we reviewed the effect of cyclicality on firms and banks. Here, we take into consideration the relationship between cycles and information, as bank information production may vary over the business cycle (DANG, GORTON &

HOLMSTRÖM, 2012; WEITZNER & HOWES, 2021).

The relation between information production in the lending process and cycles is important because it has direct consequences for policymakers. Depending on the information production process, programs designed to stimulate bank lending as well as monetary policy incentives might be less effective during downturns, exactly when those programs are most expected to generate economic recovery. In line with this reasoning, Howes and Weitzner (2021) show that the empirical properties of bank information production are crucial for understanding the link between bank lending and real economic activity, as well as how this link changes over the business cycle. Important to mention the evidence those authors provide is consistent with theories predicting that information production is an endogenous response to changes in economic conditions. Grunert, Norden, and Weber (2005) show that soft information, as incorporated in bank-internal borrower ratings, is more stable over time than hard information. This finding can be explained by the fact that soft information is mainly related to characteristics that, once they have reached their steady state, remain relatively stable over the life of the borrower (e.g., management quality, education, business, and industry experience). In a recent study based on data from the US Fed, Berger, Bouwman, Norden, Roman, Udell and Wang (2024) show that information from existing bank-customer relationships and the favorability of this information affects the terms on new credit cards for consumers and small businesses in the US during normal times and the COVID-19 crisis. Both types of relationship borrowers benefit especially during the COVID-19 crisis, when soft information became relatively more important than hard information (FICO scores for consumers were frozen at that time). This is an important novel result as the literature assumed that credit card lending is transactions lending solely based on hard information.

Based on the fact that each bank determines, according to their lending standards, the clients´ creditworthy in a competitive environment, Gorton and He (2008), in their theoretical model of the repeated game of lending, show that the bank competition for borrowers leads to periodic credit crunches. According to the authors, the reason is that bank lending standards vary over time due to strategic interaction between competing banks, so credit cycles can occur without any change in the macroeconomic environment (GORTON & HE, 2008). Additionally, their empirical investigation provided evidence that

bank credit cycles are an important autonomous part of business cycle dynamics.

According to some related research, there is a variety of evidence showing that the pricing of loans, essentially interest lending rates, is stuck to open market rates. So, banks ration credit (BERGER & UDELL, 1992; GORTON & HE, 2008). Therefore, variations in lending standards that represent the criteria by which banks determine and rank loan applicants´ risk and then take their lending decisions seem to be related to credit crunches. Thus, as lending decisions are based on information, both hard and soft information, the literature emphasizes the importance of this topic. Analyzing the Federal Reserve System´s Senior Loan Officer Opinion Survey, where banks are asked about the tightening or easing of credit standards, Lown and Morgan (2006) note that, except for 1982, from 1967 to 2003 every recession was preceded by a spike in the net percentage of banks reporting a tightening of credit standards. This way, cycles in credit lending standards are somehow important in explaining aggregate economic activity (ASEA & BLOMBERG, 1998).

Howes and Weitzner (2021) create a measure of bank information quality about borrowers at loan origination by directly using banks‘ information reported to the Federal Reserve. The authors show that their measure of information quality improves as local economic conditions deteriorate, which provides empirical support for theories of countercyclical information production in credit markets and suggests that policies designed to stimulate macroeconomic activity through the banking sector may be less effective in recessions than expansions.

In line with the importance of information in setting credit standards, Dang, Gorton, and Holmström (2012) show that information production decisions become more sensitive to loan features following negative aggregate shocks. Although those authors have analyzed the sensitivity of information production to the size of the loans, it seems like a direct implication that the relationship between leverage and information production will become stronger in bad times. Similarly, Howes and Weitzner (2021) also show that the relationship between information quality and loan or firm characteristics is amplified when the unemployment rate is high. Closely related, using internal rating data from a large Swedish cross-border bank and credit scores from a credit bureau, Becker, Bos, and

Roszbach (2020) find that the ability to classify corporate borrowers is greater during bad times and worse during good times. Thus, it is reasonable to think about the influence of cyclicality on information production. By analyzing bank screening intensity concerning hard and soft information during the cycles, we can identify firms that although able to receive loans in good times might suddenly find themselves excluded from credit access, despite governmental efforts. This mechanism, related to banks' information production decisions, might affect the volume of credit available to firms and attenuate the monetary policy efficacy, resulting in lower recoveries. Therefore, its importance and contribution to the real economy are evident.

On the one hand, Berger and Udell (2006) emphasize the importance of lending technologies, especially transaction lending (also arm´s length) relative to relationship lending. While the first is based on hard public information, collateral, and covenants, the latter is distinguished by using soft private information over time and across financial products. Concerning the types and sources of private borrower information for banks, the research of Mester et al. (MESTER, NAKAMURA & RENAULT, 2007) and Norden and Weber (NORDEN & WEBER, 2010) reflects a comprehensive analysis. Interesting to note that according to these studies, small and medium enterprises (SMEs) and retail borrowers are the most beneficiaries of this lending technology based on private information from borrowers.

On the other hand, according to Adelino et al. research (ADELINO, IVANOV & SMOLYANSKY, 2020), corporate loan interest rates line up closely with measures of hard information. Additionally, those authors show that the variation in interest rates over what internal models suggest provides limited information for predicting loan default. Important to mention that the main loan-level data of that research is based on the Federal Reserve´s Y-14Q internal models reports, so it could indirectly consider some metric related to soft information.

In its turn, the rise of fintech has brought the possibility of an automated financial system, based mainly on hard information. The research of Buchak et al. (BUCHAK et al., 2018) indicates that the shadow bank market share in residential mortgage origination nearly doubled from 2007 to 2015 in the US, mainly among fintech lenders. According to

those authors, regulation accounts for roughly 60% of shadow bank growth, while technology accounts for roughly 30%. Moreover, fintech lenders serve more creditworthy borrowers, are more active in the refinancing market, and appear to provide convenience rather than cost savings to borrowers.

Similarly, the study of Stulz (2022) indicates that although banks can replicate most of what FinTech firms can do, Fintech firms benefit from an uneven playing field in that they are less regulated than banks. However, this success is restricted to product areas that are not tied to what makes banks unique—namely, their deposit-gathering abilities and the potential for synergies with borrowers provided by deposits. That is, essentially for products where soft information may represent an important piece of information. On the other hand, big tech firms have some advantages that banks will find harder to replicate, and so they present a much stronger challenge to established banks in two main areas: consumer finance and loans to small firms (STULZ, 2022).

Concerning cyclicality, hard information about borrowers that can be measured with yearly (quarterly, monthly) financial data is strongly time-varying. Whereas soft information about borrowers is based on qualitative (non-financial) information and varies less (or not at all) over time. Thus, credit to borrowers based on relationship lending tends to be less cyclical, as this technology tends to lead lenders to provide credit when firms exhibit a strong need for external financing. However, although soft information tends to be more stable, it is also influenced by hard information.

This way, based on the previously presented evidence and in line with Berger et al. (2024), it seems reasonable that soft information has a higher importance in bad times, as it tends to be more stable so that it does not deteriorate as fast as hard information. The reason for that lies in the fact that soft information is mainly related to management quality, experience, and reputation. So, in periods of recession or even lower economic outcomes, soft information plays a more important role relative to hard information.

Thereby, this review sheds light on the influence of hard and soft information interacting with each other and with firms that receive loans through the cycles based on the information production process. This contributes to the literature and practitioners, such as regulators and supervisors, by indicating the relative importance and stability of

soft information through the various periods of the economy. Therefore, this can help governments and regulators establish the best policies that would be effective in recession periods when soft information might play a higher role in the credit lending process.

Grounded on this review, we expect that soft information has a higher importance in bad times as it does not deteriorate as fast as hard information. Therefore, borrowers whose loans are based mainly on soft information may still get access to credit if the soft information is sufficiently favorable even in periods of macroeconomic downturns and recessions. And more cyclical firms can benefit more from soft information than less cyclical ones. The reason for that is related to the stability of soft information as it represents more stable characteristics, such as the education, quality, and experience of the borrower firm management, as well as its trustworthiness.

5. Conclusions

According to this review, lower sensitivity to cycles tends to be beneficial for firms. During booms, it reduces overinvestment because the firm growth is smaller. Consequently, it also tends to reduce debt overhang. However, during recessions, the lower cyclicality allows firms to keep with the positive NPV investments, thus avoiding underinvestment. Indirectly, by smoothing firm cyclicality it is possible to restrict unhealthy growth and increase firm value and profitability. This way, both during recessions and expansions, a lower cyclicality would be associated with higher firm performance.

Concerning banks, based on the previous literature that relates credit cycles to business cycles, and banking lending to firm constraints, we observe that lower cyclicality of credit could be beneficial to financial stability and the real economy, including aspects related to welfare costs. Additionally, smoothing cyclicality might have a positive impact on bank risk-adjusted performance. In this case, banks' objectives can be aligned with the real economy´s goals. This would represent an alignment of the aim at lowering cyclicality in the real economy with better risk-adjusted performance for banks.

Based on this review, we conclude that soft information has a higher importance in bad times as it does not deteriorate as fast as hard information. Therefore, borrowers whose loans are based mainly on soft information may still get access to credit in

economic downturns and recessions if their soft information is sufficiently favorable. And more cyclical firms can benefit more from soft information than less cyclical ones. The reason for that is related to the stability of soft information as it represents more stable characteristics, such as the education, quality, and experience of the borrower firm management, as well as its trustworthiness.

Finally, together with the welfare costs associated with economic cycles, our review provides support for the establishment of financial policies and regulations intending to smooth cycles.

References

ADELINO, M.; IVANOV, I.; SMOLYANSKY, M. *Humans vs Machines: Soft and Hard Information in Corporate Loan Pricing*. [s.l: s.n.]

ASEA, P. K.; BLOMBERG, B. Lending cycles. *Journal of Econometrics*, v. 83, n. 1–2, p. 89–128, 1998.

BAI, H.; ZHANG, L. Searching for the equity premium. *Journal of Financial Economics*, v. 143, n. 2, p. 897–926, 2022.

BECK, T.; DEMIRGÜÇ-KUNT, A.; MAKSIMOVIC, V. Financial and legal constraints to growth: Does firm size matter? *Journal of Finance*, v. 60, n. 1, p. 137–177, 2005.

BECKER, B.; BOS, M.; ROSZBACH, K. Bad Times, Good Credit. *Journal of Money, Credit and Banking*, v. 52, n. October, p. 107–142, 2020.

BECKER, B.; IVASHINA, V. Cyclicality of credit supply: Firm level evidence. *Journal of Monetary Economics*, v. 62, n. 1, p. 76–93, 2014. Disponível em: <http://dx.doi.org/10.1016/j.jmoneco.2013.10.002>.

BEHR, P.; FOOS, D.; NORDEN, L. Cyclicality of SME lending and government involvement in banks. *Journal of Banking and Finance*, v. 77, p. 64–77, 2017. Disponível em: <http://dx.doi.org/10.1016/j.jbankfin.2017.01.010>.

BEHR, P.; NORDEN, L.; NOTH, F. Financial constraints of private firms and bank lending behavior. *Journal of Banking and Finance*, v. 37, n. 9, p. 3472–3485, 2013. Disponível em: <http://dx.doi.org/10.1016/j.jbankfin.2013.05.018>.

BERGER, A. N. et al. Bank Liquidity Creation and Risk Taking During Distress. *SSRN Electronic Journal*, n. 05, 2021.

BERGER, A. N.; UDELL, G. F. Some Evidence on the Empirical Significance of Credit Rationing. *Journal of Political Economy*, v. 100, n. 5, p. 1047–1077, 1992.

-BERGER, A. N.; UDELL, G. F. A more complete conceptual framework for SME finance. *Journal of Banking and Finance*, v. 30, n. 11, p. 2945–2966, 2006.

BERNANKE, B.; GERTLER, M. Agency costs, net worth, and business fluctuations. *American Economic Review*, v. 79, n. 1, p. 14–31, 1989.

BERNANKE, B.; GERTLER, M.; GILCHRIST, S. The financial accelerator and the flight to quality. *Review of Economics and Statistics*, v. 78, n. 1, p. 1–15, 1996.

BERNANKE, B.; SCHOOL, W. W.; GERTLER, M. and Business Fluctuations. n. September 1986, 1986.

BERRY, J.; KHAN, A.; REZENDE, M. How Do Global Systemically Important Banks Lower Capital Surcharges? *SSRN Electronic Journal*, 2021.

BUCHAK, G. et al. Fintech, regulatory arbitrage, and the rise of shadow banks. *Journal of Financial Economics*, v. 130, n. 3, p. 453–483, 2018. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0304405X1830237X>.

CAMPBELL, J. Y.; COCHRANE, J. H. By force of habit: A consumption-based explanation of aggregate stock market behavior. *Journal of Political Economy*, v. 107, n. 2, p. 205–251, 1999.

CHAVA, S.; PURNANANDAM, A. The effect of banking crisis on bank-dependent borrowers. *Journal of Financial Economics*, v. 99, n. 1, p. 116–135, 2011. Disponível em: <http://dx.doi.org/10.1016/j.jfineco.2010.08.006>.

CHUNG, K. H.; PRUITT, S. W. A Simple Approximation of Tobin's q. *Financial Management*, v. 23, n. 3, p. 70–74, 30 Mar. 1994. Disponível em: <http://www.jstor.org/stable/3665623>.

COOPER, M. J.; GULEN, H.; SCHILL, M. J. Asset growth and the cross-section of stock returns. *The Journal of Finance*, v. LXIII, n. 4, p. 1609–1651, 2008.

DANG, T. V.; GORTON, G.; HOLMSTRÖM, B. Ignorance, debt and financial crises. *Unpublished, Yale SOM*, 2012.

DANGL, T.; WU, Y. Corporate Investment over the Business Cycle. *Review of Finance*, v. 20, n. 1, p. 337–371, 2016.

DELL'ARICCIA, G.; MARQUEZ, R. Lending booms and lending standards. *Journal of Finance*, v. 61, n. 5, p. 2511–2546, 2006.

DIAMOND, D. W.; RAJAN, R. G. Liquidity risk, liquidity creation, and financial fragility: A theory of banking. *Journal of Political Economy*, v. 109, n. 2, p. 287–327, 2001.

FAMA, E. F.; FRENCH, K. R. Common risk factors on the return on stocks and bonds. *Journal of Financial Economics*, n. 33, p. 3–56, 1993.

FAMA, E. F.; FRENCH, K. R. Size and Book-to-Market Factors in Earnings and Returns. *The Journal of Finance*, v. 50, n. 1, p. 131–155, 1995.

FOOS, D. Lending conditions, macroeconomic fluctuations, and the impact of bank ownership. *University of Mannheim, Department of Banking and Finance*, 2009.

GERTLER, M.; GILCHRIST, S. Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms*. *The Quarterly Journal of Economics*, v. 109, n. 2, p.

309–340, 1 Maio 1994. Disponível em: <https://doi.org/10.2307/2118465>.

GORTON, G. B.; HE, P. Bank credit cycles. *Review of Economic Studies*, v. 75, n. 4, p. 1181–1214, 2008.

GRUNERT, J.; NORDEN, L.; WEBER, M. The role of non-financial factors in internal credit ratings. *Journal of Banking and Finance*, v. 29, n. 2, p. 509–531, 2005.

GUIDARA, A. et al. Banks' capital buffer, risk and performance in the Canadian banking system: Impact of business cycles and regulatory changes. *Journal of Banking and Finance*, v. 37, n. 9, p. 3373–3387, 2013. Disponível em: <http://dx.doi.org/10.1016/j.jbankfin.2013.05.012>.

IMF. Global financial stability report: Grappling with crisis legacies. *World Economic and Financial Services*, 2011.

INTERNATIONAL MONETARY FUND. Macroprudential Policy: What Instruments and How to Use Them? Lessons from Country Experiences. *IMF Working Papers*, v. 11, n. 238, p. 1, 2011.

JENSEN, M. C.; MECKLING, W. H. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, v. 3, p. 305–360, 1976.

LIM, C. et al. *Macroprudential Policy: What Instruments and how to use them? Lessons From Country Experiences IMF Working Paper No*. [s.l.] WP/11/238, https://doi.org/10.5089/9781463922603.001, 2011.

LINDQUIST, K. G. Banks' buffer capital: How important is risk. *Journal of International Money and Finance*, v. 23, n. 3, p. 493–513, 2004.

LOWN, C. S.; MORGAN, D. P. The Credit Cycle and the Business Cycle: New Findings Using the Loan Officer Opinion Survey. *Journal of Money, Credit, and Banking*, v. 38, n. 6, p. 1575–1597, 2006.

MESTER, L. J.; NAKAMURA, L. I.; RENAULT, M. Transactions accounts and loan monitoring. *Review of Financial Studies*, v. 20, n. 3, p. 528–556, 2007.

MOORE, J.; KIYOTAKI, N. Credit Cycles. *Journal of Political Economy*, v. 105, n. 2, p. 211–248, 1997.

MORTAL, S.; SCHILL, M. J. The Post-Acquisition Returns of Stock Deals: Evidence of the Pervasiveness of the Asset Growth Effect. *Journal of Financial and Quantitative Analysis*, v. 50, n. 3, p. 477–507, 2015.

NARAYANAN, R.; UZMANOGLU, C. Credit Default Swaps and Firm Value. *Journal of Financial and Quantitative Analysis*, v. 53, n. 3, p. 1227–1257, 2018.

NORDEN, L.; WEBER, M. Credit line usage, checking account activity, and default risk of bank borrowers. *Review of Financial Studies*, v. 23, n. 10, p. 3665–3699, 2010.

NORDEN, L.; YIN, C.; ZHAO, L. "Less is More": Credit Default Swaps and Firm

Cyclicality. *SSRN Electronic Journal*, n. December 2021, 2021.

PASTOR, L.; VERONESI, P. Stock Valuation and Learning about Profitability. *Journal of Finance*, v. 58, n. 5, p. 1749–1789, 2003.

PEEK, J.; ROSENGREN, E. S. Collateral damage: Effects of the Japanese bank crisis on real activity in the United States. *American Economic Review*, v. 90, n. 1, p. 30–45, 2000.

PEREZ-QUIROS, G.; TIMMERMANN, A. Firm Size and Cyclical Variations in Stock Returns. v. LV, n. 3, p. 1229–1262, 2000.

STULZ, R. M. FinTech, BigTech, and the Future of Banks. *Journal of Applied Corporate Finance*, v. 34, n. 1, p. 106–117, 2022.

WEITZNER, G.; HOWES, C. Bank Information Production Over the Business Cycle. *SSRN Electronic Journal*, n. December, 2021.