

# The Financial Turmoil in 2007 and 2008 Related Theory and Empirical Analysis



Gerald P. Dwyer, Jr.

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# Three Sets of Papers

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- Structured securities
- Banking systems with “originate and distribute” model
- Banking panics with securitization
- This brief survey is not close to exhaustive

# Structured Securities' Pricing

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- Tranching and Rating
  - Taking income flows from securities and repackaging them
  - What are the gains from doing this in equilibrium?
  - What sort of equilibrium is necessary for there to be a payoff from doing this?
- Can the behavior of prices be characterized fairly well?

# Why Are Securitization Issues Tranched?

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- Firta-Cuchra and Jenkinson (2006)
- Test theoretical explanations
  - Create separating equilibrium in which higher-rated tranches are less informationally intensive and lower-rated tranches are more informationally intensive
  - Pooling can overcome adverse selection problem by concentrating losses in lower tranche (Lender holds equity tranche Chiesa 2006)
  - Market incompleteness can create gain from stripping off nearly risk-free part
- Data in paper from comprehensive data on European securitizations from 1987 to 2003
- Find evidence consistent with all these explanations

# An Empirical Analysis of the Pricing of Collateralized Debt Obligations

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- Longstaff and Rajan (2008)
- Build a model of CDX prices and estimate it for a three-factor model
  - October 2003 to October 2005
- Suggest the three factors can be approximately interpreted as
  - Firm-specific default risk: 64.6% of the total CDX index spread
  - Clustered industry or sector risk: 27.1% of the spread
  - Economywide default risk: 8.3% of the spread

# Systemic Credit Risk: What Is the Market Telling Us?

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- Bhansali, Gingrich and Longstaff (2008)
- Estimates suggest that the common factor has become substantially more important since August 2007 for highly rated tranches

# Tranching and Rating

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- Brennan, Hein and Poon (2008)
  - Explain “arbitrage CDOs”
- Build pricing model in which CDOs are priced with same distribution as a typical corporate issuer of a bond with the same probability of default or expected losses
  - Default probabilities (S&P and Fitch)
  - Expected losses (Moody’s)
- CDO distribution is not really the same; buyers are wrong
- Theory and numerical examples
- Show this can explain tranching, not that it is only plausible explanation or most likely one

# Economic Catastrophe Bonds

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- Coval, Jurek, and Stafford (2008)
- Build model of rating and tranching
- Low payoffs on highly rated tranches are likely to come in bad states of the world
  - Bad states of the world here maps into high stochastic discount factors (high marginal utility)
  - Buyers ignore shift of payments from high value periods into low value periods
- Use CDX data on credit default swaps to suggest that the price data are consistent with prices based on ignoring the state in which various payoffs are made
  - September 2004 to September 2007

# Banking with “Originate and Distribute”

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- Banks make loans, do not hold them
- Sell loans to others
- Will a bank sell the good loans or the bad loans?
  - “Good loan” pays. “Bad loan” defaults.
- If the buyer cannot tell the difference at the time of sale and there are not repeat transactions, sell the buyer the bad ones
- Repeat sales change this incentive
  - Repeat sales means it possible that a reputational equilibrium can exist

# Effect of Credit Risk Transfer on Loan Market with Asymmetric Information

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- Credit risk transfer can be associated with loss of information produced by banks' better technology for evaluating risks
  - Need not be lost with disclosure
- Credit risk transfer can increase lending if banks have a comparative advantage in making loans and a relatively limited capacity to hold loans
- Nice summary of part of literature in Allen and Carletti (2006 *JME*, p. 92)

## Effect of Credit Risk Transfer on Probability of Losses at Banks

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- Can increase or decrease probability
- Decrease
  - Banks sell riskier loans
- Increase
  - Banks hold more liquid assets but riskier loans
  - Banks hold fewer liquid assets because risk of holding loans has fallen if buy credit protection

# Bank Behaviour with Access to Credit Risk Transfer Markets.

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- Goderis, Marsh, Castello and Wagner (2007)
- Examine effects of banks' use of credit risk management
  - Issuance of a collateralized loan obligation
    - “Collateralized loan obligation is “securitization of loans”
  - They assume securitization is correlated with other practices, particularly use of credit default swaps (no direct data on this)
  - Ten years of data for 900 largest banks
- Find that banks which securitize loans hold as much as 50 percent more loans
  - Consistent with use of other techniques such as credit default swaps
  - Also find slow adjustment

# Credit Risk Transfer and Contagion

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- Allen and Carletti (2006)
- Standard aspects of banking model
- Two sectors, banking and insurance
  - Banks make risky loans
  - Insurance firms sell insurance
- Transfer of credit risk from banks to insurance sector
  - Beneficial when banks have a uniform demand for liquidity
  - Can be associated with financial losses in bad state if banks' and insurance companies' asset positions become more aligned
  - General equilibrium effects