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Emerging markets, decoupling, and financial performance during the crisis

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* This presentation reflects the views of the authors and not necessarily those of the BIS or of central banks participating in the meeting.

“Emerging Markets, Decoupling, and Financial Performance During the Crisis”

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Decoupling?


Stock Price Indexes*
July 1, 2007=100
Advanced Economies
Emerging Economies
140
120
100
80
60
40
20
0
2007
2008
2009
*Capitalization weighted mean of national indexes within regional aggregates.
Source: Datastream

Focus of the paper

- Were EM financial sectors relatively unscathed in the first year of the crisis: were they “decoupled”?
- How did the deterioration in the EM financial sector differ from that of AEs and from EM non-financial sector?
- What factors can account for the slide in asset prices during the crisis? Were “riskier” countries hit harder? Did factors differ by EM/AE or sector?

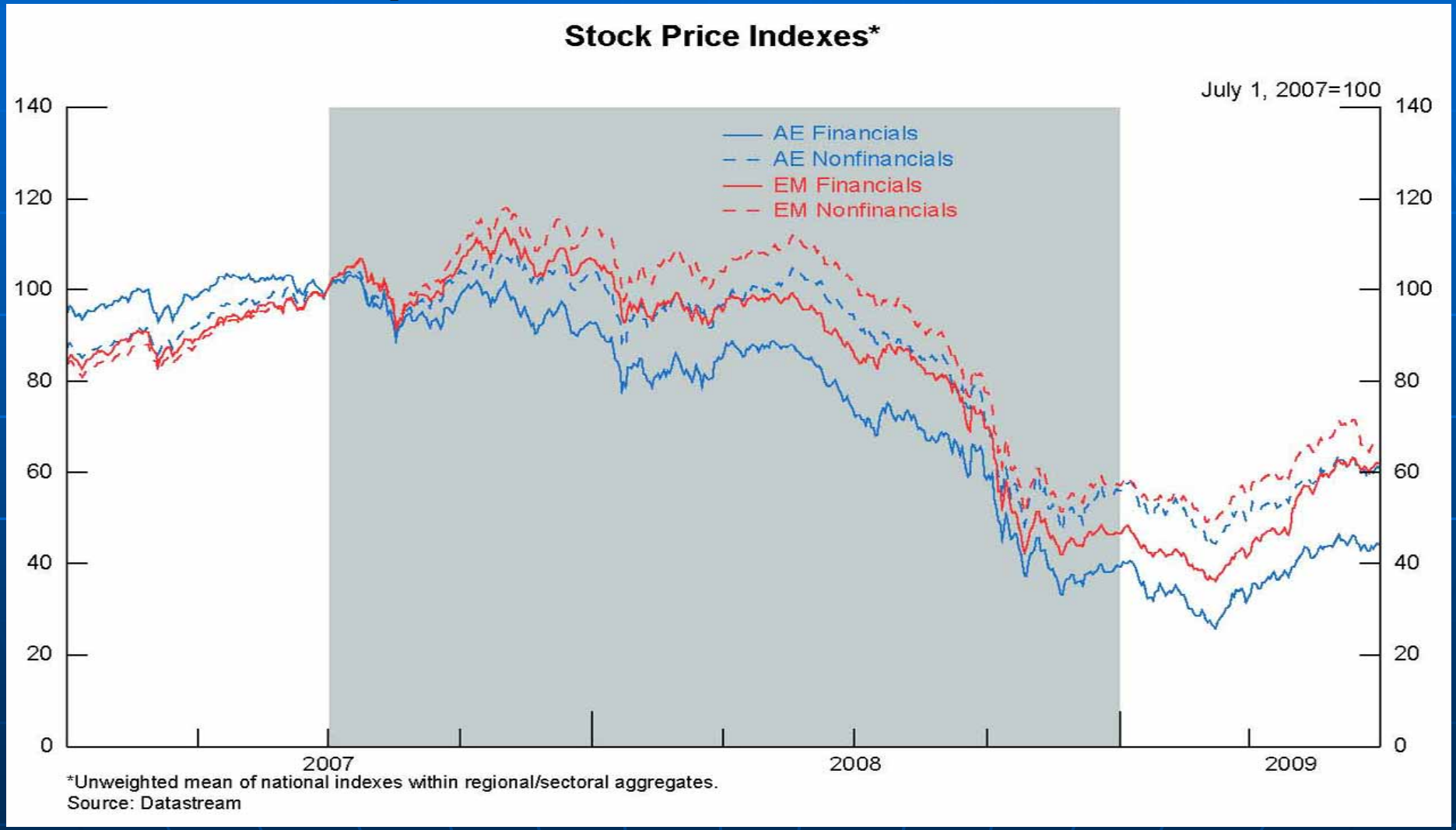
Previous Research on International Spread of Financial Crisis

- Ehrmann, Fratzscher, and Mehl (2009): Equity prices fell more in countries with weak macro fundamentals.
- Fratzscher (2009): Currencies fell more in countries with weak macro fundamentals and large financial liabilities to U.S.
- Rose and Spiegel (2009): Little explains why some countries hit harder than others.

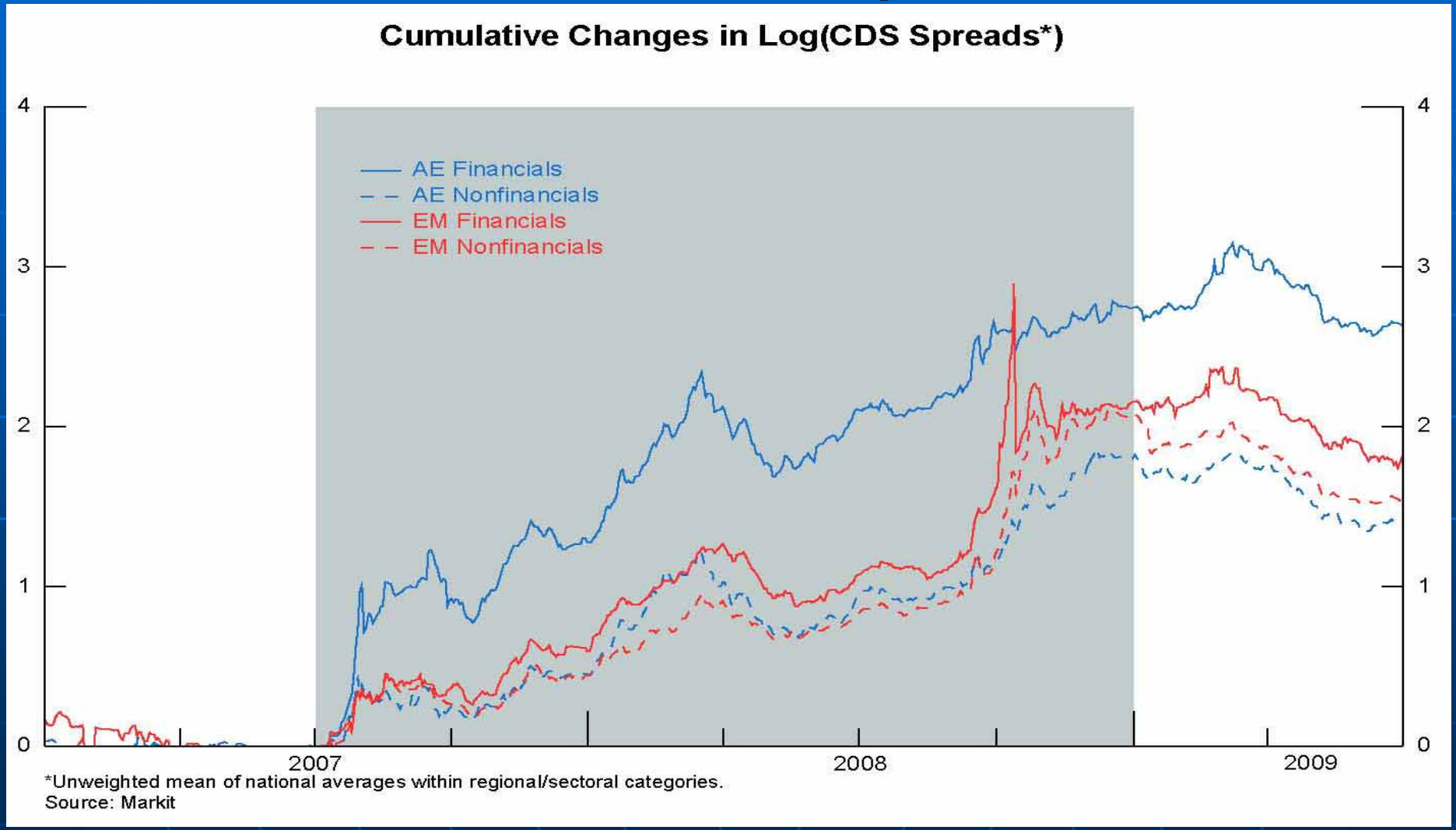
Distinctive Aspects of Our Research

- Differences between EM and AE
- Separate financial and non-financial firms
- Focus on stylized facts for different groups

Decoupled? Not EM financials



Not for CDS spreads



Research Strategy

- Formalize the chart findings by regressing firm performance measures (stock returns and change in CDS premia) on regional and sectoral dummies
- Test if regional and sectoral differences are explained by country characteristics
- See which country characteristics were associated with worse firm performance overall—and if factors matter differently by regions or sectors

Econometric Approach

$$\Delta performance = \alpha + \beta_1 D + \beta_2 Z + \beta_3 (D*Z) + \varepsilon$$

D = Dummies:

- AE
- Financial
- AE*Financial

➢ Yields estimates for each of 4 groups

Z = Country Characteristics

Measures of firm performance by country

- Equity prices
  - Datastream country indices

  (future, construct from firm-level prices)
  - separate financial and non-financial
  - 22 advanced, 31 emerging countries

- CDS premia
  - constructed as median of firm-level CDS spreads, using available data
  - separate financial and non-financial
  - 23 advanced, 49 emerging countries

Country Characteristics

- Macro Vulnerabilities
  - Current account balance/GDP
  - Fiscal balance/GDP
  - Reserves/short-term external debt
  - Sovereign credit rating
- Measured pre-crisis

Country Characteristics

- Banking system soundness
  - Capital/asset ratio
  - Non-performing loans (NPL) ratio
  - Return on bank assets
  - Change in private credit/GDP, 2003 - 06

Country Characteristics

- International interconnectedness
  - Financial openness (external assets + liabilities/GDP)
  - Exports/GDP
  - Claims on U.S./GDP
  - U.S. dollar bank liabilities/bank assets

Country Characteristics

- Economic Activity - Concurrent
  - Industrial production (change in growth from previous year)

Econometric Approach pt 2

- Cross-section
  - Cumulative change from June 2007 to …
    - September 2007
    - June 2008
    - December 2008
- Panel

Results

- Cross-section regressions
  - **Dummy variables only**

Cross-Section

Percent Change in Stock Price		
	June 2007 to June 2008	June 2007 to December 2008
AE	-7.45	-1.23
	(1.57)	(0.29)
FIN	-15.69	-10.45
	(3.66)***	(2.73)***
AE*FIN	-5.10	-6.09
	(0.76)	(1.02)
Constant	2.19	-42.89
	(0.72)	(15.87)***
Observations	108	108
R-squared adjusted	0.25	0.15

* significant at 10%; ** significant at 5%; *** significant at

Cross-Section

Change in Log CDS Premia		
	June 2007 to June 2008	June 2007 to December 2008
AE	0.10	-0.24
	(0.64)	(1.24)
FIN	0.23	0.20
	(1.41)	(0.95)
AE*FIN	0.62	0.50
	(2.43)**	(1.56)
Constant	1.18	2.29
	(13.65)***	(22.52)***
Observations	125	125
R-squared adjusted	0.19	0.05

* significant at 10%; ** significant at 5%; *** significant at

Results

- Cross-section regressions
  - Dummy variables only
  - **Add country characteristics, one at a time**

Percent Change in Stock Price			
	June 2007 to December 2008		
AE	-1.23	-2.04	-1.82
	(0.29)	(0.47)	(0.41)
FIN	-10.45	-11.54	-11.76
	(2.73)***	(2.86)***	(2.86)***
AE*FIN	-6.09	-5.00	-4.91
	(1.02)	(0.81)	(0.78)
CurrentAccount Balance/GDP 2006		38.81	37.82
		(2.10)**	(1.12)
AE* CurrentAccount Balance/GDP 2006			-20.90
			(0.38)
FIN* CurrentAccount Balance/GDP 2006			22.32
			(0.47)
AE*FIN* CurrentAccount Balance/GDP 2006			-10.74
			(0.14)
Constant	-42.89	-42.50	-42.49
	(15.87)***	(14.87)***	(14.63)***
Observations	108	102	102
R-squared adjusted	0.15	0.19	0.17

* significant at 10%; ** significant at 5%; *** significant at 1%

Summary of Results from Adding Country Characteristics Variables, One at a Time

- Few significant coefficients
  - CA balance, NPLs, credit growth
- Of significant coefficients, many with counterintuitive signs
  - Larger fiscal surpluses lower equities, boost CDS spreads
  - Worse credit ratings lower CDS spreads
  - IP growth lowers equities
- Adding characteristics variables doesn't alter coefficients on sector/region dummies
- Interaction terms between sector/region dummies and characteristics rarely significant

Results

- Cross-section regressions
  - Dummy variables only
  - Add country characteristics, one at a time
  - **Add country characteristics all at once, and then remove those with insignificant coefficients.**

Percent Change in Stock Price from June 2007 to December 2008

AE	-1.23	-8.67
	-0.29	(1.27)
FIN	-10.45	-9.29
	(2.73)***	(2.26)**
AE*FIN	-6.09	-7.81
	-1.02	(1.33)
NPL Ratio 2006		-1.44
		(1.75)*
CurrentAccount Balance/GDP 2006		60.00
		(2.13)**
U.S.$ Liabilities/Bank Assets		-43.40
		(2.07)**
AE*U.S.$ Liabilities/Bank Assets		48.98
		(2.16)**
Change in IP Growth		-33.16
		(3.41)***
Constant	-42.89	-40.44
	(15.87)***	(7.49)***
Observations	108	82
R-squared adjusted	0.15	0.32

* significant at 10%; ** significant at 5%; *** significant at 1%

Change in Log CDS Spreads from June 2007 to December 2008

AE	-0.24	-1.520
	-1.24	(5.29)***
FIN	0.20	-0.340
	-0.95	-1.22
AE*FIN	0.50	1.390
	-1.56	(3.48)***
CurrentAccount Balance/GDP 2006		-3.56
		(3.89)***
AE* CurrentAccount Balance/GDP 2006		3.00
		(2.09)**
Soverign Credit Rating (high=worse)		-0.11
		(5.05)***
AE*FIN*Change in IP Growth		3.89
		(1.76)*
Constant	2.29	3.47
	(22.52)***	14.92)***
Observations	125	90
R-squared adjusted	0.05	0.39

* significant at 10%; ** significant at 5%; *** significant at 1%

Panel Regressions

- Monthly change in performance
- Include dollar LIBOR-OIS spread as proxy for the intensity of the shock

LIBOR-OIS spread varies over time but not across country

$$\Delta performance = \alpha + \beta_1 D + \beta_2 LIB + \beta_3 (D*LIB)$$

$$+ \beta_4 Z + \beta_5 (D*Z) + \beta_6 (D*Z*LIB)$$

Panel Regression

	Month-to-Month Percent Change in Stock Price				
	(1)	(2)	(3)	(4)	(5)
LIBOR-OIS Spread	-0.037		-0.037	-0.034	-0.034
	(9.50)***		(9.52)***	(4.71)***	(4.39)***
AE		-0.273	-0.273	-0.257	-0.095
		(0.40)	(0.41)	(0.38)	(0.14)
FIN		-0.850	-0.850	-0.848	-1.034
		(1.33)	(1.36)	(1.35)	(1.54)
AE*FIN		-1.181	-1.181	-1.207	-1.022
		(1.21)	(1.24)	(1.27)	(1.04)
AE*LIBOIS				-0.016	-0.016
				(1.47)	(1.44)
FIN*LIBOIS				-0.002	-0.0002
				(0.22)	(0.02)
AE*FIN*LIBOIS				0.025	0.023
				(1.62)	(1.42)
Financial Openness 2006					-0.310
					(1.85)*
Constant	-3.359	-2.600	-2.562	-2.564	-2.413
	(14.19)***	(5.73)***	(5.79)***	(5.79)***	(5.05)***
Observations	1836	1836	1836	1836	1692
R-squared adjusted	0.05	0.01	0.05	0.05	0.05

	Month-to-Month Change in LOG(CDS)				
	(1)	(2)	(3)	(4)	(5)
LIBOR-OIS Spread	0.001		0.001	0.001	0.001
	(8.10)***		(8.11)***	(4.92)***	(3.75)***
AE		-0.029	-0.029	-0.029	-0.080
		(1.59)	(1.62)	(1.59)	(3.33)***
FIN		0.004	0.004	0.003	-0.005
		(0.24)	(0.20)	(0.16)	(0.24)
AE*FIN		0.042	0.043	0.043	0.050
		(1.48)	(1.53)	(1.52)	(1.73)*
AE*LIBOIS				-0.001	-0.001
				(1.88)*	(3.17)***
FIN*LIBOIS				0.0003	0.001
				(1.48)	(0.63)
AE*FIN*LIBOIS				0.0010	0.001
				(4.92)***	(3.75)***
Credit Growth/GDP 2003 to 2006					0.058
					(2.41)**
Soverign Credit Rating (high=worse)					-0.006
					(2.97)***
LIBOIS*Credit Growth/GDP 2003 to 2006					0.001
					(3.75)***
LIBOIS*Soverign Credit Rating (high=worse)					-0.0001
					(1.92)*
Constant	0.132	0.135	0.134	0.1340	0.184
	(20.10)***	(13.34)***	(13.46)***	(13.50)***	(8.24)***
Observations	2062	2062	2062	2062	1936
R-squared adjusted	0.03	0.00	0.03	0.04	0.05

Conclusions

1. Little evidence of decoupling of AEs and EMEs during the crisis.

   - True, early on, aggregate EME equity prices stayed higher than AE prices.
   - But, as in the AEs, equity prices for EME financial firms fell below those of non-financial firms.
   - And CDS spreads for EME financial and non-financial firms rise from the outset.

Conclusions

2. Our evidence is most consistent with crisis as generalized, non-discriminatory panic.

- Effect on EME asset prices did not come mainly through real-activity linkages to AEs – IP was not a consistent significant predictor, nor measures of trade links.
- Effect on EME asset prices did not come mainly from a pullback from perceived risk – measures of risk and vulnerability were not consistent significant predictors.
- In fact, few country characteristics were consistent, significant predictors of equity prices or CDS spreads, for EMEs or AEs, financials or nonfinancials.

Directions for further work

- Refine measure of global financial shocks (Libor-OIS spreads)
- Time-varying country characteristics for panel regressions
- Application to firm-level data