Discussion of Gilchrist and Zakrajšek: “Credit Risk and the Macroeconomy”

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This paper (and project as a whole) has two general goals:
1. Provide better measure of firms’ borrowing costs
2. Measure effect of firms’ borrowing costs on macroeconomy

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Gilchrist, Zakrajšek, et al.:
- Gilchrist and Zakrajšek (2007 NBERWP)
- Gilchrist, Yankov, and Zakrajšek (2009 JME)
- Gilchrist, Ortiz, and Zakrajšek (2008)
- Gilchrist and Zakrajšek (2010)

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- mix of coupon rates

unweighted or weighted average, “bums problem”
include callable bonds
include Yankee bonds

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Greek 2-yr. Bond Yield and S&P Credit Rating
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4. Define GZ spread $= \text{average of } S_{it}^k$. 

Caveats:
- includes callable bonds
- wide mix of maturities (1 to 30 years)
- wide mix of default probabilities (0 to 40%)
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Going into Recession

Graph showing the relationship between yield and maturity.

Eric T. Swanson (FRBSF)
Yield curve becomes downward sloping.
Going into Recession

Duration of defaultable bond decreases relative to default-free benchmark.
Going into Recession

Result: even if zero coupon corporate spreads are constant, GZ spread increases.

Diagram:
- Yield on the vertical axis.
- Maturity on the horizontal axis.
- Defaultable bond trajectory.
- Default-free benchmark trajectory.
- Arrows indicating increase.
Gürkaynak-Sack-Wright Zero Coupon Yield Curve
Generalized Gürkaynak-Sack-Wright
Merton (1974) distance to default:

\[ DD = \frac{\log(V/D) + (\mu_V - 0.5\sigma^2_V)}{\sigma_V} \]
Gilchrist-Zakrajšek Excess Bond Premium

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Regress \( S^k_{it} \) on components of distance-to-default model:

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\log S^k_{it} = \beta_1 \log[D/V]_{i,t-1} + \beta_2 \mu v_{i,t-1} + \beta_3 \log \sigma v_{i,t-1} + \theta' x^k_{it} + \epsilon^k_{it}
\]

Note: if bond \( k \) is callable, \( x \) includes level, slope, curvature, and volatility of Treasury yields.

Excess bond premium: cross-sectional average of OLS residuals:

\[
EBP_t = \frac{1}{n_t} \sum_k \hat{\epsilon}_{kt}
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Hard to interpret what GZ excess bond premium is exactly
Figure 8: Implications of a Shock to the Excess Bond Premium
(Sample Period: 1973:Q1–2009:Q4)

Excess bond premium

Investment

Quarters after shock

Percentage points

0  2  4  6  8  10  12  14  16  18  20

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Excess bond premium is ordered last, but VAR contains three other financial market variables:

- stock prices
- federal funds rate
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Questions about structural interpretation:

- risk premia are endogenous; what is the structural shock?
- is decrease in $I$ due to tighter credit, or structural shock?
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In Bernanke-Gertler-Gilchrist (1996), credit channel was an amplification mechanism. Not a shock.
5.2.2. Shock to technology, demand, and wealth

Figure 4 displays the effects on output of three alternative shocks: a technology shock, a demand shock (specifically a shock to government expenditures), and a redistribution of wealth between entrepreneurs and households. Once again, the hatched lines show impulse responses from the baseline model with the financial accelerator shut off, and the solid lines show the results from the full model.

As the figure shows, the financial accelerator magnifies and propagates both the technology and demand shocks. Interestingly, the magnitude of the effects is about the same as for the monetary policy shock. Again, the central mechanism is the rise in asset prices associated with the investment boom, which raises net worth and thus reduces the external finance premium. The extra persistence comes about because net worth is slow to revert to trend.

A positive shock to entrepreneurial wealth (more precisely, a redistribution from households to entrepreneurs) has essentially no effect in the baseline model, but has both significant impact and propagation effects when credit-market frictions are present. The wealth shock portrayed is equal in magnitude to about 1% of the initial wealth of entrepreneurs and about 0.05% of the wealth of households. The transfer of wealth drives up the demand for investment goods, which raises the price of capital and thus entrepreneurs' wealth, initiating a positive feedback loop; thus, although the exogenous shock increases entrepreneurial net worth directly by only 1%, the total effect on entrepreneurs' wealth including the endogenous increase in asset prices exceeds 2%. Output rises by 1% at an annual rate, and substantial persistence is generated by the slow decay of entrepreneurial net worth.

Thus the addition of credit-market effects raises the possibility that relatively small changes in entrepreneurial wealth could be an important source of cyclical fluctuations. This case is an interesting one, as it is reminiscent of (and motivated by) Fisher's (1933) "debt-deflation" argument, that redistributions between creditors and debtors arising from unanticipated price changes can have important real effects. Indeed, Fisher argued...
Figure 1
Impulse Responses to One Percentage Point Federal Funds Rate Shock

Figure 2
Impulse Responses to One Percent Technology Shock

Figure 3
Impulse Responses to One Percent Government Purchases Shock

Risk premium is endogenous and may be positively or negatively correlated with output, depending on the structural shock.
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Summary

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- But what is it?
- Structural interpretation of shocks?
- VAR identification?