



Essays on Macro-Financial Risks
R.C. Serna Weiland

Essays on Macro-Financial Risks

Summary

This dissertation consists of several studies on macro-financial risks. In particular, Part I, consisting of Chapters 2 and 3, discusses issues related to credit risk. Part II, consisting of Chapter 4, focuses on the relationship between labor income risk and stock returns.

Chapter 2

In Chapter 2, we investigate the interplay between credit and liquidity risk in the US corporate bond market. We develop a novel reduced-form framework that allows us to explicitly quantify the interactions between credit and liquidity risk and their impact on bond prices, yield spreads, and investment risk. In particular, we propose to use mutually exciting processes to construct a dynamic feedback mechanism between the two risk types. The cross-excitation between credit risk build-up and liquidity dry-up allows the model to accommodate a positive credit-liquidity feedback loop in which credit and liquidity shocks tend to cluster in a potentially asymmetric fashion. We develop a Bayesian estimation procedure and use US bond transaction data to estimate the model.

We find strong evidence for asymmetric feedback between credit and liquidity risk that is more pronounced during the most turbulent times and for bonds with lower credit ratings. For example, our yield-spread decomposition reveals that the impact of liquidity shocks on credit risk is mostly negligible. The effects of credit shocks on liquidity, on the other hand, are much larger and economically important. The credit-induced liquidity component contributes for 0.50 (AAA/AA) up to 0.73 (B and lower) percentage points to average 2007-2009 yield spreads and for up to 2.05 (B and lower) percentage points in the most distressed period. In a case study on Ford Motor Company, we find that the credit-induced liquidity component accounts for over 60% in relative terms of yield spreads during the peak of the crisis.

Chapter 3

In Chapter 3, I consider the pricing of risk premia related to sovereign credit risk. In particular, I consider 'distress risk premia', defined as the compensation that investors demand for being exposed to unexpected variations in credit risk, as well as risk premia related to (unpredictable) default events themselves. In order to estimate these risk premia, I develop a new model for the term-structure of sovereign credit risk in which sovereign defaults can be triggered by shocks in either a common or country-specific factor. By modeling both these factors as self-exciting processes, the model is able to capture several features observed in the data, namely the high degree of commonality in sovereign credit risk, the clustering of credit shocks over time and across countries, and jump-like increases in sovereign CDS spreads. In the empirical analysis, I use CDS term structure data on 28 geographically dispersed countries with credit ratings ranging from A to B, and historical default probabilities per rating class as reported by S&P.

The estimated model allows for a decomposition of CDS spreads along two dimensions. First, CDS spreads can be decomposed into country-specific and systemic risk components. Second, CDS spreads can be decomposed into expected default risk, distress risk premia, and default event risk premia components. In relative terms, I find that for all rating classes on average approximately 65%

of five-year CDS spreads can be attributed to country-specific risk and 35% to systemic risk. The decomposition into risk premia components shows that the default event risk premium component is substantial and seems to matter (relatively) most for short-term CDS spreads of countries with lower credit ratings. Distress risk premia, on the other hand, are priced more heavily in long-term CDS spread of countries with higher credit ratings. Combining the two decomposition dimensions reveals that differences in CDS decompositions across rating classes are mainly caused by differences in sovereign-specific risk rather than differences in exposure to systemic risk.

Chapter 4

In Chapter 4, we study the asset pricing implications of labor income risk, thereby focusing in particular on possible horizon effects that might play a role. To test for horizon effects, we use a flexible empirical framework that allows us to include labor income risk at multiple horizons simultaneously. We find a clear distinctive role for the two- to four-year horizon. Not only does labor income risk at this medium horizon carry a highly significant price of risk, whereas at other horizons it does not, also the ability to explain the cross-sectional differences of stock returns peaks at this horizon. For example, a simple two-factor model that includes the contemporaneous equity market return factor and labor income risk factor at the medium term horizon can explain a striking 71% of the cross-sectional variation in 25 size book-to-market and 25 size-investment portfolios. By contrast, the standard human capital CAPM with quarterly labor income growth can only explain 7% of the cross-sectional variation in these portfolios. This means that simply changing the horizon over which labor income risk is measured has a dramatic impact on the model performance. Furthermore, we document similar horizon effects in optimal portfolio allocation, where labor income risk generates significant adjustments to the composition of the optimal risky equity portfolio at the medium term horizon. Our results are consistent with wage stickiness, where wages are reset every two to four years.