

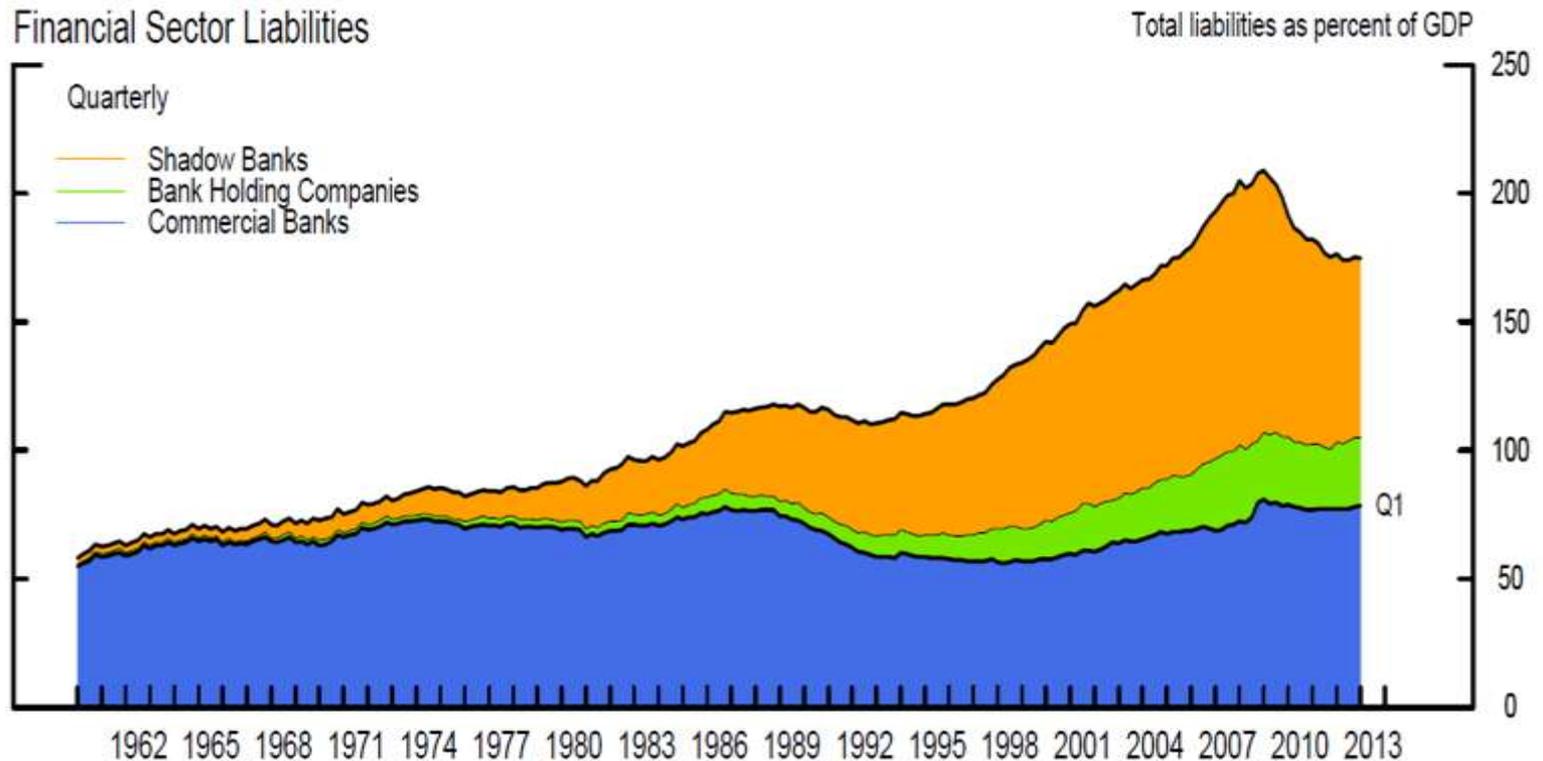
Short-term Funding and Collapse of the Asset-Backed Commercial Paper Market

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Jan. 23, 2014

* The views expressed here do not reflect those of the Federal Reserve System or its Board of Governors.

Growth of shadow banking

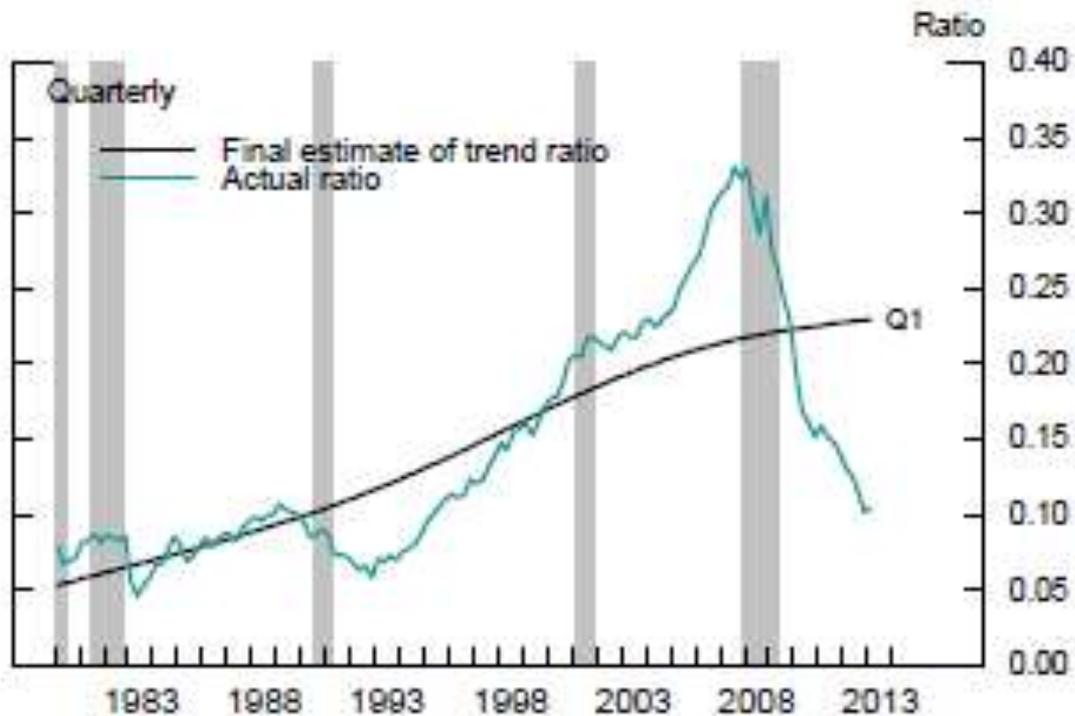


Note: Bank Holding Company liabilities include the liabilities of Broker Dealers.

Source: Federal Reserve Flow of Funds.

Short-term Wholesale Debt

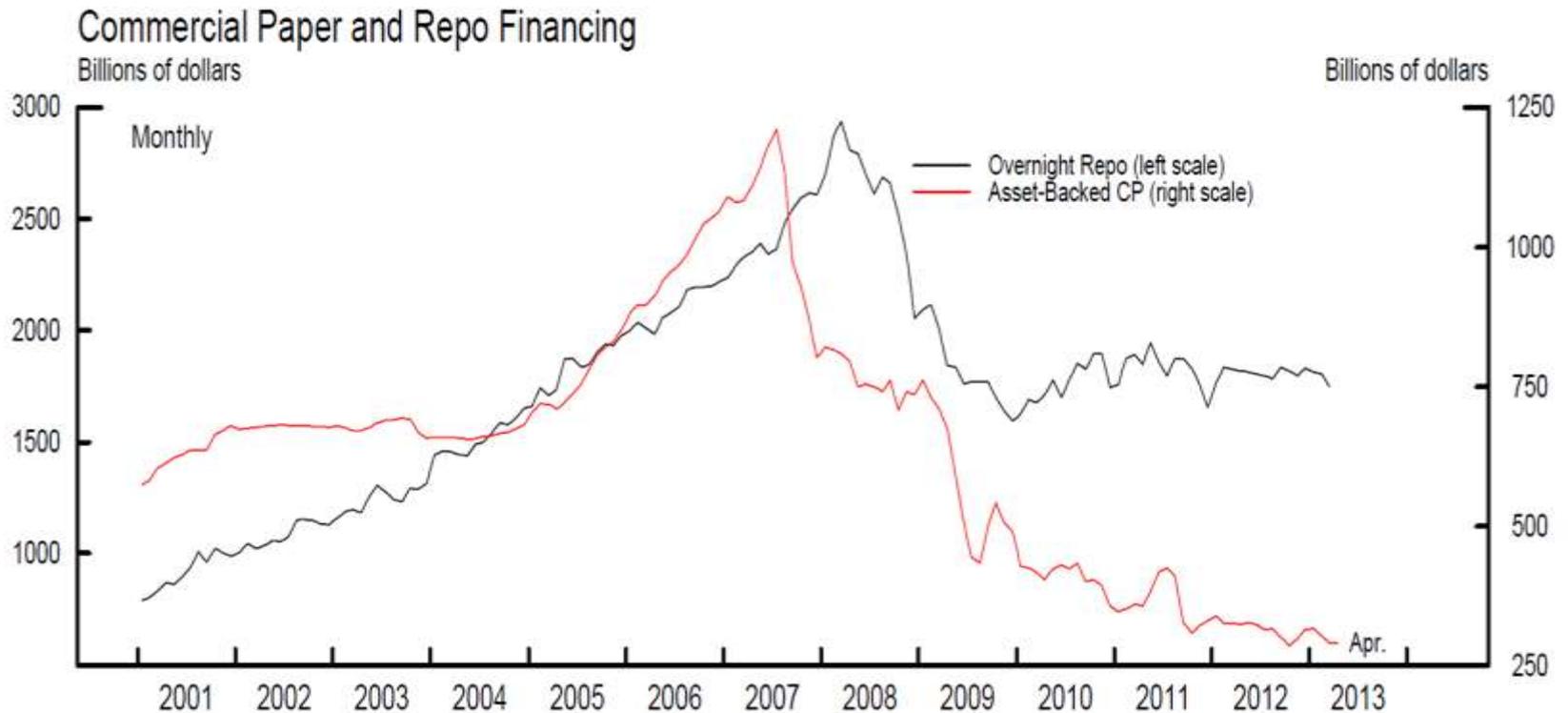
Net Short-term Wholesale Debt of Financial Sector-to-GDP Ratio



Note: Calculated using an HP filter with $\lambda=400,000$
Source: FOF and staff calculations.

Run on ABCP and Repo

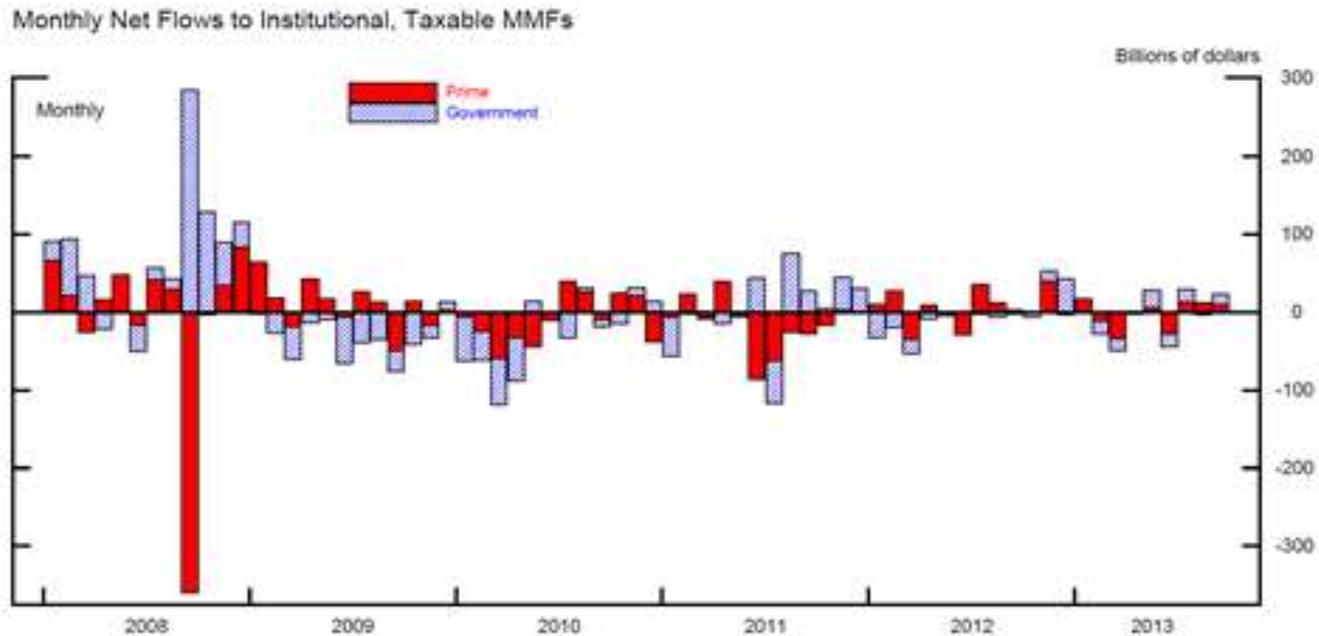
Covitz, Liang, Suarez (2013) Collapse of the Asset-Backed Commercial Paper Market
Gorton and Metrick (2012) Securitized Banking and the Run on Repo



Source: FR2004 primary dealer statistics and the Depository Trust Company. For more information see the About page on the FRB's public commercial paper release website.

Run on MMFs

Large depositors in MMFs



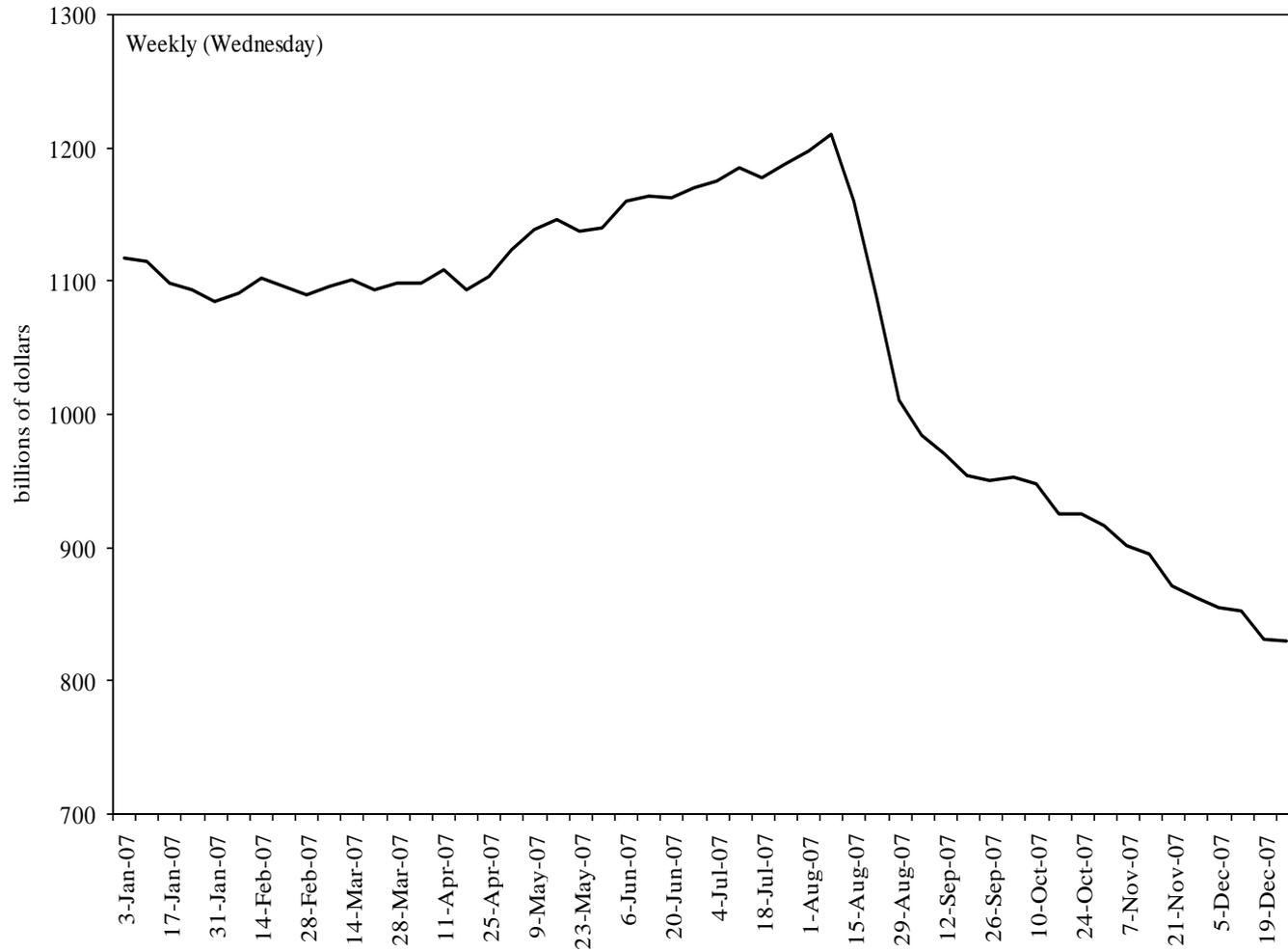
Source: Staff calculations based on data from the Investment Company Institute and iMoneyNet. Not seasonally adjusted.

Overview of “Collapse of ABCP”

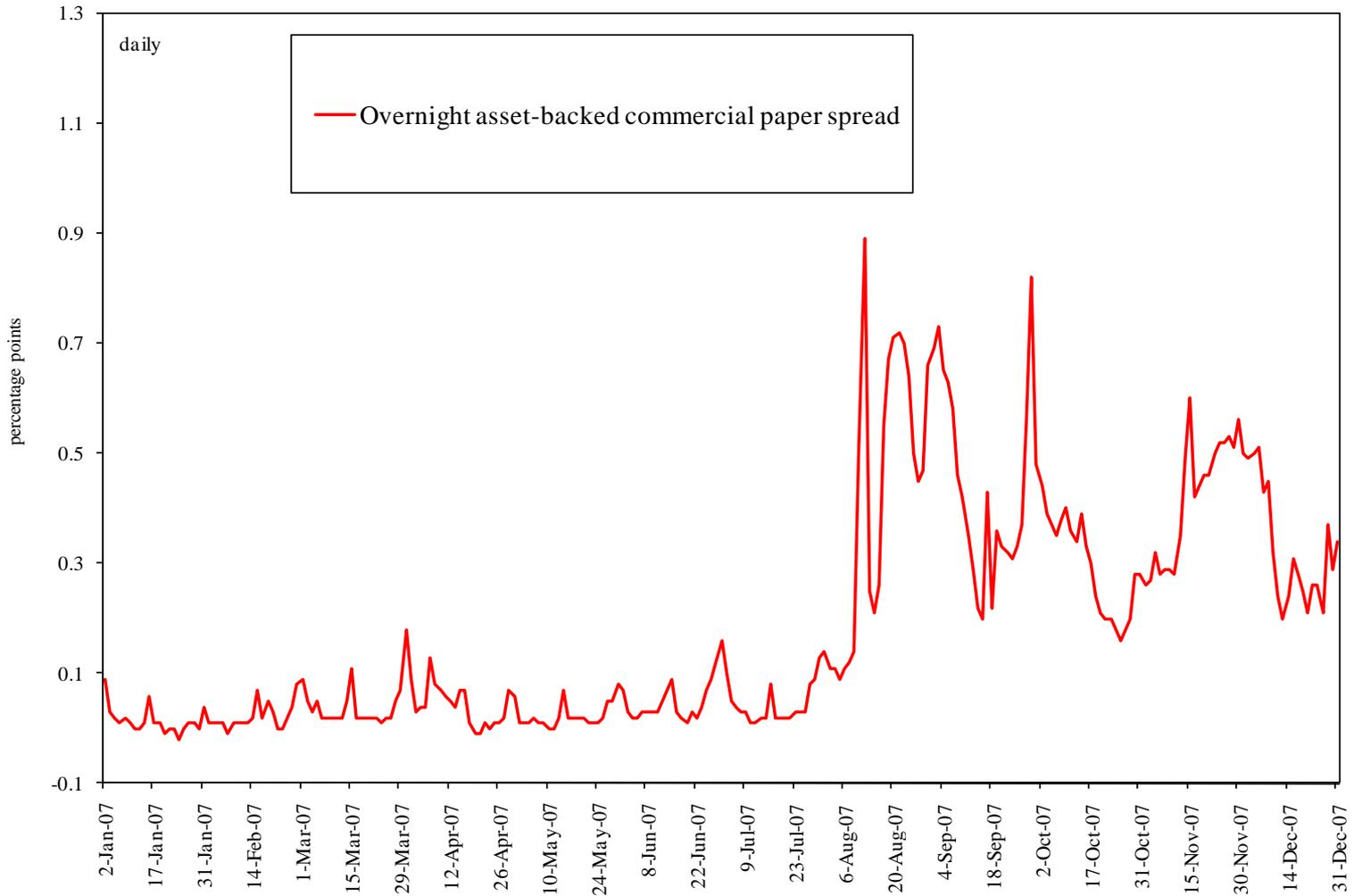
- ABCP programs are like banks
- ABCP programs differ by credit, liquidity, sponsor and other features
- Measuring “runs”
- Explaining runs

The ABCP Market in 2007: Outstandings

Panel A. ABCP Outstandings

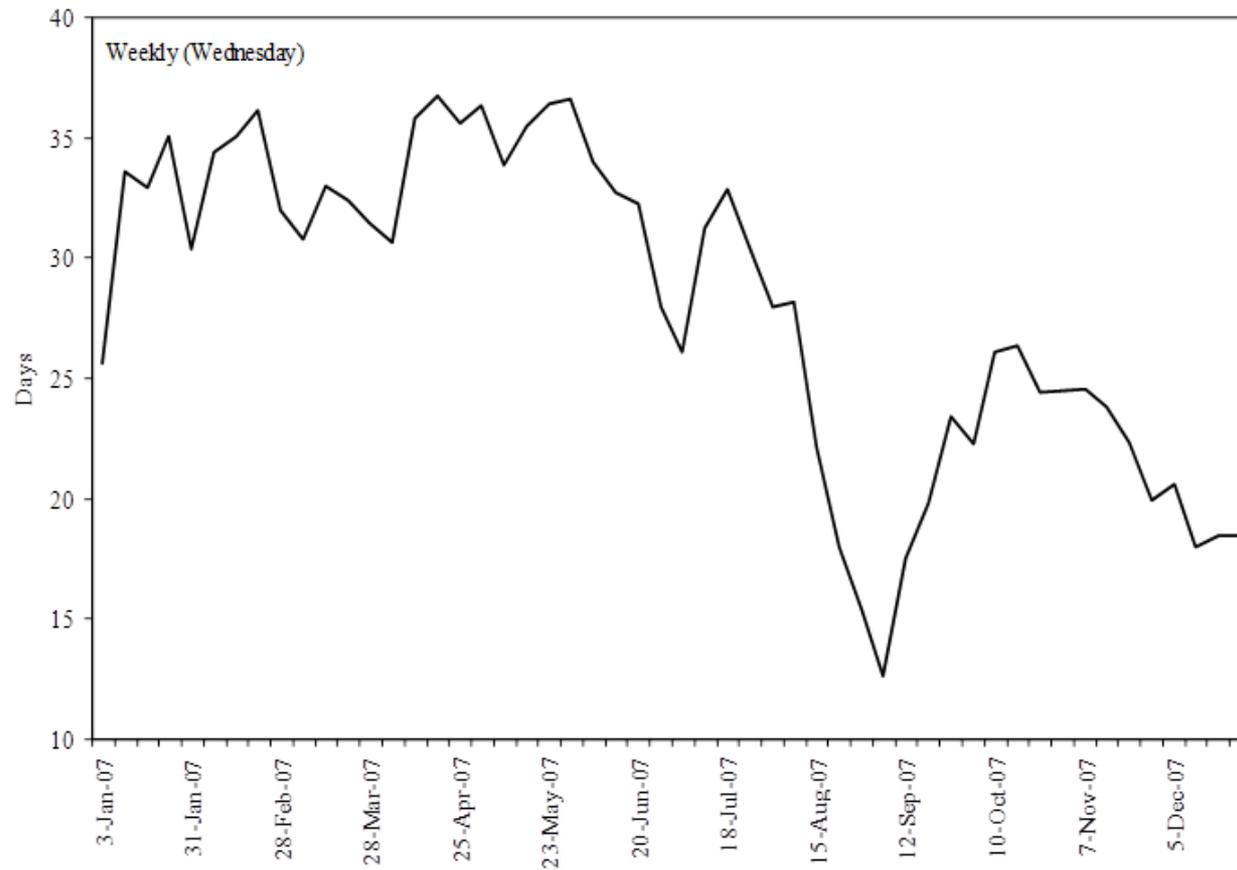


The ABCP Market in 2007: Yield Spreads



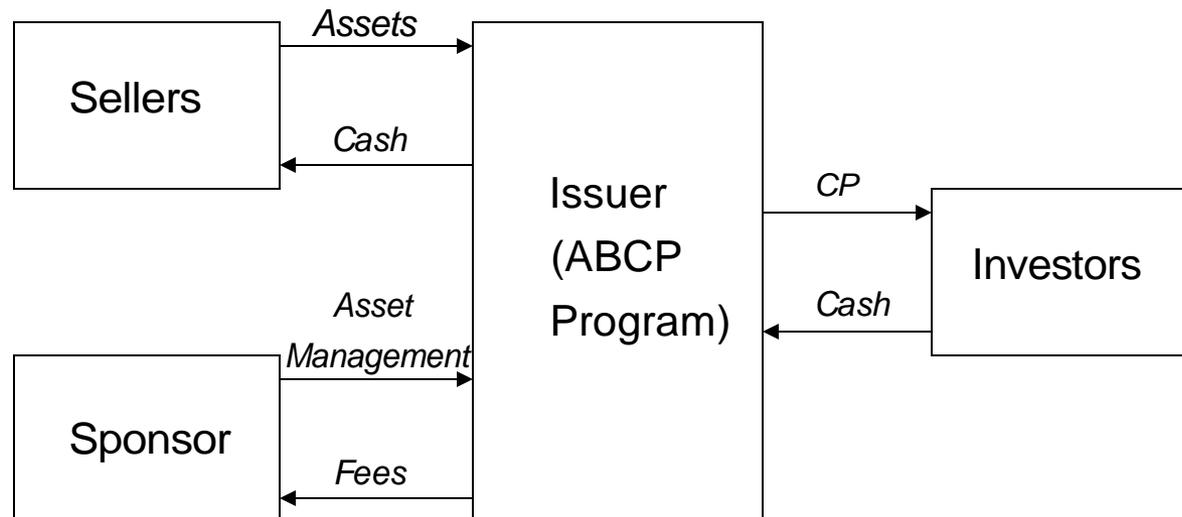
The ABCP Market in 2007: Average Maturity

Panel C. Average Maturity of New Issues



The ABCP Market

Stylized transaction:



ABCP programs are like banks

- Issues short-term debt to finance assets, such as receivables, loans, and securities
 - Substantial portion of liabilities is 'overnight'
 - Assets tend to have longer maturities
 - Assets are relatively opaque, illiquid
- Liquidity support may attenuate rollover risk

What is known about ABCP programs

- “SIVs: An Oasis of Calm in the Subprime Maelstrom”
Moody’s, July 2007
- *SIVs invest in Aaa and Aa US RMBS and CDOs ... exposures are limited owing to diversity of their portfolios ... are not structured to forcibly liquidate assets ... expects ratings to remain stable amid the current maelstrom*
- “An ABCP Cheat Sheet,” JPMorgan, Aug. 16, 2007
In response to numerous questions .. . from investors both inside and outside of the short-term credit markets ... ABCP is a complex investment that would take volumes to explain completely ... “

Data and Methodology

- Transaction-level data from DTCC for all programs in the U.S. market in 2007
- 697,762 primary market transactions by 340 programs over 251 trading days
 - Issuer name, amount, maturity, and issue rate
- Weekly data on maturity distribution of outstandings
- Supplement with data from Moody's on type of program, ratings, sponsor, and liquidity support characteristics
- Estimations based on about 300 programs with paper maturing each week

ABCP programs vary by assets and liquidity support

Program type	Assets	Liquidity support	No. of programs	Share extendable (percent)
Multi seller	Receivables, loans	Full	98	19
Non-mortgage single seller	Credit-card receivables, auto loans	Implicit	40	62
Mortgage single seller	Mortgages and MBS	Implicit	11	67
Securities arbitrage	Highly-rated long-term securities	Full	35	9
SIVs	Highly-rated long-term securities	Little to none	35	0
CDOs	Highly-rated long-term securities	Partial	36	25
Hybrid and other	--	--	84	20

ABCP programs also vary by type of sponsor and other characteristics

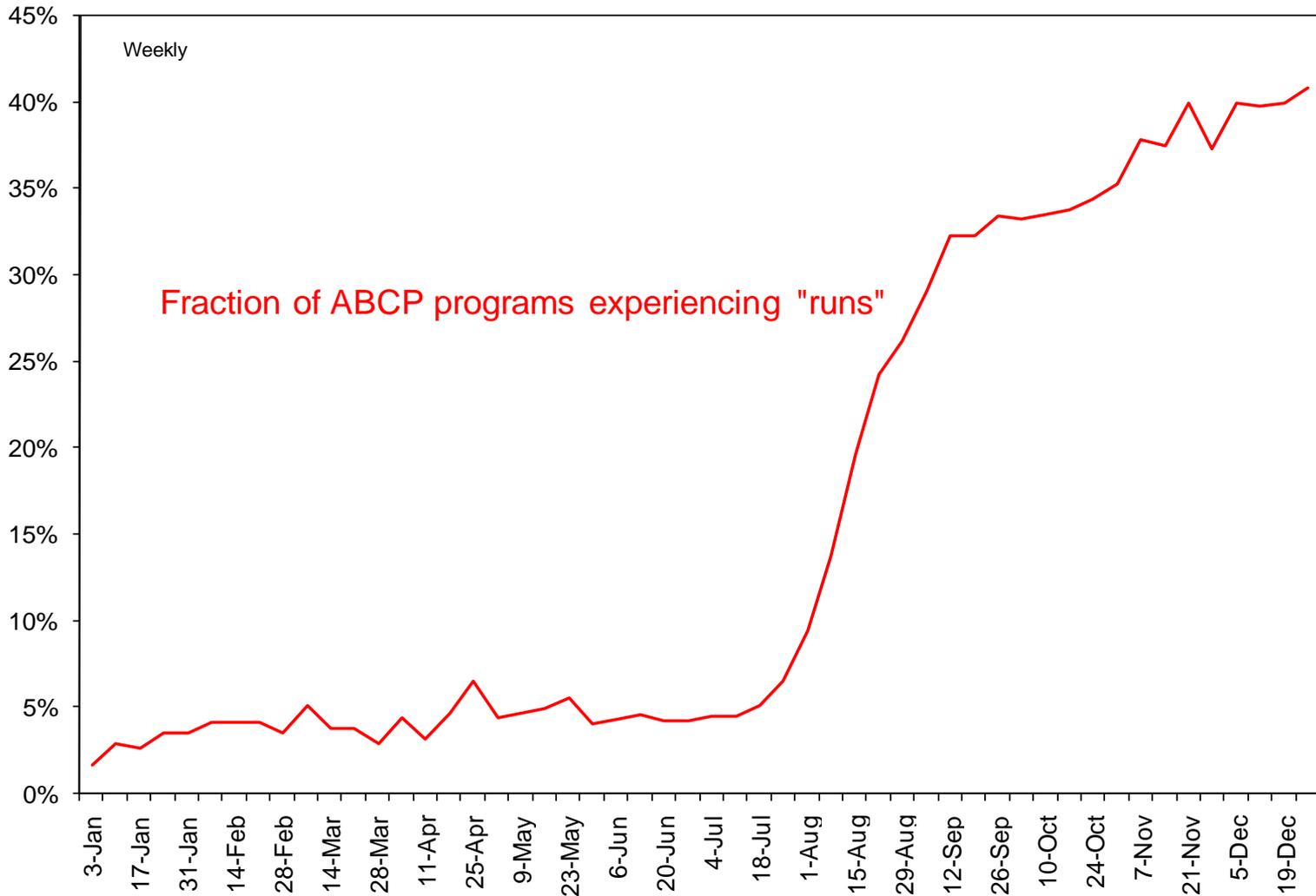
- Ratings
- Credit support
- Number of liquidity providers
- CDS spread of main liquidity provider
- Sponsors
 - Domestic commercial banks
 - Foreign commercial banks
 - Nonbank sponsors – mortgage lenders, finance companies, asset managers

Measuring Runs

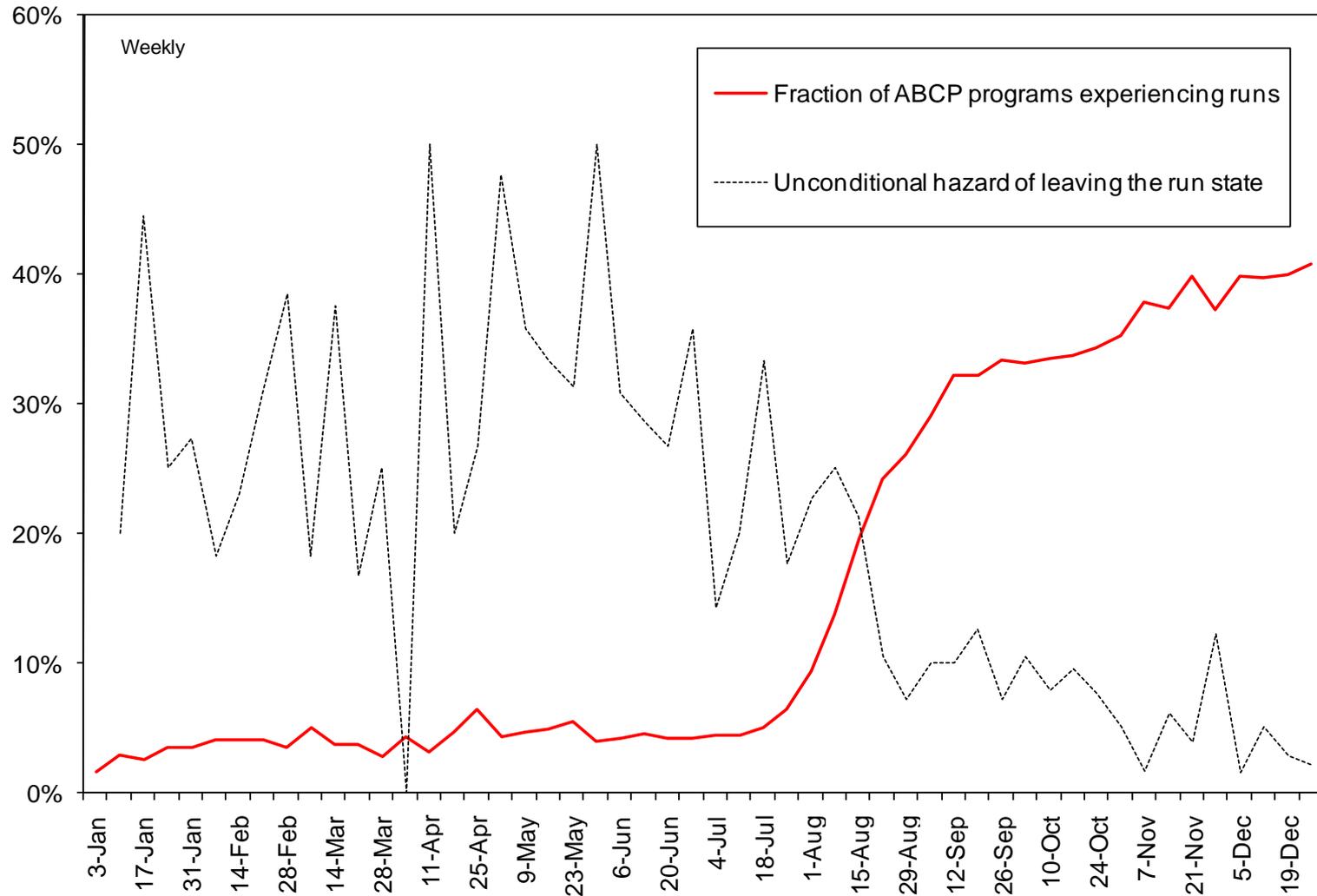
- Define a run on an ABCP program as occurring if a program is unable to issue new paper to fund maturing obligations

$$\text{Run}_{it} = \begin{cases} 1 & \text{if } \frac{\text{Maturing}_{it}}{\text{Outstanding}_{it}} > 0.1 \text{ and } \text{Issuance}_{it} = 0 \\ 1 & \text{if } \text{Run}_{i,t-1} = 1 \text{ and } \text{Issuance}_{it} = 0 \\ 0 & \text{otherwise} \end{cases}$$

Runs in ABCP Programs



Runs are “Absorbing States” after August 2007



Explaining Runs

- Declines in programs in a run accounted for decline in outstandings
- Runs more likely at programs perceived to be weaker
 - Fewer liquidity providers
 - Extendible
 - Higher CDS for liquidity provider
 - More likely to hold subprime mortgages
 - More likely when markets are more volatile
- Similar factors explain higher spreads and shorter maturities for programs not in a run

Summary

- The ABCP market contracted \$350 billion in five months, which reflected runs by investors.
- Runs were not random, at programs with weak characteristics, and macro volatility
- Consistent with literature that runs are caused by a shock with unknown incidence in the cross-section Gorton (1988), Calomiris and Mason (2003)

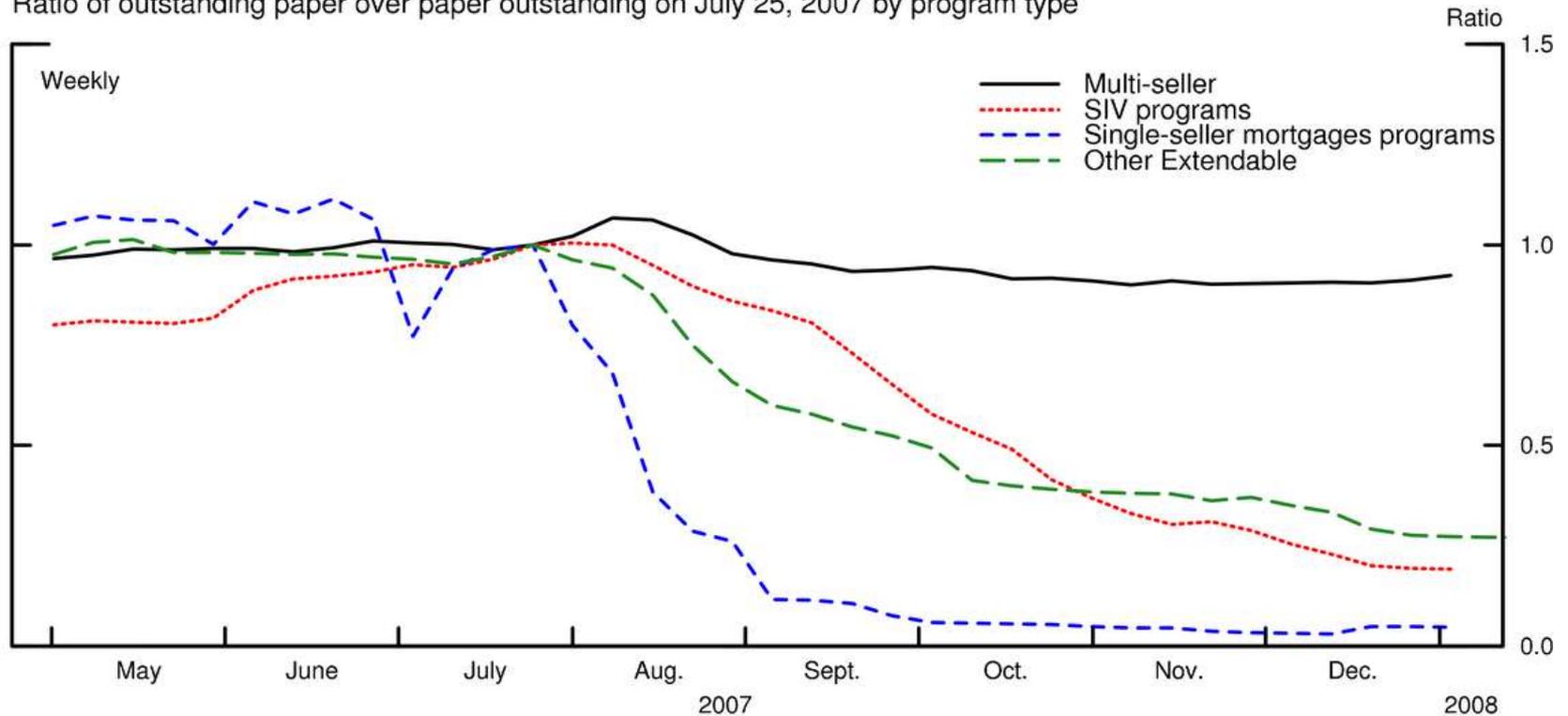
Dependent variable: Probability of experiencing a run

		(1)	(2)	(3)	(4)
		February - July 2007	February - July 2007	August-December 2007	August-December 2007
Program characteristics	Extendibility	-0.010 [0.028]	-0.009 [0.028]	0.462*** [0.116]	0.467*** [0.116]
	Number of liquidity providers	-0.022** [0.010]	-0.022** [0.010]	-0.008 [0.007]	-0.008 [0.007]
	CDS spread of main liquidity provider	0.236* [0.131]	0.273 [0.167]	0.359*** [0.119]	0.277** [0.117]
	Lower rating	dropped (perf. pred.)	dropped (perf. pred.)	0.345*** [0.118]	0.345*** [0.121]
	Credit support	0.010 [0.030]	0.009 [0.029]	0.092 [0.121]	0.094 [0.122]
	Initial average maturity of outstandings	-0.001 [0.001]	-0.001 [0.001]	0.001 [0.002]	0.001 [0.002]
Program type variables	Multi seller	-0.056* [0.029]	-0.055* [0.028]	-0.239*** [0.072]	-0.240*** [0.072]
	Non-mortgage single seller	-0.017 [0.026]	-0.017 [0.026]	-0.060 [0.127]	-0.064 [0.127]
	Mortgage single seller	dropped (perf. pred.)	dropped (perf. pred.)	0.030 [0.166]	0.032 [0.169]
	Securities arbitrage	0.017 [0.040]	0.017 [0.039]	-0.231*** [0.049]	-0.229*** [0.050]
	Structured invest. vehicle	dropped (perf. pred.)	dropped (perf. pred.)	0.302*** [0.116]	0.314*** [0.114]
	CDO	-0.025** [0.011]	-0.025** [0.011]	-0.043 [0.161]	-0.031 [0.167]
Sponsor type variables	Small U.S. bank sponsor	-0.031** [0.013]	-0.031** [0.013]	0.382** [0.159]	0.384** [0.160]
	Non-U.S. bank sponsor	-0.036* [0.020]	-0.035* [0.021]	0.127 [0.110]	0.119 [0.110]
	Nonbanking sponsor	-0.024 [0.028]	-0.022 [0.028]	0.072 [0.088]	0.062 [0.089]
Macro variables	Spread of 1-month LIBOR over OIS	-0.117 [0.815]		0.040 [0.028]	
	Volatility of the spread of 1-month LIBOR over OIS	0.136 [0.558]		0.582*** [0.127]	
	Return on the ABX index		0.010 [0.007]		0.000 [0.003]
	Volatility of the return on the ABX index		-0.010 [0.036]		0.116*** [0.023]
Observations		2,088	2,088	2,319	2,319
Number of programs		123	123	144	144
Pseudo R2		0.152	0.154	0.269	0.271

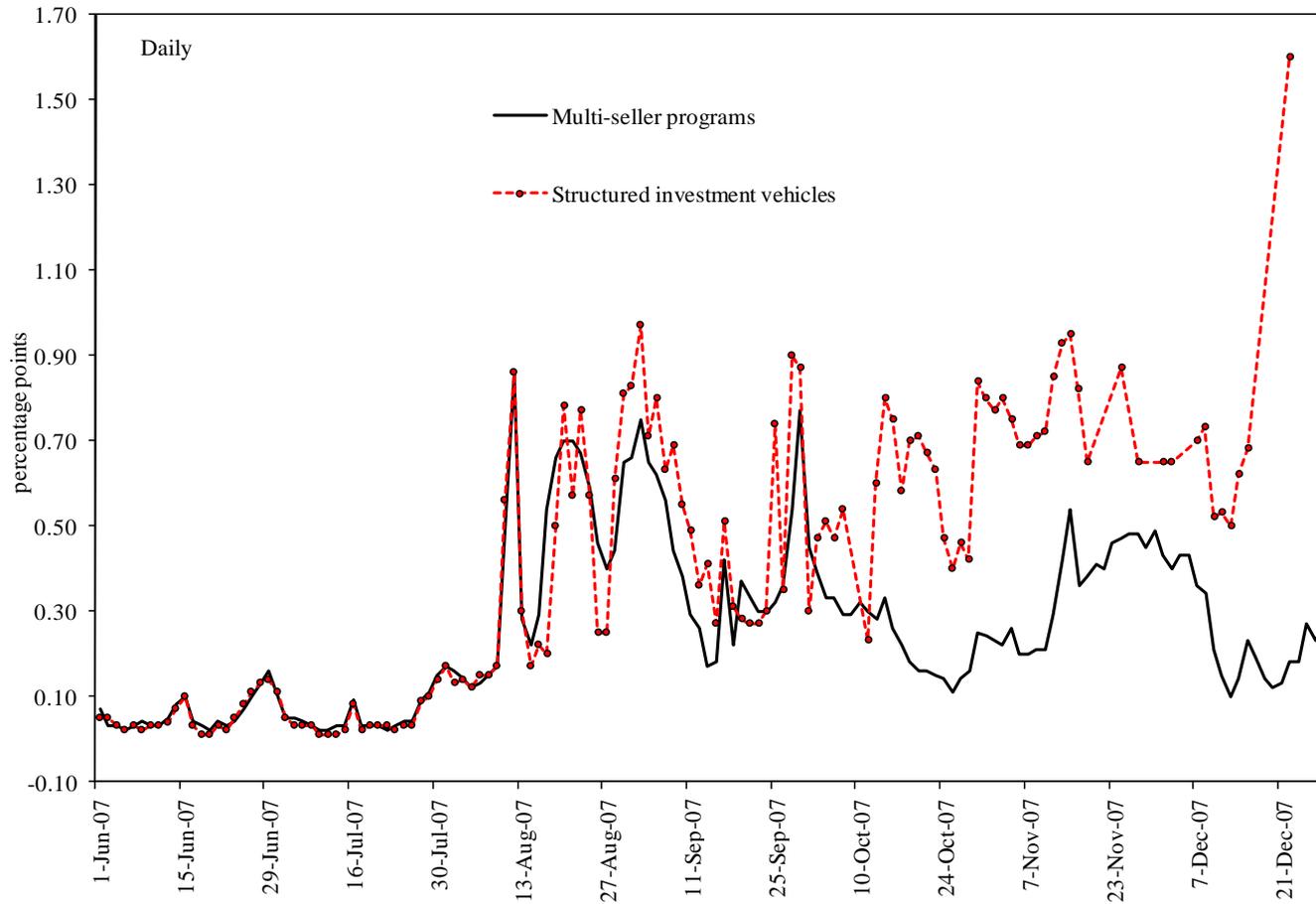
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Market behavior at the onset of financial turmoil

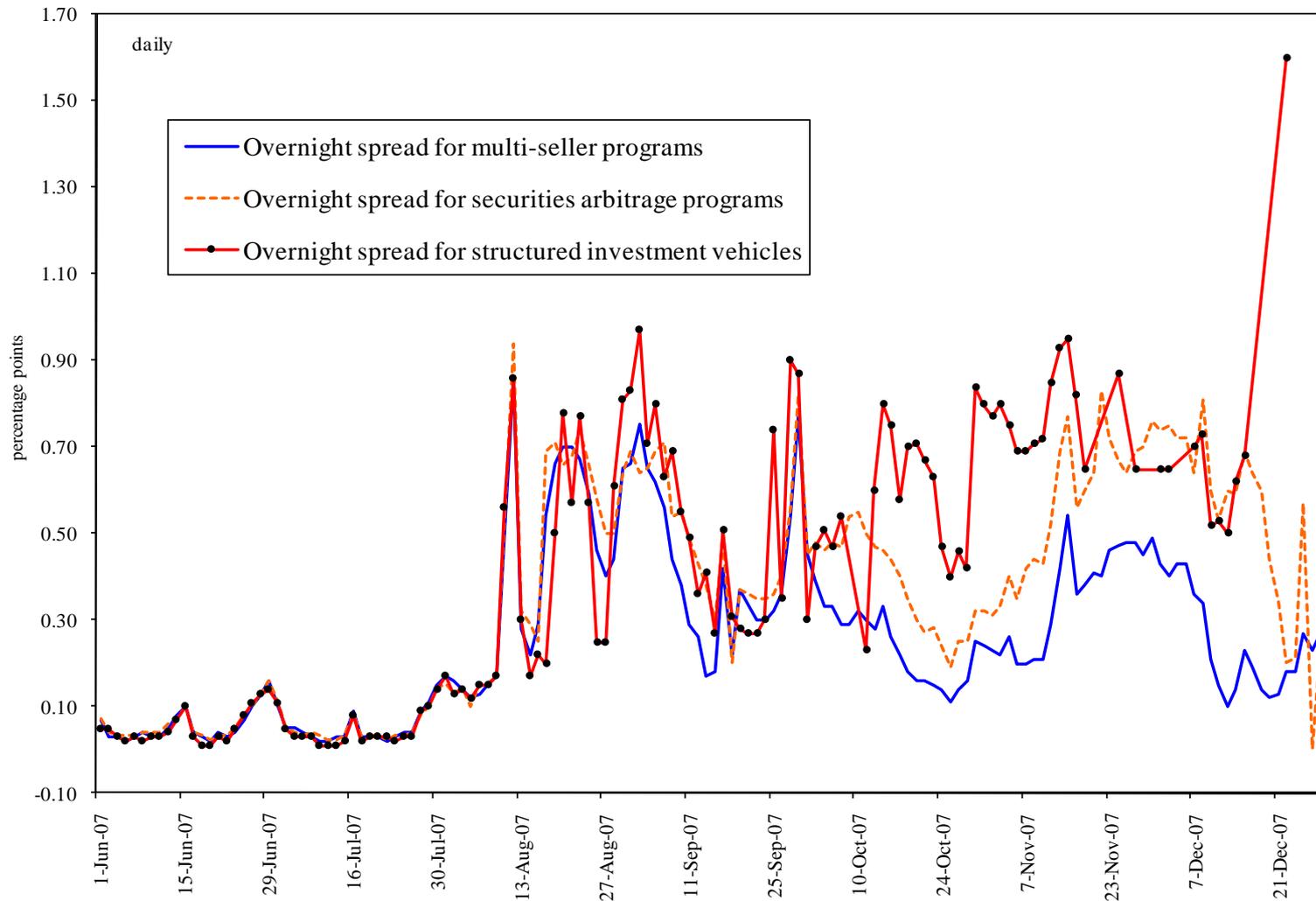
Ratio of outstanding paper over paper outstanding on July 25, 2007 by program type



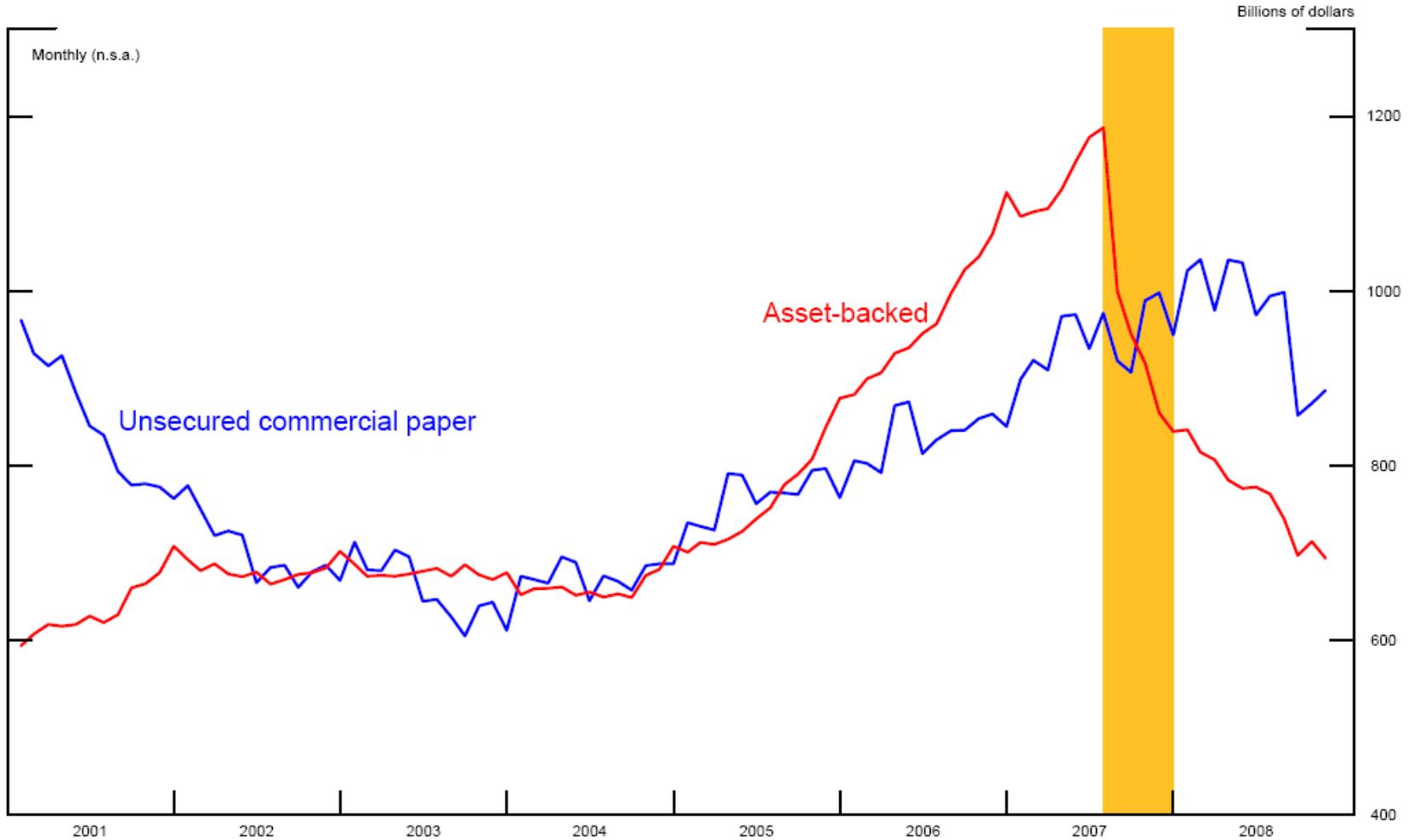
ABCP risk spreads by program type



Risk spreads indicate runs reflect difficulties in issuing, not less willingness



The ABCP Market in 2007: Outstandings



Source: Federal Reserve Board using data from DTCC.