Policy as Myth and Ceremony?
The Global Spread of Stock Exchanges, 1980 - 2005



Klaus Weber, *Northwestern U*
Jerry Davis, *U Michigan*
Mike Lounsbury, *U Alberta*

The Networks Workshop
The University of Michigan
January 12, 2010

Policy as Myth and Ceremony: Overview

1. **Motivation and Executive Summary**
2. **Context: Financial Markets and Economic Development**
3. **Theory: Decoupling in Global Institutional Processes**
4. **Hypotheses and Methods**
5. **Findings: Formal Adoption and Vibrancy of Markets**
6. **Implications and Conclusions**

Why Care About This Study?

Institutional Theory

- World Society perspective (Meyer et al., 1997)
  - Countries are like organizations, create formal policies and structures to gain legitimacy, e.g., environmental protection, privatization, democracy
  - Mechanisms: peer nation influence, transnational professionals and agencies
- Institutional decoupling?
  - Implicit assumption that these actions are often ceremonial, i.e. form trumps functioning; due to motives of local actors and misfit with local context

-> But: Almost no empirical work on the consequences of 'institutional' adoption of structures and practices

Economic Development

- Financial market model of economic development (e.g., IMF, WB)
  - Private investments and financial markets solve problems of capital, transparency and governance in development finance, neoliberal logic of development
  - Significant expansion of market-based systems since 1980s ("Washington Consensus")

-> But: Do these markets actually work (in a technical sense)?

Research Question & Answer

Do global institutional processes in the adoption of policies and practices undermine the effectiveness of these practices?

- Are global institutional processes associated with ceremonial adoption?
- Does 'institutional' practice diffusion make for bad (economic) policy?

The master proposition:

- It depends on the mechanism of global diffusion

Study design:

- Data: new national stock markets since 1980 (113 countries, 58 new exchanges)
- Hypotheses: Do predictors of exchange creation also predict vibrancy?
- Survival analysis of exchange creation, panel and spatial econometric analysis of exchange vibrancy (companies listed, market capitalization)

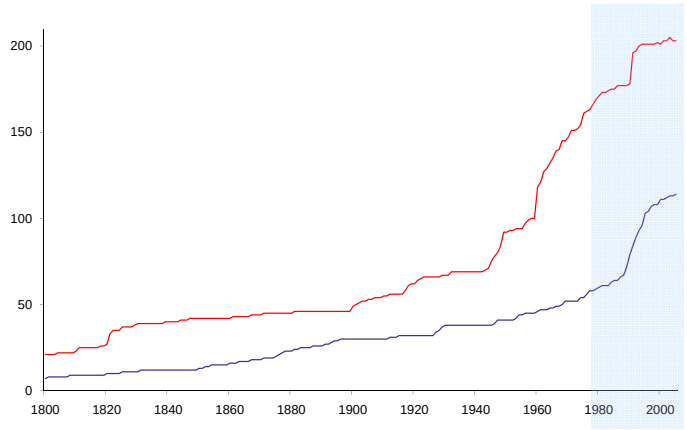
Findings:

- Coercive channels (IMF aid) were associated with more ceremonial adoption
- Competitive, learning and status-based channels led to greater vibrancy

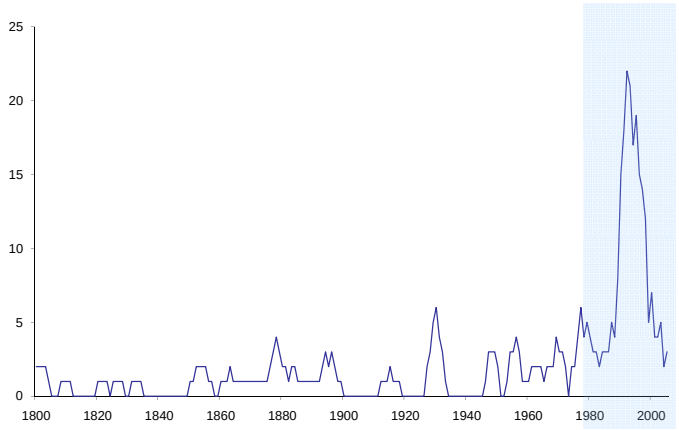
Overview

1. Motivation and Executive Summary
2. Context: Financial Markets and Economic Development
3. Theory: Decoupling in Global Institutional Processes
4. Hypotheses and Methods
5. Findings: Formal Adoption and Vibrancy of Markets
6. Implications and Conclusions

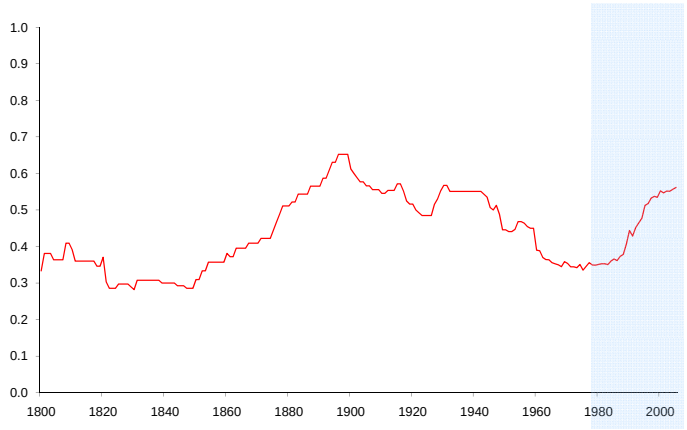
Historical Diffusion of Stock Markets, 1800 - 2005



Historical Spikes in The Diffusion of Exchanges



Prevalence of Stock Markets (Cumulative Adoption)



What Changed In The 1980s?

Stock markets already had high general legitimacy

- First exchange opened in 1602 (Amsterdam)
- Spread widely during industrialization (capital needs, 1st wave of international liberalism before 1914)
- Limited diffusion to former colonies and new states post WWI
- A central institution of the industrialized core of the capitalist world

1980s: Applying the financial market solution to a new problem

- Economic development ideologies since WWI (e.g., Mc Michael, 1996)
- How to foster capital accumulation in poor countries?
  - endogenous accumulation often seen as too slow
  - 1950s-60s: state-to-state lending
  - 1970s: bank-to-state lending
  - 1980s: private-to-private investing (shift due to debt crisis, monetarism)

Stock markets became part of neoliberal development ideology

In Financial Markets We Trust(ed)

The logic of neoliberal development policies

- High private capital stocks in wealthy countries are disconnected from high return opportunities in developing countries
- A win-win proposition: from "third world" to "emerging markets"
- But, governments are inefficient, protectionist and corrupt, see e.g., the collapse of bank lending after the Mexican loan default
- Private financial markets offer several advantages:
  - Transparency and 'democratic' (disembedded) access and exit
  - Better governance of firms
  - Opportunity to manage investment risk via larger portfolios

Stock market-based development became a normative ideology

- Role models (Reagan, Thatcher, Pinochet)
- International epistemic community of development experts
- "Washington Consensus" included US Treasury, IMF and WB endorsements

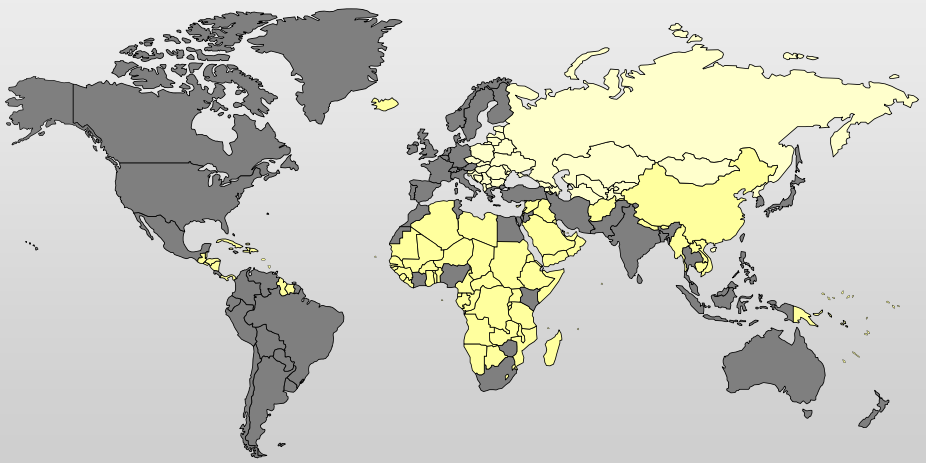
So why is there variance in countries creating exchanges??

The World

The World of Stock Markets, 1980

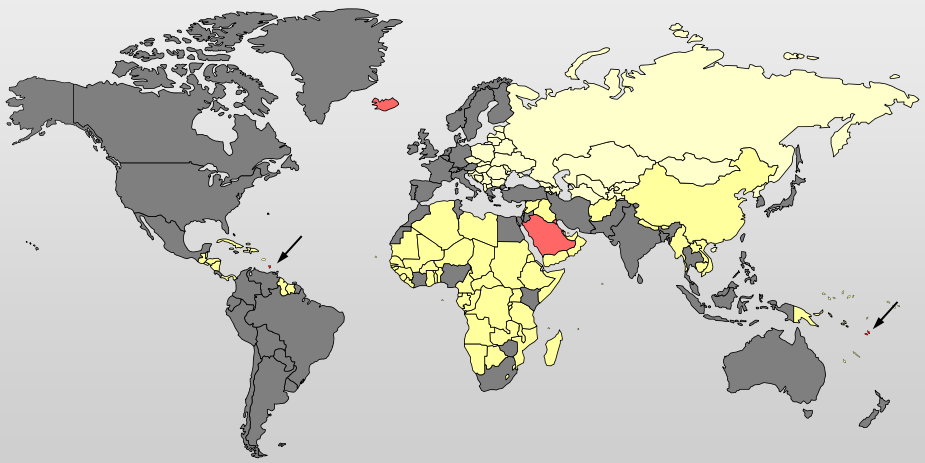
Countries with exchanges by 1980

The Geographic Spread of Stock Markets, 1980



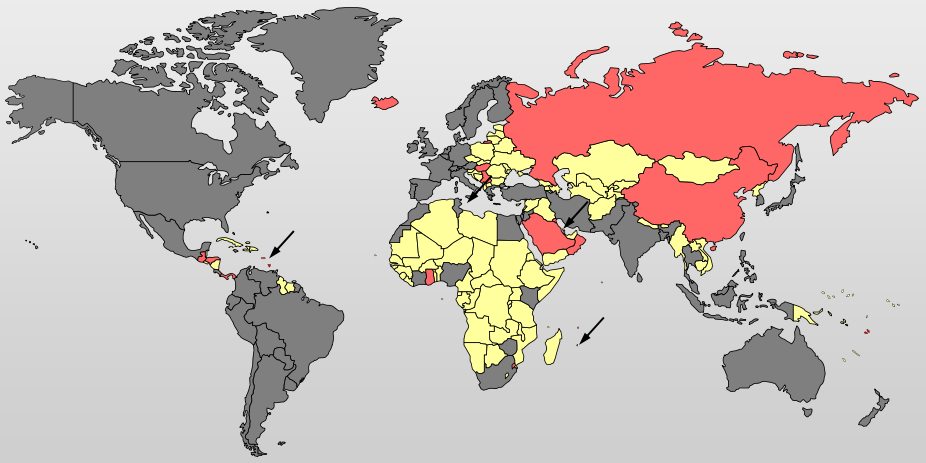
Countries with exchanges by 1980 | Risk set in 1980

The Geographic Spread of Stock Markets, 1985



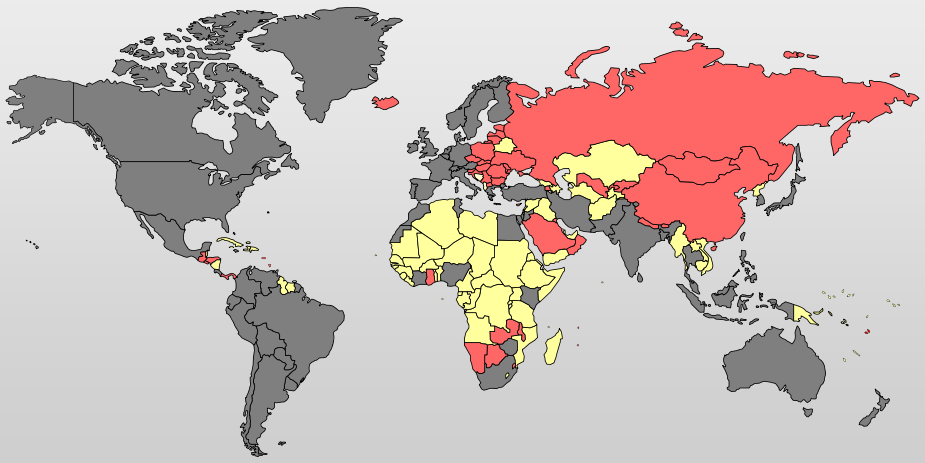
Countries with exchanges by 1980 | Risk set in 1980 | Exchanges created since 1980

The Geographic Spread of Stock Markets, 1990



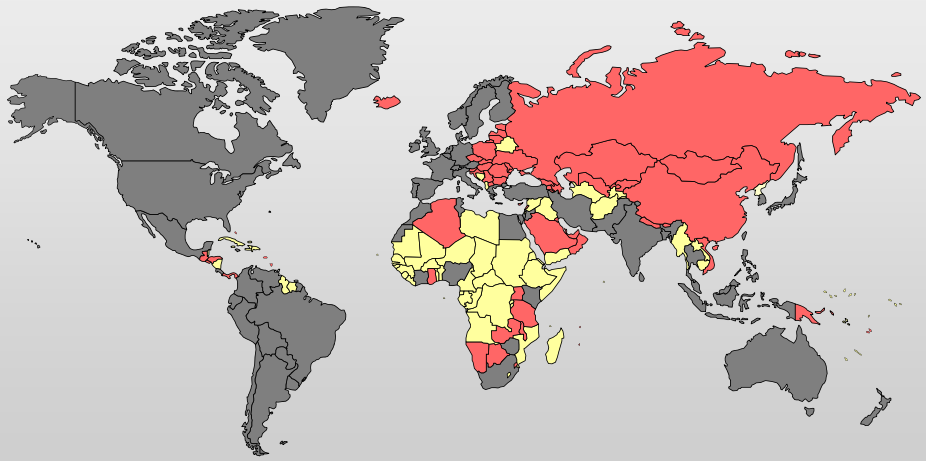
Countries with exchanges by 1980 | Risk set in 1980 | Exchanges created since 1980

The Geographic Spread of Stock Markets, 1995



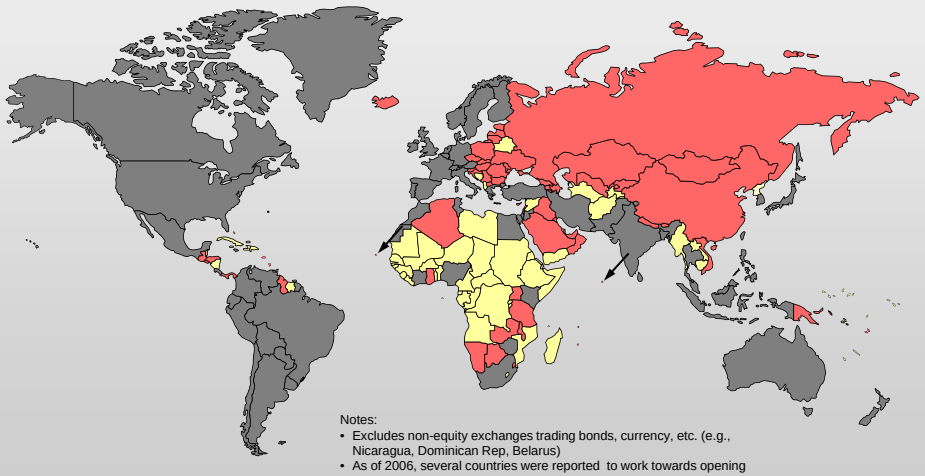
Countries with exchanges by 1980 | Risk set in 1980 | Exchanges created since 1980

The Geographic Spread of Stock Markets, 2000



Countries with exchanges by 1980 | Risk set in 1980 | Exchanges created since 1980

The Geographic Spread of Stock Markets, 2005



Notes:
- Excludes non-equity exchanges trading bonds, currency, etc. (e.g., Nicaragua, Dominican Rep, Belarus)
- As of 2006, several countries were reported to work towards opening exchanges, inc., Lao, Cambodia, Libya, Suriname, Albania, Afghanistan , Syria, Bosnia

Countries with exchanges by 1980 | Risk set in 1980 | Exchanges created since 1980

The World of Stock Markets, 1980

The World of Stock Markets, 2005

Overview

1. **Motivation and Executive Summary**
2. **Context: Financial Markets and Economic Development**
3. **Theory: Decoupling in Global Institutional Processes**
4. **Hypotheses and Methods**
5. **Findings: Formal Adoption and Vibrancy of Markets**
6. **Implications and Conclusions**

Sources of Variance in Market Creation and Vibrancy

Economic policy making from an institutional perspective

- Policy makers: includes state officials, civil society and private sector
- Policy process: formal adoption + actual enactment + ongoing development
- Policy impetus: audience legitimation + political interest + technical rationality
- Policy success: motivation + knowledge/resources
- Parallel to organizational level, e.g., TQM, stock buy-backs, recycling

The structure of external influences cause variance

- Many policies and practices originate somewhere else
- Institutional channels ("carriers" – Scott, 2003) expose some policy makers at some stage of the process to more external influence than others
  - Actors outside of a country's polity serve as idea givers, evaluating audiences, social referents, rivals, professional experts and resource holders
  - Variation in: the "infectiousness" or power of others, the "susceptibility" of policy participants in the country, and the "proximity" or connection between the focal country and potential influencers
    - e.g., China and Vietnam influence Cambodian policy makes more than Namibia

Formal Policy Adoption vs. Enactment and Vibrancy

Decoupling of formal policy change from enactment

- Compared to effective implementation, formal adoption
  - requires narrower participation, e.g. only government
  - requires episodic rather than sustained effort, e.g. limited program
  - is easier to monitor from the outside, e.g., compliance check lists
  - has fewer repercussions in other policy areas
  - requires less tacit knowledge and experience

Different institutional mechanisms, different outcomes

(Lee & Strang, 2006; Simmons, Dobbin & Garrett, 2006)

- Coercion
- Competition
- Learning
- Emulation

Overview

1. **Motivation and Executive Summary**
2. **Context: Financial Markets and Economic Development**
3. **Theory: Decoupling in Global Institutional Processes**
4. **Hypotheses and Methods**
5. **Findings: Formal Adoption and Vibrancy of Markets**
6. **Implications and Conclusions**

Baseline Hypothesis

Domestic propensity

- Fit between the new policy and national institutional endowment (North, 1990)
  - Two countries may behave similarly not because they influence each other or are exposed to a same third party, but because they share the same features, e.g., due to a common history that increases adoption propensity
  - Policies are adopted and implemented when they fit domestic institutions
  - In this context, institutions compatible with financial markets:
    - Influence of colonial power (legal system, policy traditions, etc.): France vs. UK
    - Religion: Protestant commercial ethic
    - Political system: Democracy allows self-governing private interests
    - Ruling elite ideology: Socialist party and head of state ideology
- The influence of these factors is pervasive (many actors, durable, tacit)

H1: Countries with domestic institutions compatible with stock markets are more likely to create markets, and achieve market vibrancy (less ceremonial).

External Influence Hypotheses

	Variables	Mechanisms	Adoption Prediction	Vibrancy Prediction
H2: Coercion	IMF/WB concessional lending	Dependence on lending Conditionality on policy change Episodic projects Relationships focuses on state	+	-
H3: Competition	Trade competition with recent adopters (structural equivalence in imports/exports)	Attention and rivalry Ongoing, broad relations But limited tacit information sharing	+	-/+
H4: Learning	Trade with recent adopters Shared regional identity with recent adopters	Attention and communication Ongoing, broad relations Voluntary beneficial exchange	+	+
H5: Emulation	World system centrality (compound, trade) Local professional finance associations	Status-based imitation Normative authority of professions	+	-

Data and Analysis

Population, Sample, Data

- Population of independent countries without exchanges in 1980 (N=113)
- Adoption event = Legal incorporation with regulation in place for equities trading
- Vibrancy = number of companies listed, market capitalization as % GDP
- Independent & control variables: various sources (UN, IMF, and economic political databases)

Models and Estimation

- Proportional hazard models of exchange adoption
- GEE for vibrancy, with conditions in adoption year as predictors
- ML estimation of spatial autoregressive (SAR) models for vibrancy
- AR(1) autoregressive error specifications

Controls And Robustness Tests

Control variables

- Country factors: population, former Soviet country
- Time period: pre and post 1989
- Economic: GDP/capita, GDP growth, trade openness, market liberalization
- Development of financial system: capital account balance, domestic credit

Alternative specifications and sensitivity analyses

- Selection for being in the risk set, receiving IMF/WB aid and having a professional finance association
- Extension of time period to earlier years, different country samples, jackknifed and bootstrapped estimations
- Shared frailty and cluster by country, alternative lag structures for prior adoption events, infectiousness weights for prior adopters' economic performance
- Alternative legal and colonial dummies; alternative controls for financial development, economic openness, offshore financial activity

Overview

1. Motivation and Executive Summary
2. Context: Financial Markets and Economic Development
3. Theory: Decoupling in Global Institutional Processes
4. Hypotheses and Methods
5. Findings: Formal Adoption and Vibrancy of Markets
6. Implications and Conclusions

Panel 3a: Time to Adoption, 75 Country Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ln(Population)	0.157	0.143	0.233	0.164	0.163	-0.018	-0.033	-0.017	-0.339	-0.258	-0.791
	(0.179)	(0.169)	(0.196)	(0.185)	(0.174)	(0.165)	(0.164)	(0.232)	(0.298)	(0.299)	(0.495)
Ln(GDP/capita)	0.372**	0.359**	0.421***	0.445***	0.443***	0.156	0.137	0.352**	0.086	0.163	-0.255
	(0.150)	(0.153)	(0.141)	(0.153)	(0.148)	(0.137)	(0.145)	(0.172)	(0.229)	(0.185)	(0.336)
GDP Growth (%)	0.018	0.02	0.016	0.021	0.025	0.047	0.047	0.017	0.01	0.054*	0.063**
	(0.028)	(0.024)	(0.025)	(0.030)	(0.030)	(0.029)	(0.029)	(0.027)	(0.028)	(0.030)	(0.031)
Time strata (1990s = 1)	1.546	1.461	1.256	1.539	1.596*	0.573	0.642	1.730*	1.830**	0.581	0.952
	(0.954)	(0.966)	(0.965)	(0.946)	(0.963)	(1.016)	(1.011)	(0.933)	(0.926)	(1.079)	(1.194)
Former Soviet block	1.651***	1.156***	1.020**	1.766***	1.573***	-1.077	-1.067	1.894***	1.848***	-1.737**	-1.446*
	(0.439)	(0.424)	(0.464)	(0.441)	(0.449)	(0.878)	(0.888)	(0.425)	(0.445)	(0.802)	(0.871)
Trade openess [Ln(Trade/GDP)]	0.461	0.09	0.17	0.406	0.447	0.256	0.213	0.017	-0.262	-0.738	-1.215*
	(0.458)	(0.458)	(0.480)	(0.477)	(0.432)	(0.427)	(0.432)	(0.451)	(0.458)	(0.525)	(0.723)
Capital account balance / GDP	-0.527	-0.35	-0.444	-0.556	-0.601	-0.683	-0.728	-0.529	-0.593	-0.891	-0.961
	(0.813)	(0.413)	(0.555)	(0.841)	(0.916)	(1.047)	(1.077)	(0.803)	(0.841)	(0.894)	(0.917)
Ln(Domestic Credit / GDP)	0.198	0.153	0.1	0.193	0.206	0.082	0.085	0.084	0.042	-0.274	-0.277
	(0.237)	(0.190)	(0.139)	(0.239)	(0.207)	(0.111)	(0.111)	(0.251)	(0.187)	(0.197)	(0.257)
Protestant religion [% of population in 1980)		0.015*	0.007							0.001	-0.002
		(0.008)	(0.009)							(0.009)	(0.012)
Former French colony or protectorate		-2.668**	-2.449**							-2.610**	-2.434*
		(1.091)	(1.107)							(1.125)	(1.292)
Level of democracy			0.041								0.009
			(0.032)								(0.039)
Ideology of ruling party (left leaning)			-0.125								-0.14
			(0.125)								(0.177)
IMF/WB concessional aid / GDP				0.178***						0.172***	0.193***
				(0.043)						(0.045)	(0.053)
Prior adoptions, weighted by trade competition, t-1					0.025						0.037**
					(0.010)						(0.018)
Adoption events within region, t-1						0.683***	0.668***			0.914***	0.974***
						(0.202)	(0.203)			(0.203)	(0.209)
Regional cumulative adoption [%], t-1						2.073	1.911			3.328**	2.253
						(1.341)	(1.386)			(1.435)	(1.535)
Number of nations in regional risk set, t-1						-0.054**	-0.057**			-0.057**	-0.063**
						(0.025)	(0.025)			(0.024)	(0.032)
Prior adoptions, weighted by trade cohesion, t-1							-1.336				1.284
							(1.068)				(2.796)
World-system position: Semi-periphery								-2.187**	-2.175**	-4.258***	-5.026**
								(0.911)	(0.961)	(1.334)	(2.423)
World-system position: Periphery								-1.505	-1.263	-1.776	-1.424
								(0.920)	(0.919)	(1.131)	(1.552)
International Professional Finance Association								0.683*	0.725*	0.456	0.939*
								(0.404)	(0.397)	(0.531)	(0.563)
World-system position: Centrality in trade network									0.081*		0.148**
									(0.046)		(0.065)
Observations	869	869	869	869	869	869	869	869	869	869	869
Countries	75	75	75	75	75	75	75	75	75	75	75
Adoptions	35	35	35	35	35	35	35	35	35	35	35
Log likelihood	-108.5	-99.79	-98.02	-106.51	-107.23	-96.94	-96.74	-105.27	-104.34	-82.77	-78.83
Wald chi2	44.88	60.82	69	50.78	50.37	57.73	60.06	71.37	84.11	123.19	145.4
Pseudo R2	0.12	0.19	0.21	0.14	0.13	0.21	0.22	0.15	0.15	0.33	0.36

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Domestic institutional factors

Coercion

Competition

Learning

Emulation

Panel 3b: Time to Adoption, Variable Sample Sizes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ln(Population)	0.352***	0.429***	0.195	0.361***	0.408***	0.316***	0.253**	0.287**	0.310**	0.404***	-0.791
	(0.091)	(0.092)	(0.166)	(0.095)	(0.115)	(0.087)	(0.100)	(0.120)	(0.151)	(0.136)	(0.495)
Ln(GDP/capita)	0.548***	0.538***	0.526***	0.635***	0.471***	0.430***	0.134	0.495***	0.491**	0.493***	-0.255
	(0.146)	(0.143)	(0.141)	(0.149)	(0.159)	(0.132)	(0.132)	(0.180)	(0.197)	(0.183)	(0.336)
GDP Growth (%)	0.009	0.008	0.007	0.007	0.02	0.02	0.04	0.009	0.005	0.019	0.063**
	(0.013)	(0.013)	(0.015)	(0.013)	(0.028)	(0.012)	(0.028)	(0.012)	(0.013)	(0.013)	(0.031)
Time strata (1990s = 1)	1.307	1.225	1.023	1.317	1.558*	0.674	0.556	1.496*	1.549*	0.732	0.952
	(0.839)	(0.853)	(0.870)	(0.835)	(0.944)	(0.870)	(1.000)	(0.839)	(0.847)	(0.880)	(1.194)
Former Soviet block	1.359***	0.949**	0.798*	1.416***	1.489***	-0.329	-0.947	1.558***	1.719***	-0.614	-1.446*
	(0.375)	(0.381)	(0.412)	(0.367)	(0.458)	(0.618)	(0.960)	(0.357)	(0.379)	(0.627)	(0.871)
Trade openess [Ln(Trade/GDP)]	0.275	0.192	-0.105	0.242	0.692	0.352	0.585	0.102	0.061	0.065	-1.215*
	(0.374)	(0.365)	(0.412)	(0.386)	(0.447)	(0.364)	(0.418)	(0.354)	(0.370)	(0.350)	(0.723)
Capital account balance / GDP	-1.085***	-0.946***	-0.832	-1.119***	-1.099	-1.120***	-1.653	-1.050***	-1.020**	-1.013***	-0.961
	(0.369)	(0.332)	(0.599)	(0.371)	(0.980)	(0.421)	(1.445)	(0.377)	(0.404)	(0.377)	(0.917)
Ln(Domestic Credit / GDP)	0.193	0.148	0.151	0.182	0.129	0.123	0.078	0.121	0.168	0.02	-0.277
	(0.182)	(0.147)	(0.165)	(0.185)	(0.134)	(0.133)	(0.093)	(0.184)	(0.220)	(0.166)	(0.257)
Protestant religion [% of population in 1980)		0.01	0.007							0.005	-0.002
		(0.006)	(0.009)							(0.008)	(0.012)
Former French colony or protectorate		-2.007***	-2.570**							-1.921***	-2.434*
		(0.712)	(1.044)							(0.675)	(1.292)
Level of democracy			0.054*								0.009
			(0.028)								(0.039)
Ideology of ruling party (left leaning)			-0.076								-0.14
			(0.096)								(0.177)
IMF/WB concessional aid / GDP				0.202***						0.147***	0.193***
				(0.039)						(0.045)	(0.053)
Prior adoptions, weighted by trade competition, t-1					0.022						0.037**
					(0.017)						(0.018)
Adoption events within region, t-1						0.478***	0.729***			0.480***	0.974***
						(0.127)	(0.229)			(0.128)	(0.209)
Regional cumulative adoption [%], t-1						0.262	2.369*			0.62	2.253
						(1.072)	(1.257)			(1.050)	(1.535)
Number of nations in regional risk set, t-1						-0.030*	-0.034*			-0.029	-0.063**
						(0.018)	(0.019)			(0.019)	(0.032)
Prior adoptions, weighted by trade cohesion, t-1							-1.261				1.284
							(2.057)				(2.796)
World-system position: Semi-periphery								-0.985	-0.765	-0.583	-5.026**
								(0.713)	(0.713)	(0.873)	(2.423)
World-system position: Periphery								-0.711	-0.485	0.282	-1.424
								(0.665)	(0.707)	(0.847)	(1.552)
International Professional Finance Association								0.707*	0.806**	0.247	0.939*
								(0.385)	(0.397)	(0.422)	(0.563)
World-system position: Centrality in trade network									0.005		0.148**
									(0.024)		(0.065)
Observations	1916	1916	1405	1916	1275	1916	1275	1916	1832	1916	869
Countries	113	113	94	113	96	113	96	113	108	113	75
Adoptions	51	51	48	51	36	51	36	51	48	51	35
Log likelihood	-190.7	-183.45	-154.1	-187.78	-119.89	-180.85	-108.81	-188.22	-171.52	-170.41	-78.83
Wald chi2	66.28	98.55	72.32	91.12	72.68	90.7	82.03	110.35	110.28	158.75	145.4
Pseudo R2	0.13	0.16	0.2	0.14	0.15	0.17	0.23	0.14	0.16	0.22	0.36

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Robust population averaged GEE models of exchange vibrancy with AR(1)

	Panel 4a: Domestic Companies Listed			Panel 4b: Market Capitalization		
	(1)	(2)	(3)	(1)	(2)	(3)
Equity market liberalized to foreigners	0.138	0.046	-0.170**	0.196	-0.001	-0.170**
	(0.248)	(0.258)	(0.077)	(0.167)	(0.192)	(0.077)
Years since exchange creation	0.105***	0.117***	0.109***	0.134***	0.154***	0.109***
	(0.021)	(0.023)	(0.028)	(0.026)	(0.027)	(0.028)
Ln(Population)	0.322***	0.323***	0.324	0.09	0.027	0.324
	(0.069)	(0.113)	(0.243)	(0.098)	(0.144)	(0.243)
Ln(GDP/capita)	0.247**	0.196*	0.326	0.550***	0.467***	0.326
	(0.117)	(0.116)	(0.203)	(0.169)	(0.160)	(0.203)
GDP Growth (%)	0.011	0.011	-0.008	0.027*	0.029*	-0.008
	(0.011)	(0.010)	(0.008)	(0.016)	(0.015)	(0.008)
Time strata (1990s = 1)	0.165***	0.182***	0.208**	0.135	0.149*	0.208**
	(0.057)	(0.061)	(0.083)	(0.086)	(0.085)	(0.083)
Former Soviet block	0.319	0.248	0.197	-1.136***	-1.480***	0.197
	(0.274)	(0.289)	(0.346)	(0.328)	(0.490)	(0.346)
Trade openess [Ln(Trade/GDP)]	-0.142	-0.182	-0.447	0.504*	0.29	-0.447
	(0.289)	(0.281)	(0.447)	(0.298)	(0.272)	(0.447)
Capital account balance / GDP	0.013	-0.016	0.105**	-0.206	-0.231	0.105**
	(0.059)	(0.067)	(0.046)	(0.198)	(0.205)	(0.046)
Ln(Domestic Credit / GDP)	0.082	0.083	0.126***	0.084	0.064	0.126***
	(0.052)	(0.060)	(0.027)	(0.108)	(0.093)	(0.027)
Protestant religion [% of population in 1980)	-0.010**	-0.008*	-0.005	0.008	0.014	-0.005
	(0.005)	(0.004)	(0.006)	(0.011)	(0.009)	(0.006)
Former French colony or protectorate	-1.202***	-1.514***	-0.477	-0.1	-0.252	-0.477
	(0.331)	(0.407)	(0.676)	(0.365)	(0.323)	(0.676)
IMF/WB concessional aid / GDP, t0		-0.530**	-0.362*		-0.058	-0.362
		(0.223)	(0.215)		(0.321)	(0.260)
Prior adoptions, weighted by trade competition, t0			-0.004			-0.004
			(0.009)			(0.009)
Adoptions within region, t0		-0.053	-0.068		0.132*	0.169*
		(0.058)	(0.129)		(0.075)	(0.100)
Regional cumulative adoption [%], t0		1.436**	1.512*		1.250*	1.512*
		(0.561)	(0.849)		(0.642)	(0.849)
Number of nations in regional risk set, t0		-0.021	-0.013		0.023	0.072
		(0.019)	(0.029)		(0.017)	(0.026)
Prior adoptions, weighted by trade cohesion, t0			1.176			1.176
			(2.032)			(2.032)
World-system position: Semi-periphery, t0		1.255**	1.764**		0.107	1.764**
		(0.636)	(0.857)		(0.503)	(0.857)
World-system position: Periphery, t0		0.274	0.467		-0.028	0.467
		(0.589)	(0.705)		(0.601)	(0.705)
International Professional Finance Association, t0		0.456*	0.790**		0.518**	0.790**
		(0.234)	(0.357)		(0.233)	(0.357)
World-system position: Centrality in trade network, t0			0.005			0.005
			(0.041)			(0.041)
Observations	581	581	371	520	520	371
Countries	51	51	34	49	49	34
Wald chi2	164.54	235.31	434.34	129.84	206.49	434.34

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Population averaged GEE panel regression models with robust standard errors and AR(1) errror structure.

at t_i

at t_0

Interdependence, Common Descent, Common Shock

Galton's Problem

- We want to distinguish similarities in outcomes due to correlated domestic factors (e.g., population size), common ancestry (e.g., common colonial history), similar stages of development (e.g., GDP/capita), parallel adaptations to common exogenous influences (e.g., IMF programs) or mutual influence and interdependence (e.g., trade diffusion)
- It is statistically difficult to attribute similarities to causes in comparative designs, and standard panel regression models are likely to yield biased estimates
- Spatial lag autoregressive models offer one solution (Franzese et al., 2006-8)
  - Specify N x N matrices of interdependence between countries (spatial proximity, such as region, trade, competition, etc)
  - Test the significance of these spatial weights together with other variables
  - Similar approach to heterogeneous diffusion models (Strang & Tuma, 1993) but allows for time-varying spatial structure
  - Assumption: spatial dimensions are exogenous (stock markets do not affect regional membership or trade)

Common origin, parallel adaptation

t_0 coeff. now isolate conditions at founding

Ongoing social influence

Companies listed	GEE			SAR region			SAR trade cohesion			SAR trade competition		
Panel 4a. Domestic Companies Listed	GEE Population Averaged			Spatial Lag SAR (Region)			Spatial Lag SAR (Trade Cohesion)			Spatial Lag SAR (Trade Competition)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Equity market liberalized to foreigners	0.138	0.046	-0.170**	0.339***	0.068	-0.047	0.253***	0.005	-0.058	0.390***	0.009	-0.139
	(0.248)	(0.258)	(0.077)	(0.107)	(0.121)	(0.147)	(0.078)	(0.083)	(0.093)	(0.103)	(0.180)	(0.248)
Years since exchange creation	0.105***	0.117***	0.109***	0.051***	0.061**	0.054***	0.043***	0.054***	0.043***	0.066***	0.120***	0.102
	(0.021)	(0.023)	(0.028)	(0.010)	(0.013)	(0.014)	(0.008)	(0.009)	(0.014)	(0.012)	(0.019)	(0.069)
Ln(Population)	0.322***	0.323***	0.324	0.241***	0.271***	0.346***	0.223***	0.223***	0.215***	0.343***	0.502***	0.508
	(0.069)	(0.113)	(0.243)	(0.034)	(0.059)	(0.098)	(0.031)	(0.039)	(0.048)	(0.041)	(0.086)	(0.358)
Ln(GDP/capita)	0.247**	0.196*	0.326	0.093*	0.038*	0.085	0.120***	0.076*	0.063	0.184***	0.174**	0.149
	(0.117)	(0.116)	(0.203)	(0.050)	(0.059)	(0.084)	(0.039)	(0.039)	(0.050)	(0.057)	(0.086)	(0.163)
GDP Growth (%)	0.011	0.011	-0.008	0.015	0.021**	0.005	0.015**	0.018***	0.004	0.024**	0.040***	0.009
	(0.011)	(0.010)	(0.008)	(0.009)	(0.009)	(0.011)	(0.007)	(0.006)	(0.008)	(0.010)	(0.014)	(0.019)
Time strata (1990s = 1)	0.165***	0.182***	0.208**	0.280***	0.259**	0.156	0.136*	0.143**	0.091	0.211**	0.316**	0.208
	(0.057)	(0.061)	(0.083)	(0.098)	(0.101)	(0.106)	(0.071)	(0.069)	(0.070)	(0.107)	(0.153)	(0.219)
Former Soviet block	0.319	0.248	0.197	0.249***	0.139	-0.179	0.318***	-0.037	-0.191	0.490***	-0.088	-0.468
	(0.274)	(0.289)	(0.346)	(0.091)	(0.196)	(0.248)	(0.080)	(0.134)	(0.178)	(0.104)	(0.299)	(0.477)
Trade openess [Ln(Trade/GDP)]	-0.142	-0.182	-0.447	-0.079	-0.090	-0.068	0.050	0.049	-0.098	0.076	0.114	-0.227
	(0.289)	(0.281)	(0.447)	(0.157)	(0.161)	(0.222)	(0.119)	(0.107)	(0.167)	(0.145)	(0.162)	(0.379)
Capital account balance / GDP	0.013	-0.016	0.105**	-0.461**	-0.491**	-0.750***	-0.400***	-0.415***	-0.586***	-0.616***	-0.931**	-1.388
	(0.059)	(0.067)	(0.046)	(0.207)	(0.208)	(0.210)	(0.150)	(0.142)	(0.203)	(0.220)	(0.313)	(0.937)
Ln(Domestic Credit / GDP)	0.082	0.083	0.126***	0.147**	0.089*	0.229***	0.143***	0.047	0.159*	0.220***	0.103	0.376
	(0.057)	(0.060)	(0.037)	(0.068)	(0.073)	(0.080)	(0.051)	(0.050)	(0.082)	(0.064)	(0.110)	(0.278)
Protestant religion [% of population in 1980)	-0.010**	-0.008*	-0.005	-0.006***	-0.002	0.003	-0.007***	-0.003	0.001	-0.012***	-0.005*	0.002
	(0.005)	(0.004)	(0.006)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)
Former French colony or protectorate	-1.202***	-1.514***	-0.477	-1.568***	-1.627***	-1.033*	-0.935***	-0.868***	-0.869**	-1.440***	-1.955***	-2.065
	(0.331)	(0.407)	(0.676)	(0.335)	(0.331)	(0.612)	(0.238)	(0.226)	(0.448)	(0.309)	(0.478)	(1.702)
IMF/WB concessional aid / GDP, t0		-0.530**	-0.362*		-0.466***	-0.543***		-0.269***	-0.342***		-0.606***	-0.807
		(0.223)	(0.215)		(0.123)	(0.141)		(0.084)	(0.128)		(0.181)	(0.561)
Prior adoptions, weighted by trade competition, t0			-0.004			-0.005			-0.002			-0.005
			(0.009)			(0.005)			(0.003)			(0.008)
Adoptions within region, t0		-0.053	-0.068		-0.026	0.038		0.017	0.052*		0.037	0.125
		(0.058)	(0.129)		(0.025)	(0.037)		(0.017)	(0.031)		(0.036)	(0.095)
Regional cumulative adoption [%], t0		1.436*	1.512*		0.745**	0.813**		0.714***	0.661***		1.603***	1.564
		(0.561)	(0.849)		(0.310)	(0.380)		(0.211)	(0.251)		(0.472)	(1.157)
Number of nations in regional risk set, t0		-0.021	-0.013		0.001	0.015*		-0.008*	0.007		-0.018*	0.016
		(0.019)	(0.029)		(0.007)	(0.009)		(0.004)	(0.005)		(0.010)	(0.017)
Prior adoptions, weighted by trade cohesion, t0			1.176			1.533*			1.051*			2.482
			(2.032)			(0.906)			(0.618)			(2.200)
World-system position: Semi-periphery, t0		1.255**	1.764**		1.148***	2.239***		0.833***	1.235***		1.427***	2.933
		(0.636)	(0.857)		(0.253)	(0.331)		(0.172)	(0.296)		(0.384)	(1.909)
World-system position: Periphery, t0		0.274	0.467		0.289	0.574**		0.054	0.345**		0.128	0.835
		(0.589)	(0.705)		(0.257)	(0.284)		(0.172)	(0.169)		(0.363)	(0.673)
International Professional Finance Association, t0		0.456*	0.790**		0.373***	0.580***		0.216***	0.418***		0.489***	0.989
		(0.234)	(0.357)		(0.106)	(0.127)		(0.073)	(0.149)		(0.157)	(0.656)
World-system position: Centrality in trade network, t0			0.005			0.005			0.018			0.044
			(0.042)			(0.042)			(0.018)			(0.039)
Spatial AR				0.559***	0.496***	0.383***	0.374***	0.374***	0.374**	0.037	0.402**	0.475
				(0.136)	(0.056)	(0.065)	(0.008)	(0.008)	(0.168)	(0.055)	(0.084)	(0.937)
Observations	581	581	371	581	581	371	581	581	371	581	581	371
Countries	51	51	34	51	51	34	51	51	34	51	51	34
Wald chi2 | Log likelihood	164.54	235.31	434.34	-715.37	-685.14	-409.96	-763.57	-715.92	-419.71	-763.91	-716.45	-419.80
R square				0.418	0.498	0.522	0.390	0.467	0.538	0.395	0.477	0.536

Standard errors in parentheses. Robust standard errors for GEE regressions.
* significant at 10%; ** significant at 5%; *** significant at 1%
AR(1) temporal error structure specified. Spatial autoregressive models ("spatial lag" models, Franzese & Hays, 2007) use region,trade cohesion and trade competition as respective W weights

Common origin, parallel adaptation

t_0 coeff. now isolate conditions at founding

Ongoing social influence

Market Capitalization	GEE			SAR region			SAR trade cohesion			SAR trade competition		
Panel 4b. Market capitalization	GEE Population Averaged			Spatial Lag SAR (Region)			Spatial Lag SAR (Trade Cohesion)			Spatial Lag SAR (Trade Competition)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Equity market liberalized to foreigners	0.196	-0.001	-0.170**	-0.109	-0.304**	-0.328**	0.12178	-0.177**	-0.209**	0.042	-0.057**	-0.067
	(0.167)	(0.192)	(0.077)	(0.116)	(0.130)	(0.166)	0.079	(0.087)	(0.101)	(0.028)	(0.028)	(0.049)
Years since exchange creation	0.134***	0.154***	0.109***	0.063***	0.093***	0.111***	0.054***	0.083***	0.086***	0.018***	0.026***	0.026*
	(0.026)	(0.027)	(0.028)	(0.013)	(0.013)	(0.017)	0.009	(0.009)	(0.012)	(0.003)	(0.003)	(0.015)
Ln(Population)	0.09	0.027	0.324	0.180***	0.205***	0.407***	0.141***	0.134***	0.246***	0.049***	0.044***	0.078*
	(0.098)	(0.144)	(0.243)	(0.019)	(0.020)	(0.115)	0.019	(0.013)	(0.059)	(0.003)	(0.005)	(0.047)
Ln(GDP/capita)	0.550***	0.467***	0.326	0.366***	0.395***	0.490***	0.346***	0.328***	0.353***	0.122***	0.107***	0.113*
	(0.169)	(0.160)	(0.203)	(0.050)	(0.053)	(0.105)	0.032	(0.037)	(0.055)	(0.014)	(0.013)	(0.062)
GDP Growth (%)	0.027*	0.029*	-0.008	0.036***	0.038***	0.007	0.020***	0.023***	0.003	0.007***	0.007***	0.001
	(0.016)	(0.015)	(0.008)	(0.011)	(0.011)	(0.013)	0.008	(0.007)	(0.009)	(0.003)	(0.002)	(0.003)
Time strata (1990s = 1)	0.135	0.149*	0.208**	0.204*	0.285***	0.135	0.04017	0.163**	0.075	0.012	0.051**	0.021
	(0.086)	(0.085)	(0.083)	(0.108)	(0.109)	(0.120)	0.075	(0.073)	(0.077)	(0.026)	(0.024)	(0.028)
Former Soviet block	-1.136***	-1.480***	0.197	-0.343**	-0.163	0.522*	-0.783***	-0.472***	0.104	-0.275***	-0.154***	0.023
	(0.328)	(0.490)	(0.346)	(0.149)	(0.212)	(0.286)	0.082	(0.149)	(0.180)	(0.031)	(0.048)	(0.060)
Trade openess [Ln(Trade/GDP)]	0.504*	0.29	-0.447	0.724***	0.545***	0.997***	0.596***	0.375***	0.599***	0.209***	0.123***	0.193*
	(0.298)	(0.272)	(0.447)	(0.035)	(0.121)	(0.249)	0.058	(0.080)	(0.132)	(0.017)	(0.027)	(0.112)
Capital account balance / GDP	-0.206	-0.231	0.105**	-0.138	-0.290	0.071	0.014448	-0.183	0.031	0.005	-0.059	0.008
	(0.198)	(0.205)	(0.046)	(0.232)	(0.235)	(0.230)	0.164	(0.158)	(0.151)	(0.057)	(0.051)	(0.048)
Ln(Domestic Credit / GDP)	0.084	0.064	0.126***	0.147**	0.255***	0.186*	0.06237	0.159***	0.108*	0.021	0.051***	0.034
	(0.108)	(0.093)	(0.037)	(0.072)	(0.078)	(0.096)	0.052	(0.053)	(0.068)	(0.018)	(0.017)	(0.027)
Protestant religion [% of population in 1980)	0.008	0.014	-0.005	0.005**	0.004	0.010***	0.000631	0.000	0.005***	0.000	0.000	0.002
	(0.011)	(0.009)	(0.006)	(0.002)	(0.003)	(0.003)	0.002	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Former French colony or protectorate	-0.100	-0.252	-0.477	-0.576	-0.641*	-0.735	-0.205	-0.219	-0.462	-0.073	-0.073	-0.155
	(0.365)	(0.323)	(0.676)	(0.361)	(0.371)	(0.764)	0.254	(0.250)	(0.491)	(0.089)	(0.081)	(0.176)
IMF/WB concessional aid / GDP, t0		-0.058	-0.362		-0.075	-0.512***		-0.018	-0.327***		-0.006	-0.103*
		(0.321)	(0.260)		(0.135)	(0.157)		(0.091)	(0.107)		(0.029)	(0.063)
Prior adoptions, weighted by trade competition, t0			-0.004			0.010*			0.009***			0.002*
			(0.009)			(0.006)			(0.004)			(0.002)
Adoptions within region, t0		0.132*	0.169*		0.035*	0.054*		0.047***	0.010*		0.015***	0.003
		(0.075)	(0.100)		(0.021)	(0.031)		(0.018)	(0.006)		(0.006)	(0.006)
Regional cumulative adoption [%], t0		1.250*	1.512*		0.294	1.336***		0.495***	1.044***		0.160**	0.334*
		(0.642)	(0.849)		(0.331)	(0.430)		(0.225)	(0.254)		(0.073)	(0.195)
Number of nations in regional risk set, t0		0.023	0.072		0.022***	0.075***		0.021***	0.053***		0.007***	0.016*
		(0.017)	(0.026)		(0.007)	(0.010)		(0.005)	(0.006)		(0.002)	(0.009)
Prior adoptions, weighted by trade cohesion, t0			1.176			7.958***			5.331***			1.696*
			(2.032)			(1.133)			(0.679)			(0.915)
World-system position: Semi-periphery, t0		0.107	1.764**		0.346	0.542		0.184	0.265		0.061	0.094
		(0.503)	(0.857)		(0.249)	(0.368)		(0.166)	(0.229)		(0.054)	(0.088)
World-system position: Periphery, t0		-0.028	0.467		0.307	0.068		0.123	0.048		0.042	0.026
		(0.601)	(0.705)		(0.205)	(0.316)		(0.138)	(0.205)		(0.045)	(0.066)
International Professional Finance Association, t0		0.518**	0.790**		0.448***	0.722***		0.356***	0.548***		0.116***	0.175*
		(0.233)	(0.357)		(0.119)	(0.146)		(0.081)	(0.116)		(0.026)	(0.096)
World-system position: Centrality in trade network, t0			0.005			-0.011			0.002			0.001
			(0.042)			(0.022)			(0.015)			(0.014)
Spatial AR				0.541***	0.421***	0.265***	0.374***	0.374***	0.374**	0.781***	0.797***	0.800***
				(0.052)	(0.047)	(0.078)	0.010	(0.010)	(0.068)	0.006	(0.007)	(0.104)
Observations	520	520	371	520	520	371	520	520	371	520	520	371
Countries	49	49	34	49	49	34	49	49	34	49	49	34
Wald chi2 | Log likelihood	129.84	206.49	434.34	-691.42	-674.39	-400.96	-731.96	-691.85	-405.52	-728.27	-687.69	-401.93
R squared				0.456	0.541	0.632	0.487	0.555	0.643	0.477	0.556	0.645

Standard errors in parentheses. Robust standard errors for GEE models.
* significant at 10%; ** significant at 5%; *** significant at 1%
AR(1) temporal error structure specified. Spatial autoregressive models ("spatial lag" models, Franzese & Hays, 2007) use region,trade cohesion and trade competition as respective W weights

Summary of Results

	Variables	Mechanisms	Adoption Prediction	Vibrancy Prediction
H1: Domestic Institutions	~~Protestantism,~~ French colonial legacy, ~~level of democracy, ruling party left ideology~~	Fit with existing domestic institutions	+ ✓	+ ✓
H2: Coercion	IMF/WB concessional lending	Dependence on lending Conditionality on policy change Episodic projects Relationships focuses on state	+ ✓	- ✓
H3: Competition	Trade competition with recent adopters (structural equivalence in imports/exports)	Attention and rivalry Ongoing, broad relations But limited tacit information sharing	+ ✓	~~+~~/+ ✓
H4: Learning	(Trade with recent adopters) Shared regional identity with recent adopters	Attention and communication Ongoing, broad relations Voluntary beneficial exchange	+ ✓	+ ✓
H5: Emulation	(World system centrality) (compound, trade) Local professional finance associations	Status-based imitation Normative authority of professions	+ ✓	~~+~~ + ⊘

Overview

1. **Motivation and Executive Summary**
2. **Context: Financial Markets and Economic Development**
3. **Theory: Decoupling in Global Institutional Processes**
4. **Hypotheses and Methods**
5. **Findings: Formal Adoption and Vibrancy of Markets**
6. **Implications and Conclusions**

Conclusions

Institutional Theory:

- Not all "institutional" diffusion leads to ceremonial compliance
  -> evidence only for coercive channels
- Expanded model of policy making process
  -> distributed, multi-stage process of "adoption"

Economic Development Policies:

- Global financial institutions face problems in deploying policy programs
  -> IMF/WB projects effective for formal adoption, not vibrancy
  -> greater role for non-state actors in policy implementation
- Regional cooperation and international professional networks are the most effective carriers of "world society" type global integration
  -> similar to lessons from 'nation building' efforts in political institutions