

# Do Global Banks Spread Global Imbalances?

## The Case of Asset-backed Commercial Paper During the Financial Crisis of 2007-2009

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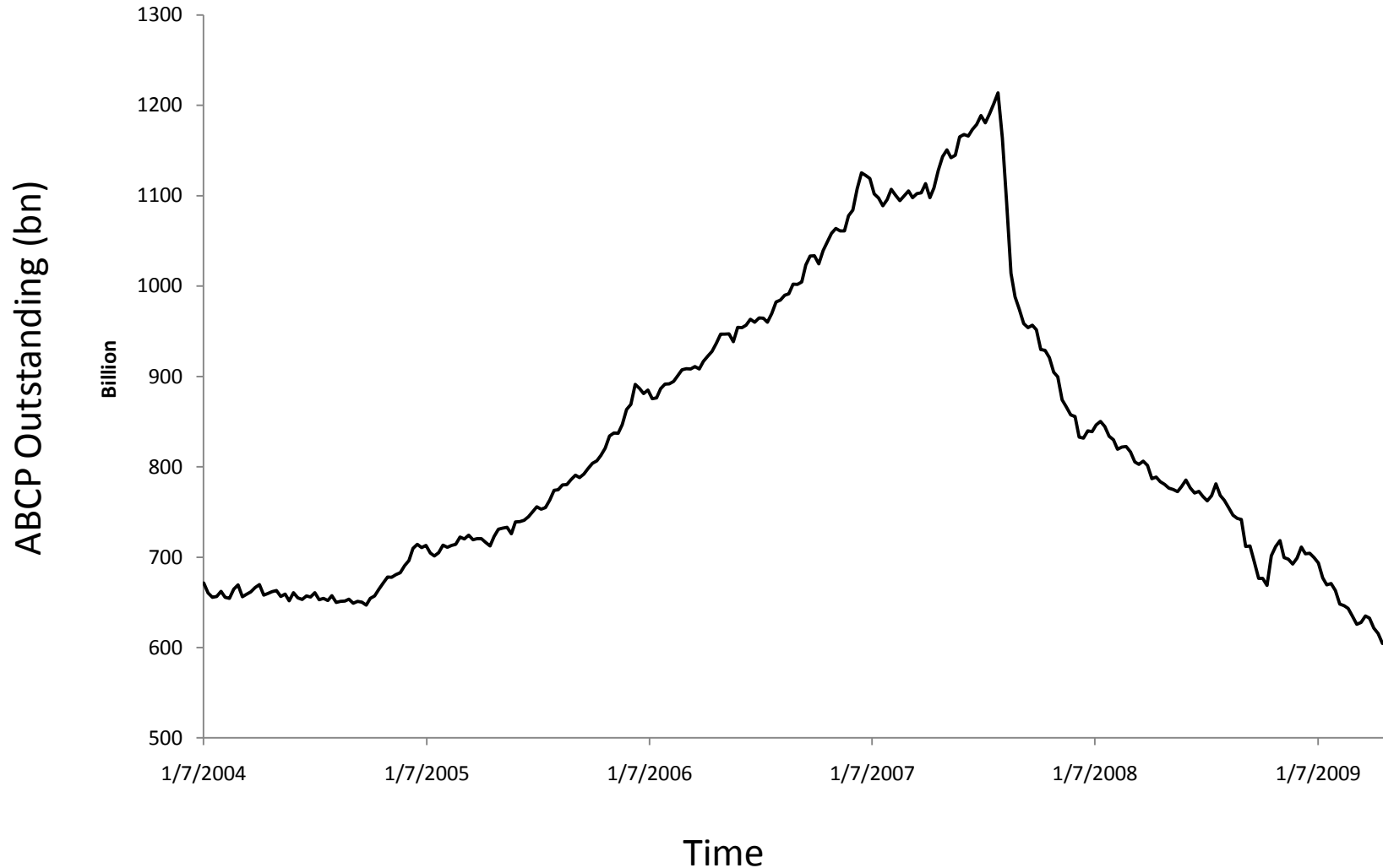
# Motivation

- What explains the geography of the financial crisis?
- Global imbalances may generate financial fragility
  - Large capital flows from surplus to deficit countries
  - Demand for riskless assets from surplus countries
  - Global imbalances generate financial fragility in deficit countries
- Financial fragility observed in deficit and surplus countries
  - First bank bailouts were in “surplus country” Germany

# What we do?

- Analyze geography of global banks' off-balance sheet conduits
  - Conduits are structured purpose vehicles managed by large banks
  - Purchase and hold financial assets
  - Finance assets by selling Asset-backed Commercial Paper (ABCP)
  - Arguably a “financially fragile” structure
- Provides window to study risk choices of global banks
  - Proxy for other risk choices within large global banks
- Financial crisis started with a modern bank run on conduits in Aug 2007

# Growth and decline of ABCP



# Results

- Conduits invest in U.S./U.K. assets and fund themselves in USD
  - Suggests banks “manufacture” riskless assets in response to safe asset demand
  - Riskless assets are backed by assets from deficit countries
- Global banks in “weakly regulated” financial systems underwrite risk
  - Global banks in deficit *and* surplus countries underwrite riskless assets
  - More underwriting after bank regulators issues capital exemption in 2004
  - No underwriting in countries with strong capital regulation
- Global banks transmit crisis across countries
  - Banks with more conduits have lower returns after start of the crisis
  - Larger effects on banks in surplus countries than deficit countries

# Outline

- 1. Institutional background**
2. Empirical analysis
  - Geography of conduits
  - Event Study

# Related literature

## Global imbalances and safe-asset demand

- Global imbalances amplify asset bubble (Obstfeld & Rogoff, 2009)
- Global asset scarcity led to U.S. capital inflows and asset bubble (Caballero, Fahri, and Gourinchas, 2008)
- Safe asset demand creates financial fragility (Caballero and Krishnamurthy, 2009)

## Securitization

- Securitization can concentrate risk (Shin, 2009; Acharya, Schnabl, and Suarez 2009)
- Incentive problems in securitization (Dell'Ariccia, Deniz, and Laeven, 2008; Keys et al., 2009)

# Traditional model: banks as delegated monitors

## Bank balance sheet

Assets	Liabilities
Loans	Deposits
	Capital/Equity



# New model: securitization

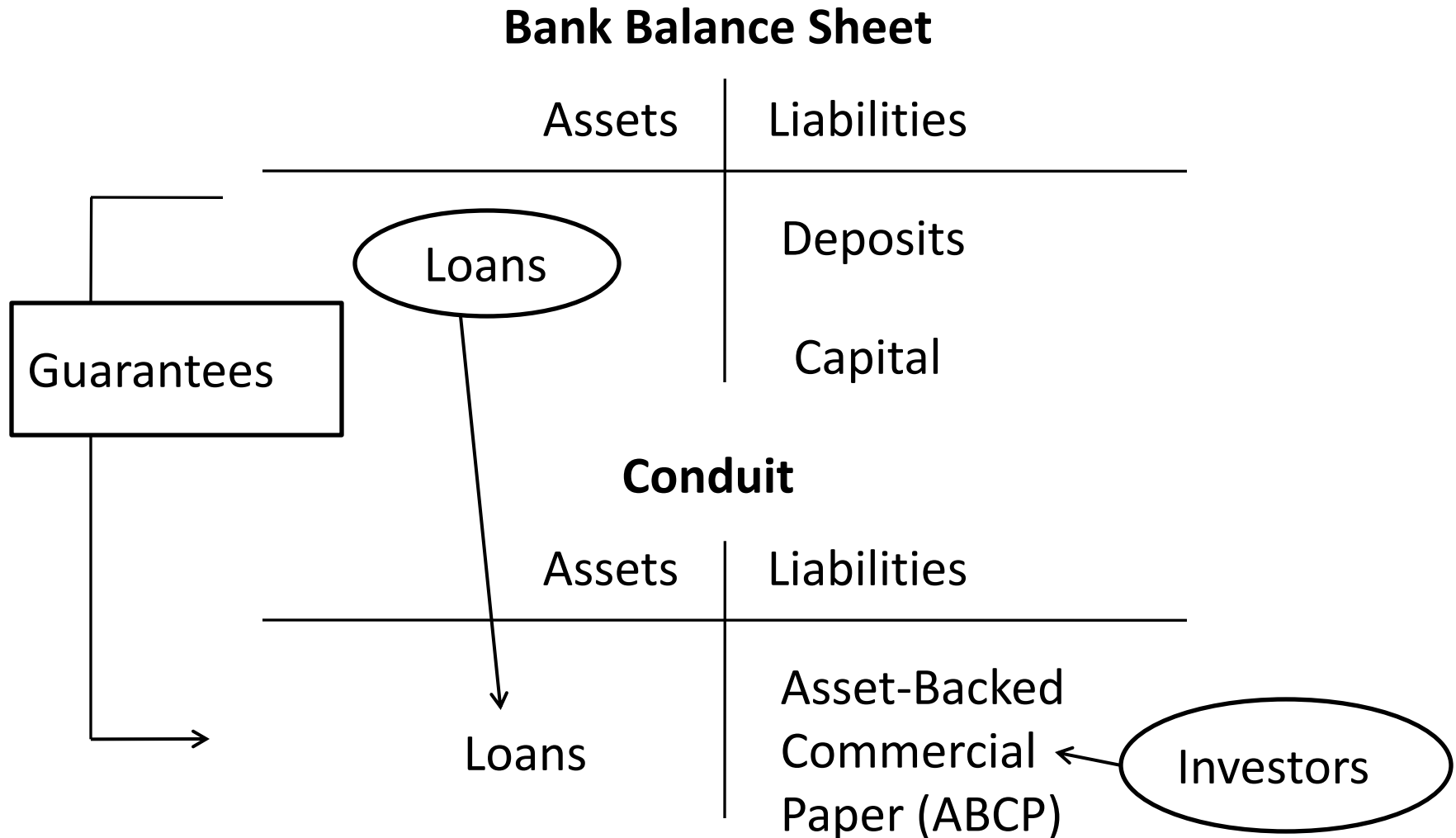
## Bank balance sheet

Assets	Liabilities
Loans	Deposits
	Capital

## Structured purpose vehicle

Assets	Liabilities
Loans	Asset-Backed Securities (ABS)
	Investors

# New model+: securitization w/o risk transfer



# Example: Conduit Balance Sheet

## Ormond Quay (July 2007)

Assets		Liabilities	
Residential Mortgage-backed Securities	\$6.3bn	Asset-Backed Commercial Paper (ABCP)	\$11.3bn
Commercial Mortgage-backed Securities	\$2.7bn		
Consumer Loans	\$0.5bn		
Other	\$1.8bn	Total	\$11.3bn
	<u>\$11.3bn</u>		

Guarantee by German bank  
Sachsen Landesbank

Short-term debt: Average  
Maturity < 1 Month

# New Model+: Lower capital requirements

## Bank

Asset	Capital Requirement (Basel 1)
Loans	8%
Guarantees	0% - 0.8%

## Conduit

Asset	Capital Requirement (Basel 1)
Loans	0%

# Benefits and risks of ABCP conduits

- Banks:
  - Maturity arbitrage (“lend long, fund short”)
  - Regulatory arbitrage (“circumvent capital requirements”)
    - Manufacture riskless assets without holding regulatory capital
    - But underwrite risks of the underlying assets
- Investors:
  - Slightly higher return than Treasuries
  - Rating satisfies Money Market Funds regulatory requirements
    - Allows money market funds to invest in long-term assets via ABCP
    - But need to liquidate assets if bank fails

# ABCP conduits relative to other securitization

	<b>ABCP conduits</b>	<b>Other Securitization (e.g., CDO)</b>
Assets	Mortgage, Credit cards, etc.	Mortgage, Credit cards, etc.
Highest Credit Rating	Yes (short-term)	Yes (AAA tranche)
Tranches	No	Yes
Risk transfer	Remains with bank	Mostly transferred to investors

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# Data Sources

- Rating Agency Reports (Moody's, S&P, Fitch)
- Balance Sheet Data (Bankscope)
- Money Market Holdings (iMoneyNet, Federal Reserve Board)
- Conduit-level prices and quantities (Depository Trust & Clearing Corporation)



# Conduits invest in U.S. and U.K.

Conduit Name	Size (bn)	Asset Origin (%)
Grampian	37	U.S. (70.4%)
Amstel	20	Netherlands (100%)
Scaldis	18	U.S. (51.1%), U.K. (10.1%)
Atalantis One	16	U.S. (40.5%), NL (27.1%)
Thames Asset No1	18	U.K. (57.8%), U.S. (35.8%)
Solitaire Funding	15	U.S. (68.9%), U.K. (24.9%),
Stanfield Victoria	22	U.S. (96%), U.K. (2%)
Cancara Asset Sec.	15	U.S. (76%), U.K. (19%)
Cullinan Finance Limited	13	U.S. (62%), U.K. (23%)
Ormond Quay	12	U.S. (38%), U.K. (22%)

Source: Moody's ratings reports, sample only includes conduits with available data on asset origin

# Conduits primarily funded in U.S. money markets

<b>Issuing Currency</b>		
Currency		%
US Dollars	715	73.8%
Euro	219	22.6%
Other	35	3.6%
Total	970	

<b>Holdings by Investor Class</b>		
Investor		%
Money Market Funds	722.5	32.6%
Funding Corporations	584.3	26.4%
Foreign Investors	226.5	10.2%
Other Investors	682.6	30.8%
Total	2,215.9	

Source: Federal Reserve Flows of Funds, iMoneyNet data, Moody's data

# Global banks underwrite conduit risk

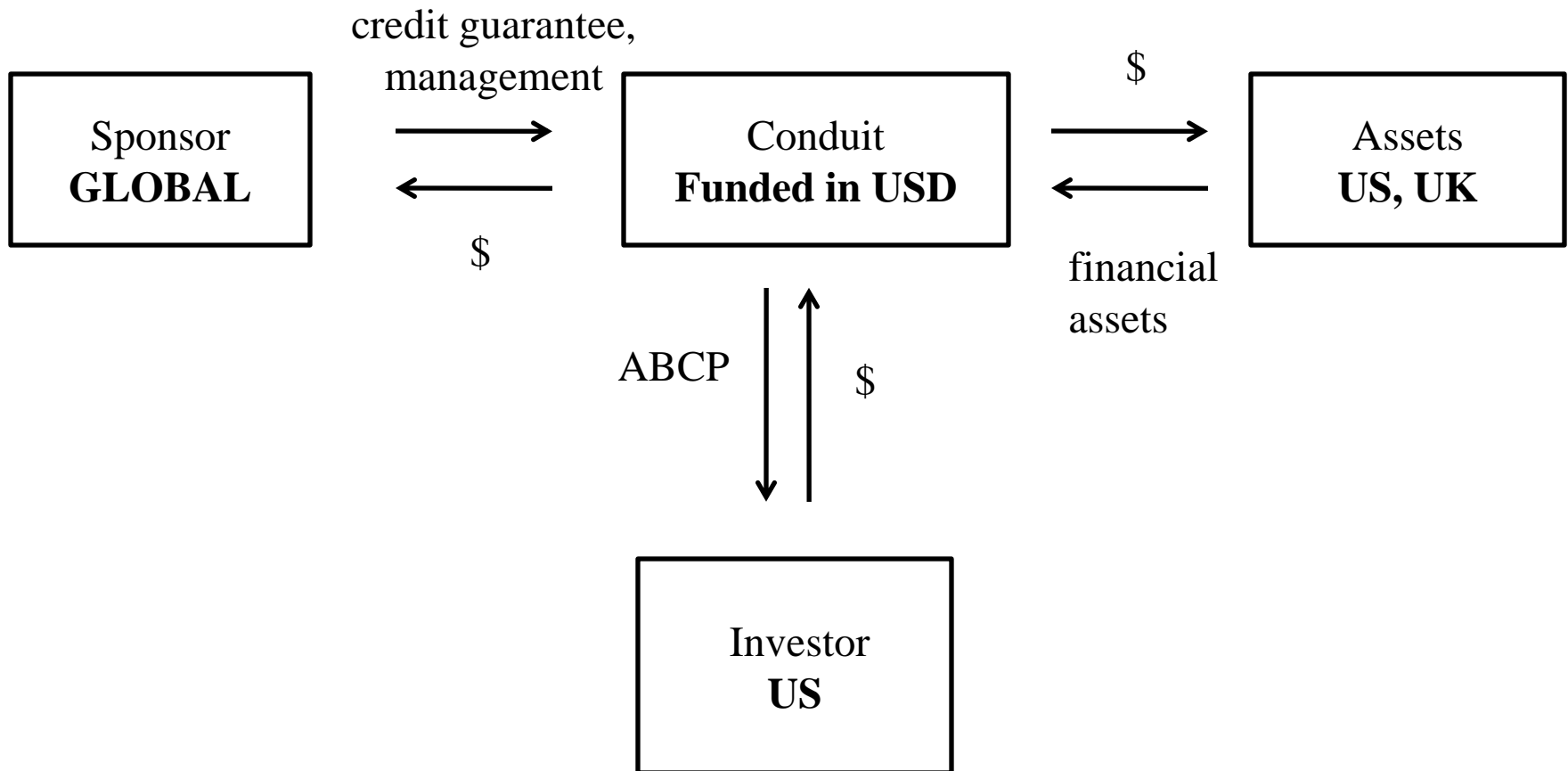
Sponsor	ABCP (bn)	ABCP/Tier1 (%)	Tier1 Ratio (%)
Citigroup (US)	92.7	102.0%	8.6%
ABN Amro (NL)	68.6	219.5%	8.5%
Bank of America (US)	45.7	50.2%	8.6%
HBOS Plc (UK)	43.9	99.7%	8.1%
JP Morgan (US)	42.7	52.7%	8.7%
HSBC (UK)	39.4	44.9%	9.4%
Deutsche Bank (GE)	38.7	125.0%	8.5%
Société Générale (FR)	38.6	87.1%	7.8%
Barclays Plc (UK)	33.1	73.2%	7.7%
Rabobank (NL)	30.7	88.3%	10.7%

Source: Moody's rating reports

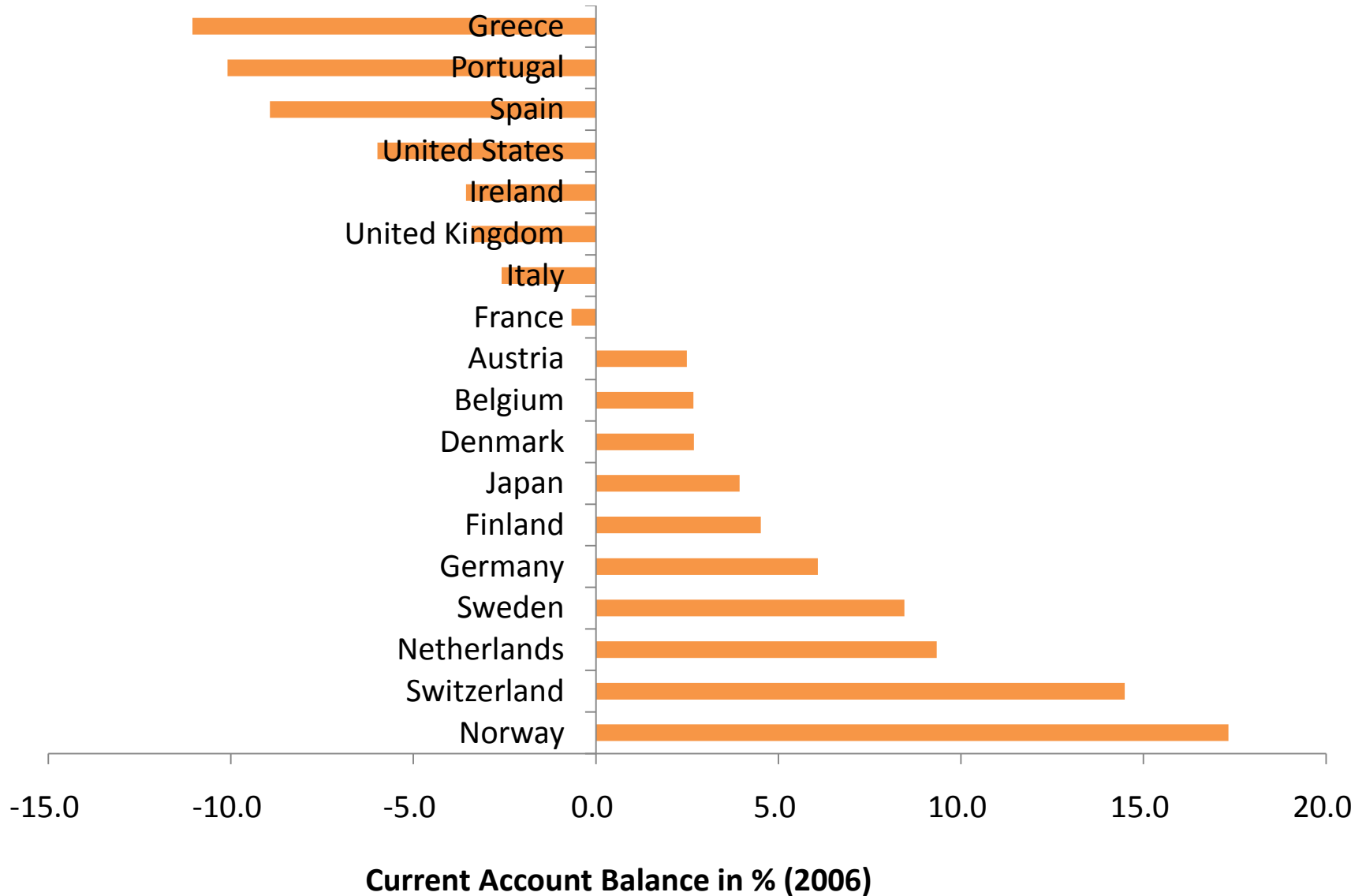
# Located in both surplus and deficit countries

Country	ABCP (bn)	%
United States	305.1	31.5%
Germany	204.5	21.1%
United Kingdom	158.3	16.3%
Netherlands	125.8	13.0%
France	75.7	7.8%
Japan	40.8	4.2%
Belgium	35.2	3.6%
Switzerland	13.1	1.3%
Other	11.2	1.2%
Total	969.7	

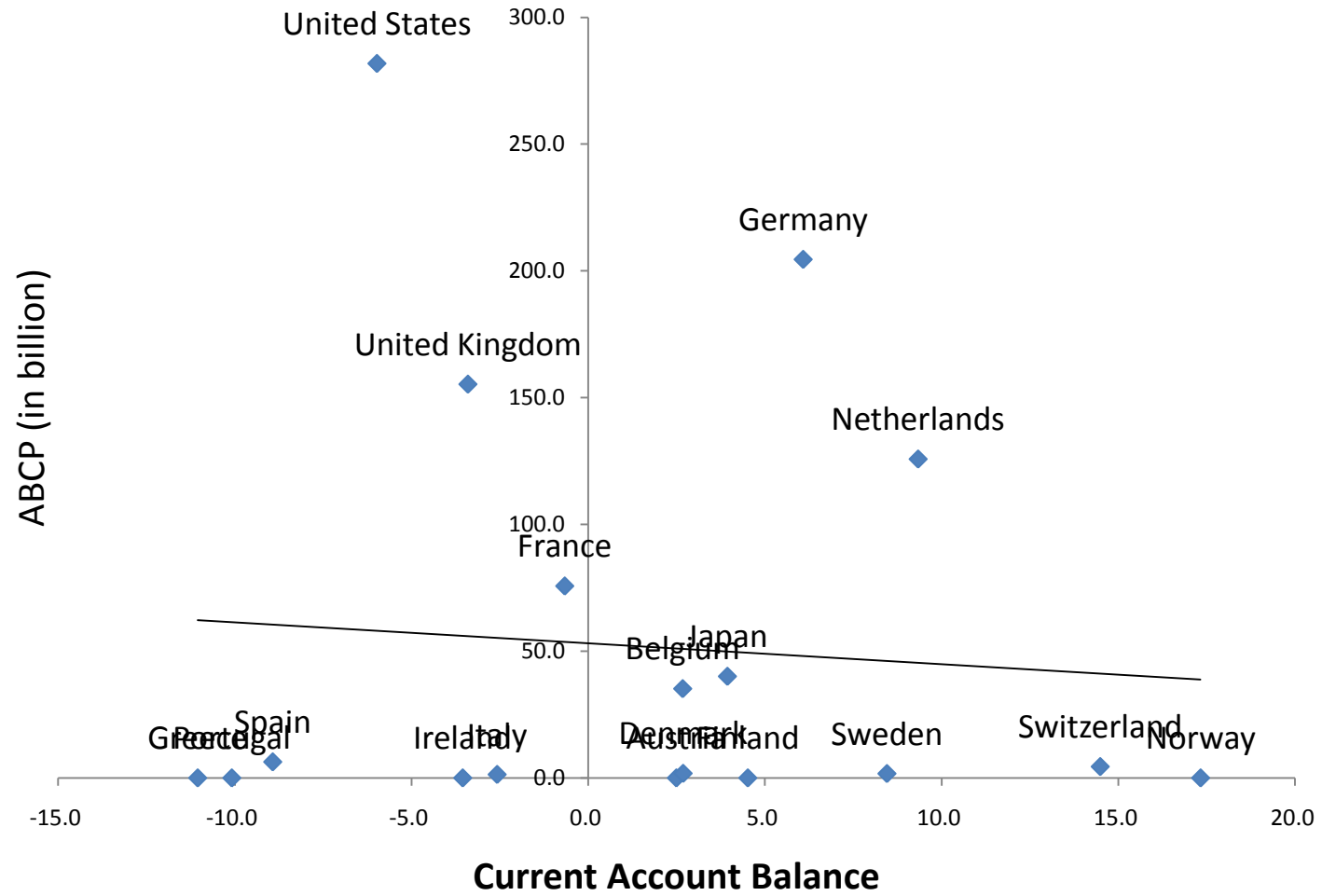
# Global banks as sponsors for U.S. assets



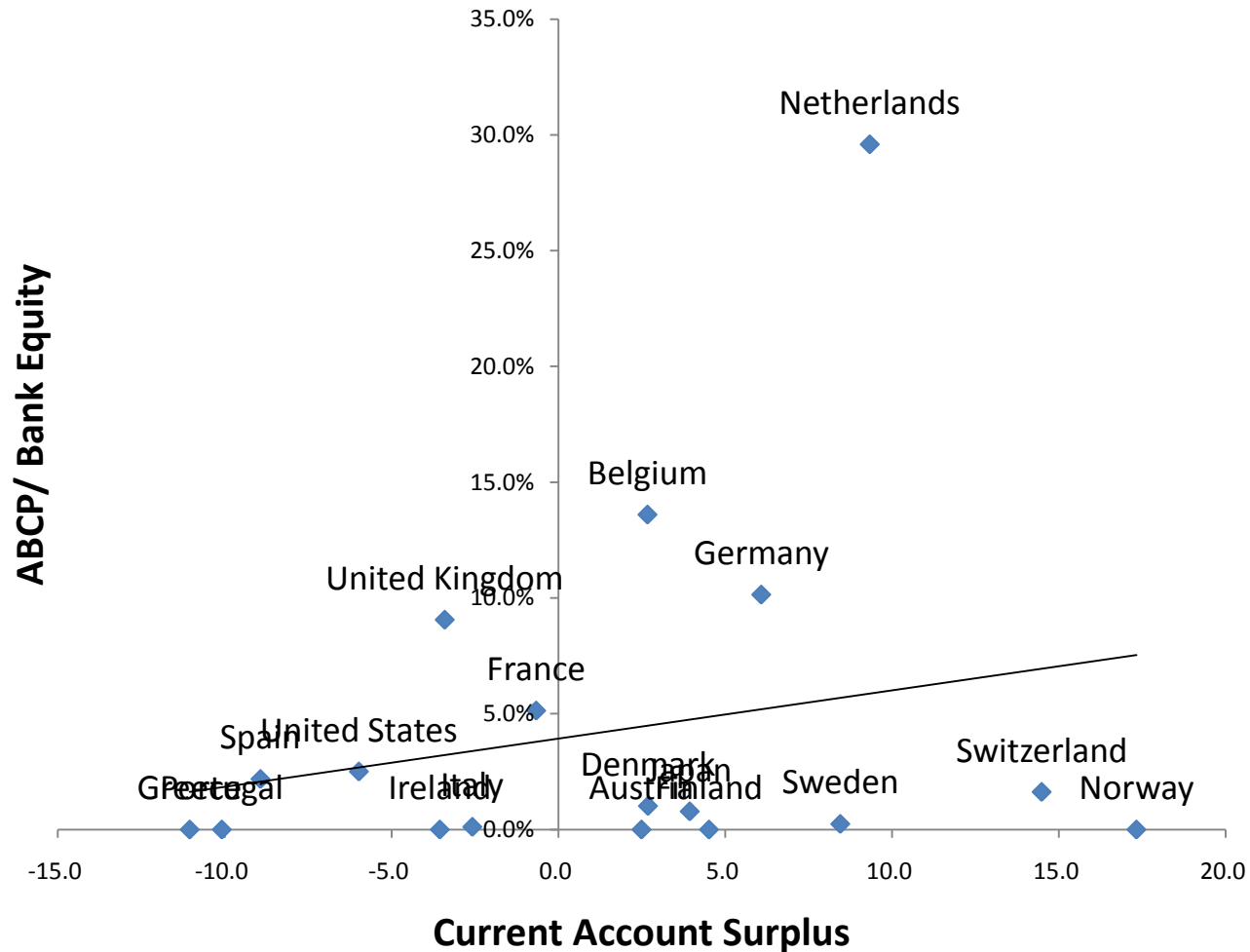
# Global imbalances



# Conduits and global imbalance



# Conduits and global imbalance

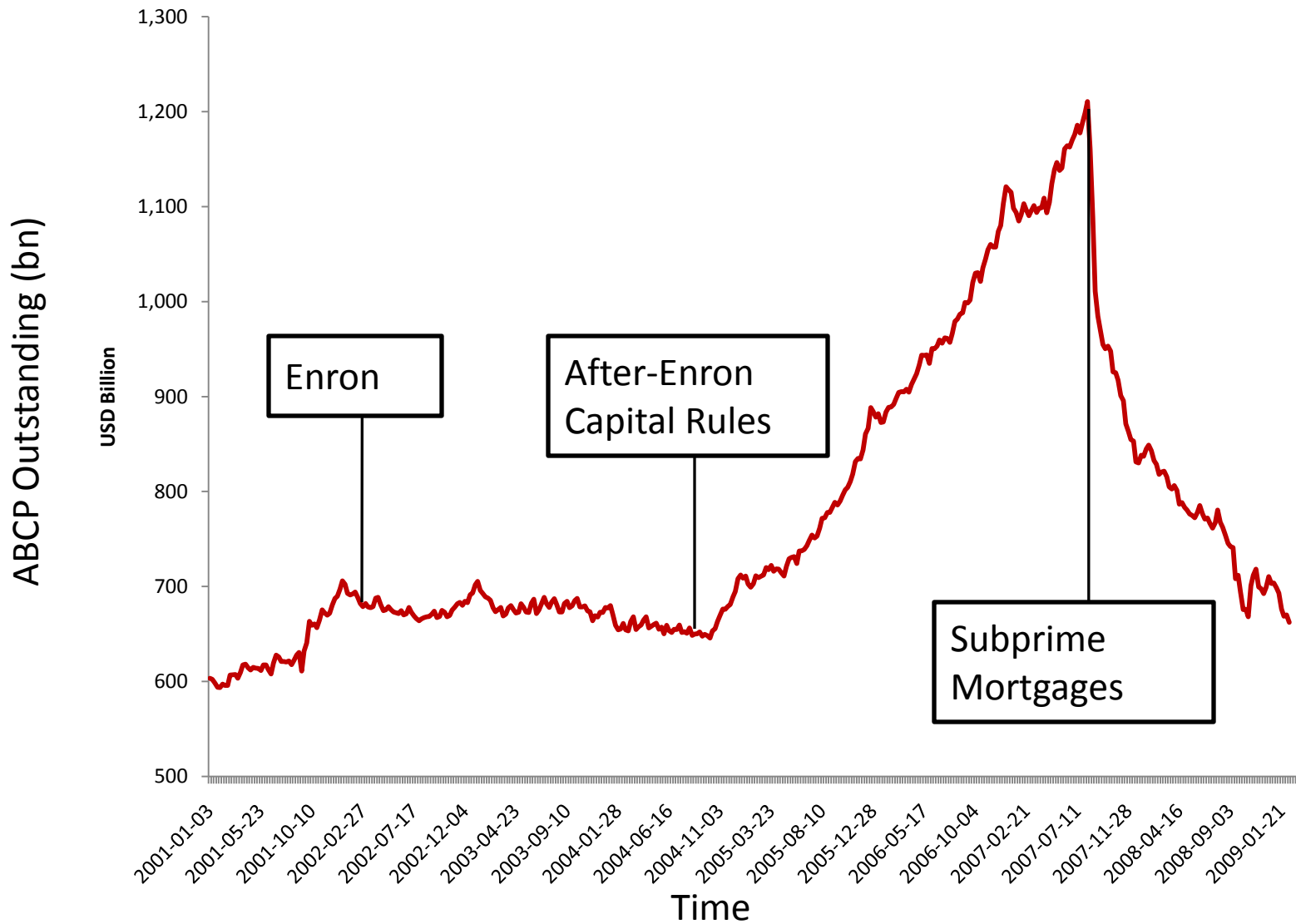




# “Weakly” regulated financial systems

Country	Capital Requirement
United States (before 2004)	0%
United States (after 2004)	0.8 %
Germany (Basel 1)	0%
Germany (Basel 2)	1.6% (+ lower risk weights)
Germany (Landesbanken)	State Guarantees
Spain	8%
Portugal	8%

# Growth and decline of ABCP



# Outline

1. Related literature
2. Institutional background
3. Empirical analysis
  - Geography of conduits
  - **Event Study**

# Event Study

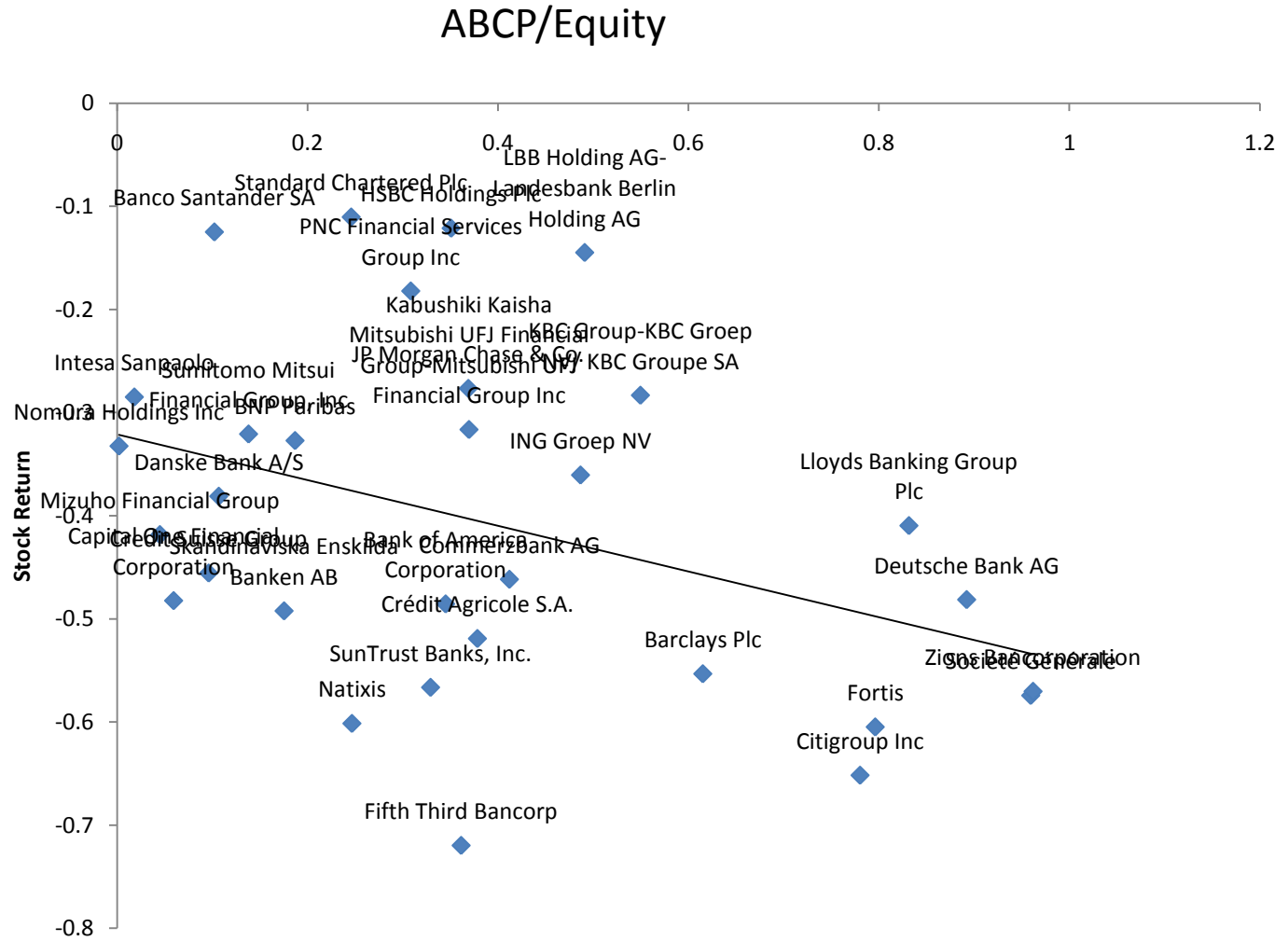
- Test whether global banks spread crisis
- Sample:
  - Start of financial crisis (August 2007)
  - Banks with assets  $\geq$ \$5bn in assets
  - Stock returns available

- Estimation:

$$StockReturn_i = \alpha + \beta ConduitExposure_i + \gamma X_i + \varepsilon_i$$

# Banks with more conduits experience larger stock declines

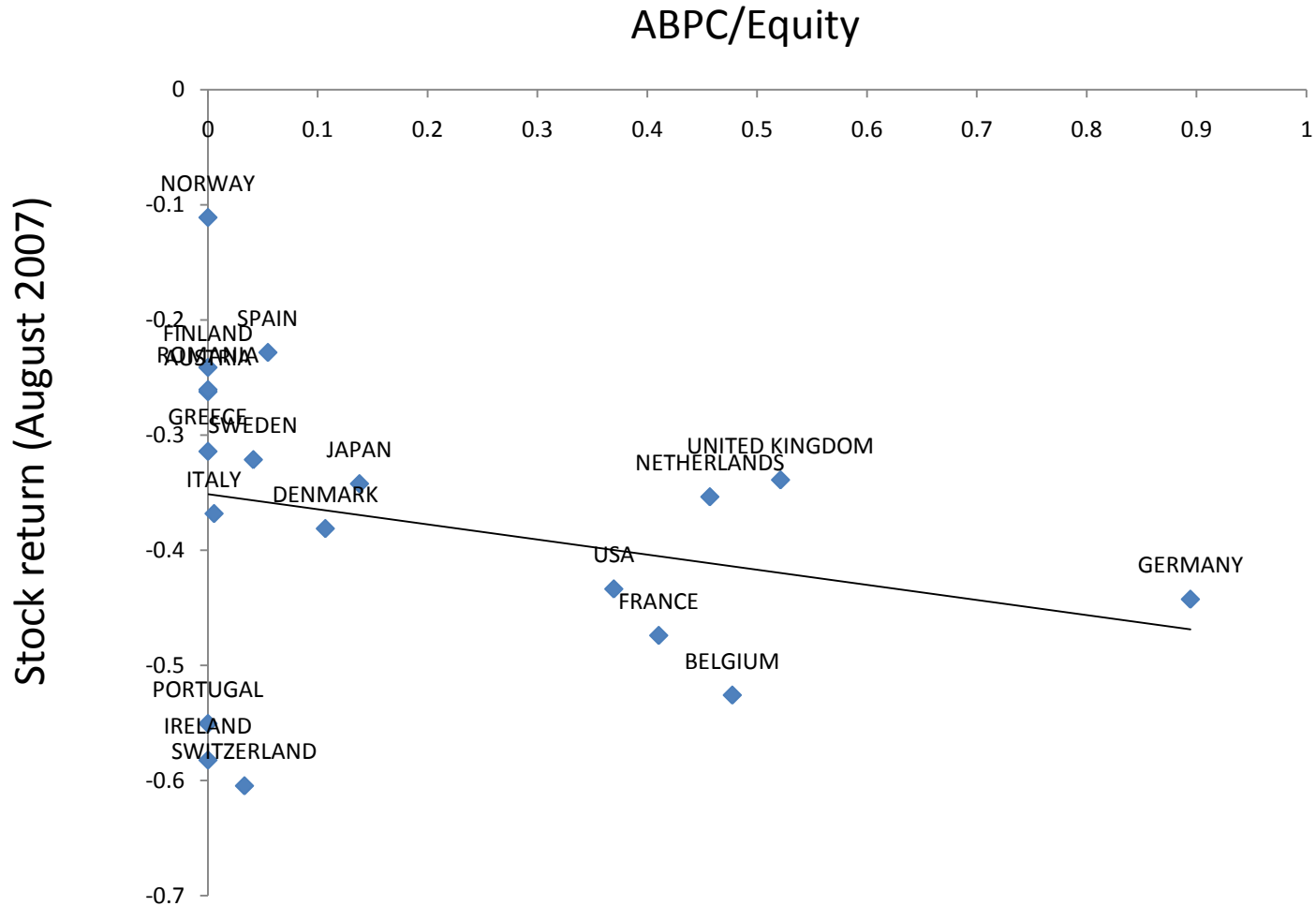
Stock retruns (July 07-July 2008)



# Banks with more conduits have lower returns

Dependent Variable: Stock Return (August 2007)				
	(1)	(2)	(3)	(4)
Conduit Exposure	-0.034 (0.007)**	-0.023 (0.005)**	-0.022 (0.008)**	-0.029 (0.009)**
Size Controls	N	Y	Y	Y
Other Controls	N	N	Y	Y
Country FE	N	N	N	Y
Observations	107	107	107	107
R-squared	0.068	0.277	0.289	0.359

# Countries with more conduits experience larger banks stock declines

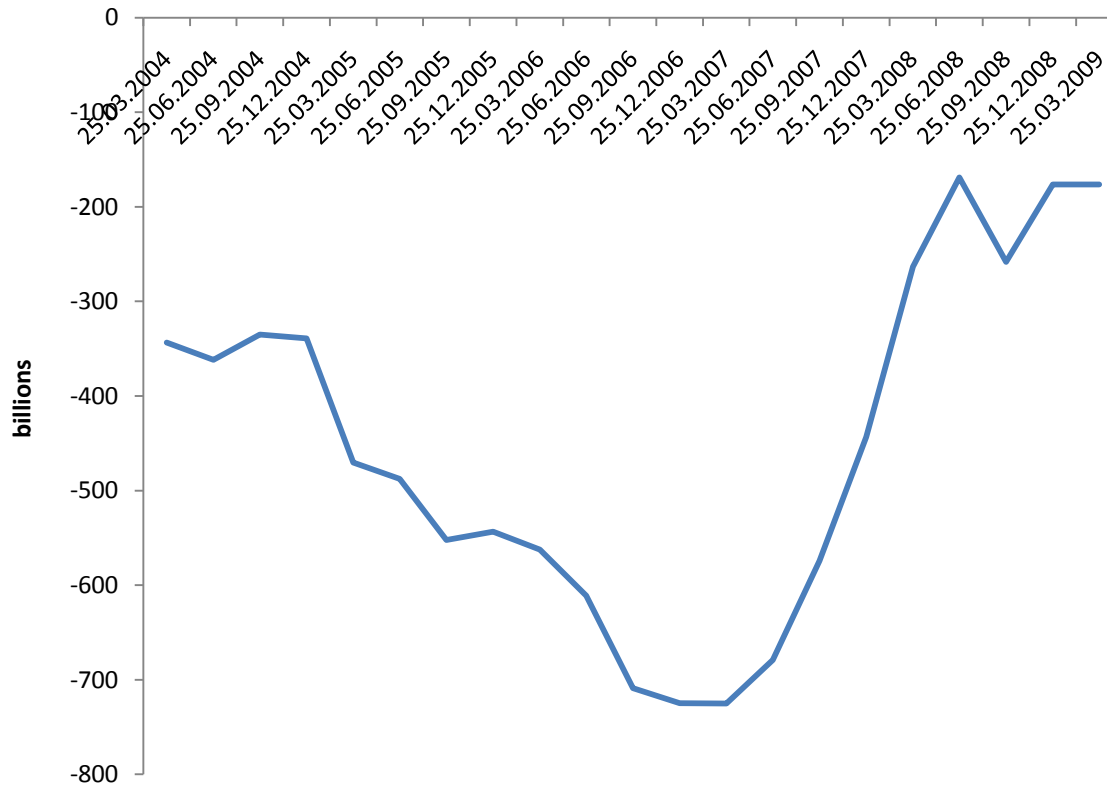


# Robustness

- Robust to changes in estimation window (in August)
- Robust to restricting sample to large banks  $\geq$ \$50 billion
- Robust to dropping outliers (German banks) and estimating with high and low exposure indicator variables



# US subsidiaries of European banks increase USD borrowing after August 2007



Source: McGuire and von Peter (BIS Review, 2009)

# Conclusions

- Banks use conduits to “manufacture” riskless assets
  - Conduits invest in U.S. and U.K assets
  - Funded in U.S. money markets
- Weakly regulated financial system underwrite conduit risks
  - Global banks transmit financial crisis to both deficit and surplus countries
- Future research: Motivation for setting up conduits
  - Corporate governance, government guarantees

# Investment strategies

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## Panel A: Conduits

	Total	
	# Conduits	Size
All Conduits	296	1,235.3
Conduit type		
Multi-Seller	135	548.0
Single-Seller	63	173.5
Securities Arbitrage	35	213.8
Other	63	299.9

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# Ten largest conduits

Program Name	Sponsor	ABCP (bn)	Main Asset Type (%)
Grampian Funding	HBOS	37.9	Residential Mortgages (36%)
Amstel Funding	ABN Amro	30.7	CDO/CLO (84%)
Scaldis Capital	Fortis Bank	22.6	Asset backed securities (77%)
Sheffield	Barclays	21.4	Mortgages (43%)
Morrigan TRR	Hypo Public	18.9	Bonds (51%)
Cancara Asset	Lloyds	18.8	Residential Mortgages (43%)
Solitaire Funding	HSBC	18.5	Residential Mortgages (45%)
Rhineland Funding	IKB	16.7	CDO/CLO (95%)
Mane Funding	ING	13.7	Asset backed securities (91%)
Atlantis One	Rabobank	13.5	Commercial Loans (100%)

# Results

- Banks use conduits to manufacture “riskless” assets
  - Conduits engage in maturity arbitrage (“lend long, borrow short”)
  - Structured to avoid bank capital requirements
  - Riskless to outside investors because banks assume all risks
- Global banks in “weakly” regulated financial system set up conduits
  - Conduits mostly invest in US assets financed with U.S. dollar debt
  - Debt is sold to risk-averse investors (e.g., U.S. money market funds)
  - Banks in both current account surplus and deficit countries set up conduits
- Empirical findings

# Conduits primarily funded in U.S.

	Total	
	# Sponsors	ABCP
All Programs	126	1,235.3
Sponsor type		
Commercial Banks	64	903.3
Structured Finance	27	181.7
Mortgage Lender	16	71.1
Other	19	79.1
Country of Origin		
United States	68	488.5
Germany	15	204.1
United Kingdom	10	195.7
Other	33	347.0

Source: Analysis based on Moody's ratings reports and Bankscope data

# Conduits primarily funded in USD

	Currency			Total	%
	USD	Euro	Other		
United States	302	0	3	<b>305</b>	31.5%
Germany	139	63	3	205	21.1%
United Kingdom	93	62	3	158	16.3%
Netherlands	57	66	3	126	13.0%
France	51	24	1	76	7.8%
Other	73	5	23	100	10.3%
Total (billion)	<b>715</b>	219	35	970	
%	73.7%	22.6%	3.6%		

Source: Author's analysis based on Bankscope and Moody's data