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The highs and the lows: A theory of credit risk assessment and pricing through the business cycle

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ABSTRACT

This paper develops a theory of how risk is assessed and priced through the business cycle by developing an intuitive model in which there is uncertainty about whether outcomes depend on the risk-management skills of banks or are just based on luck, in the spirit of Piketty's (1995) model of "left-wing" and "right-wing" dynasties. Periods of sustained banking profitability cause *all* agents to *rationally* elevate their estimates of bankers' skills, despite the uncertainty about what is driving outcomes. Everybody consequently becomes sanguine about bank risk, credit spreads decline, and banks choose increasingly risky assets. Conditional on subsequently observing unexpectedly high defaults, beliefs can endogenously shift to put more weight on outcomes being luck-driven, and this causes credit spreads to widen and may be enough to trigger a crisis. Regulatory implications of the analysis are extracted.

1. Introduction

1.1. Motivation

An interesting stylized fact about banking is how the evaluation and pricing of risk by bankers *and* other market participants changes over the business cycle. For example, Krainer (2004) documents that credit spreads shrink during expansions and widen during economic contractions/recessions. There are various reasons why spreads, and even equity risk premia, vary over the business cycle.

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For example, Bekaert et al. (2013) provide evidence that this is driven at least in part by changes in risk aversion that are correlated with monetary policy changes. Moreover, monetary policy and other shocks can work through the "balance-sheet channel" to change the distribution of wealth that can cause a variation in spreads in general equilibrium.[1] Nevertheless, there is substantial empirical evidence that *lending standards* vary over the business cycle, and that this is also a cause of variation in spreads. Asea and Blomberg (2014) examine quarterly data on two million commercial loans over the 1977–1993 time period and document systematic patterns in lending standards. They find that lending standards decline—credit terms become easier for borrowers—during economic expansions and tighten in recessions. Similarly, Bassett et al. (2014) also document that lending standards started becoming more lax in the U.S. in late 2003 and this easing of standards continued until early 2006, with tightening that started in early 2007. Further evidence is provided by Dell'Ariccia et al. (2012) who show that a relaxation of credit standards, triggered by an increased demand for loans, contributed to the boom and the ensuing financial crisis of 2007–2009.

The phenomenon is not just limited to U.S. banking. Gizycki's (2001) empirical analysis shows that Australian banks weakened their credit standards during a rapid expansion of aggregate credit, which typically goes hand in hand with economic booms; Jiménez et al. (2012) provide similar evidence for Spain. And this collective optimism about credit risk during expansions is not just limited to bankers. As Brunnermeier (2009) notes, credit rating agencies appeared to have overly optimistic forecasts about the creditworthiness of structured finance products (prior to the 2007–2009 financial crisis) at the same time that lending standards were becoming more lax and the market was awash in cheap credit. Moreover, the U.S. government's *Financial Crisis Inquiry Commission* (FCIC) report blames regulators—specifically the Federal Reserve—of being too supportive of industry growth objectives and not being vigilant enough in "reining in" risk taking.

Many have noted that these lax credit standards during expansions sow the seeds of future crises as loans extended on easier terms come back to haunt banks when there is a downturn (see, for example, Asea and Blomberg (2014) and Acharya and Naqvi (2012)). During these contractions, the pricing of risk changes quite dramatically, credit standards become more stringent, and risky lending is eschewed. Bassett et al. (forthcoming) view such a tightening of credit standards as a shock to credit supply and document a significant decline in lending as a result.

1.2. Research question

Why does the evaluation and pricing of risk change like this over the business cycle and what does this teach us about the risk management practices of bankers and portfolio managers? The main goal of the paper is to develop a theory to address this question. The theory is aimed at understanding sudden reassessments of risk in a world in which rational agents are engaged in Bayesian learning, with "rations optimism" prevailing when things are going well, and a precipitous (seemingly non-Bayesian) decline in this optimism when some "bad news" arrives.

1.3. The analysis

The basic version of the two-period model used to develop the theory has three key building blocks. The first is that banks can choose between a relatively safe loan and a potentially more profitable risky loan, with public observability of the type of loan chosen. The probability of success (repayment) of the loan depends on the realization of a macroeconomic state: there is a high probability of a "skill" macroeconomic state in which outcomes are influenced by the *a priori* unknown skills of banks and a small probability of a "luck" macroeconomic state in which these outcomes are purely exogenous.[2] No one knows at the outset which state governs the economy, but there are common prior beliefs about the probabilities of the luck and skill states. If outcomes are driven only by luck, then banks

[1] See Bernanke and Gertler (1995).

[2] An alternative interpretation is that there are two systematic risk regimes: high risk and low risk. In the high risk regime, default risk is deemed to be so high that investors will fund only low-risk loans even if banks are viewed as being highly skilled, whereas in the low-risk regime, riskier loans are funded if the bank is viewed as being skilled enough.