DIGITAL TRANSFORMATION OF COMPETITIVE DYNAMICS: THE ROLE OF (LEGACY) INSTITUTIONS

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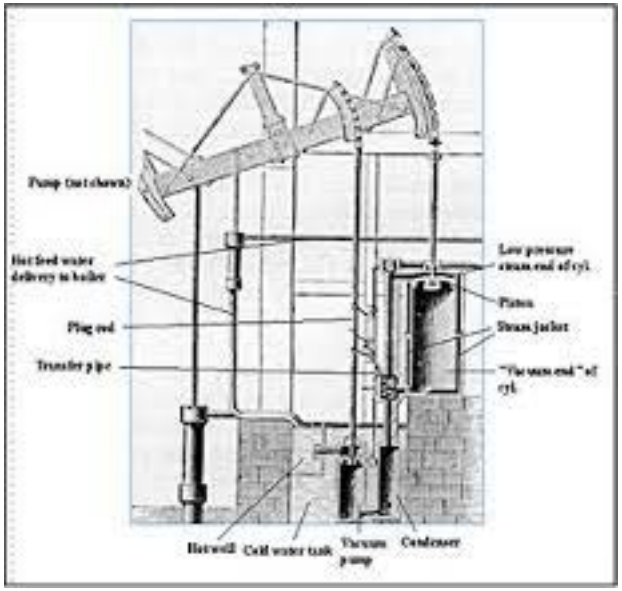
Three research areas

- Competitive dynamics in digital marketplaces
- Pioneering (dis)advantages and network effect
- Digital transformation of business models, risks and corporate governance

Digital technologies?

- Not fully captured by the extant technology classifications – e.g., General Purpose Technologies, Process technologies, Disruptive
- Focus on their transformational capabilities
  - Digitization
  - Efficiency
  - Connectivity
  - Automation
  - Trust disintermediation

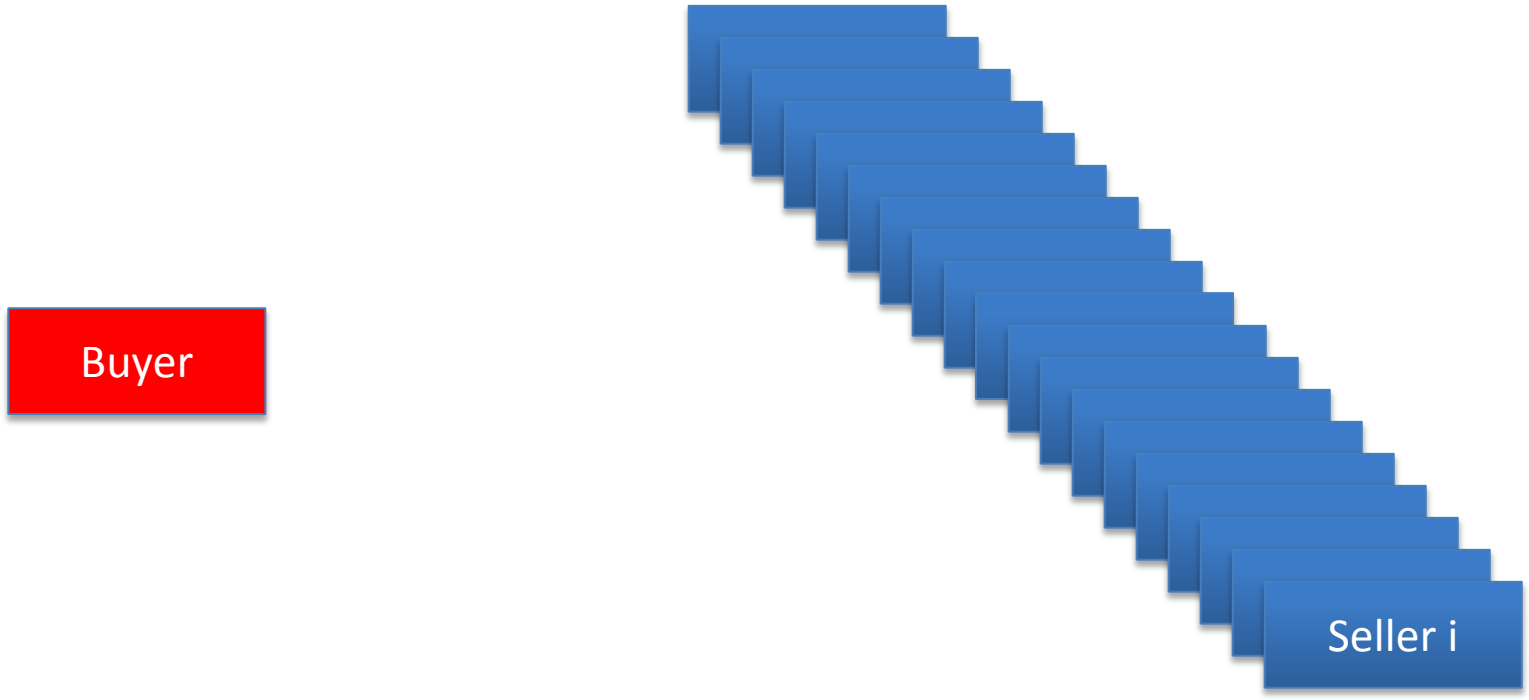

Pump (not shown)
Plug rod
Transfer pipe
Plates
Steam jacket
Hotwell
Cold water tank
Vacuum pump
Condenser

X

Three research areas

- **Competitive dynamics in digital marketplaces**
- Pioneering (dis)advantages and network effect
- Digital transformation of business models, risks and corporate governance

Why does buyer X contact seller Y?



i = 1 to…many!

Source: Lanzolla, Gianvito, and Hans TW Frankort. "The online shadow of offline signals: which sellers get contacted in online B2B marketplaces?." *Academy of Management Journal* 59.1 (2016): 207-231.

Available “solutions”

- Seller brand (e.g., Gulati & Garino 2000; Smith & Brynjolfsson 2001)
- Reputation systems (e.g., Dellarocas 2003; Diekmann et al. 2013)
- Certification systems (e.g., Pavlou & Gefen 2004)
- Spatial and social proximity (e.g., Sorenson & Stuart 2001; Zipf 1949)

- **…yet, there are several sellers that score similarly across these dimensions - i.e., the choice set can be huge!**

Existing solutions do not seem to fully explain buyer-seller dynamics in digital marketplaces

In online B2B marketplaces that enable spot sourcing, a fundamental decision criterion for a buyer is the *trading risk* associated with different sellers due to information asymmetry

1. The risk of receiving unreliable information
2. The risk that contacted sellers do not deliver products or services to specification once an order is placed
3. **Value appropriation risk – the likelihood of recovering potential losses**

Our complementary "solution"…

We develop and test an **Institutional signals** based set of explanations for *buyer-seller contact* in online B2B marketplaces that help extend understanding of how buyers distinguish between otherwise indistinguishable sellers.

Hypothesis 1. *The higher a* ***seller's local institutional quality****, the greater the likelihood that a buyer contacts that seller in an online B2B marketplace.*

Hypothesis 2. *The stronger the obligations and controls associated with the* ***legal status of a seller****, the greater the likelihood that a buyer contacts that seller in an online B2B marketplace.*

Buyer/Seller relative institutional signals do matter

Hypothesis 3*. The higher a seller's local institutional quality relative to a buyer, the greater the likelihood that the buyer contacts that seller in an online B2B marketplace.*

Hypothesis 4*. The stronger the obligations and controls associated with a seller's legal status relative to a buyer, the greater the likelihood that the buyer contacts that seller in an online B2B marketplace.*

Empirical setting

- 'Primary' longitudinal data on all 438 contacts (*requests for quotation*) initiated by buyers with sellers
- Choice set = 250
- 11,124 Italian companies; wide variation in legal forms and geographic locations
- Company identities verified by platform owner upon registration
- Buyers requesting quotations were located across 20 Italian provinces
- Contacted sellers were located across 66 Italian provinces, representing 24 distinct 2-digit SIC codes

- **Dependent variable:**

  *'*Request for quotation' ('1' if a buyer requests a quotation from a seller, and '0' otherwise)

- **Independent variables:**

- **Seller legal status** ('0' for no legal status reported; '1' for sole proprietorship; '2' for limited liability company; '3' for corporation)

- ***Institutional quality***
  - regional judicial efficiency and the concomitant ease of contractual enforcement (e.g., Djankov et al. 2003; Laeven & Woodruff 2007; Moretti 2014) and
  - the regional lack of corruption and organized crime (e.g., Daniele & Marani 2011; Mauro 1995; Peri 2004)

TABLE 3
Values for Institutional Quality by Italian Region[a]

	Institutional quality
Northern Italy:	*$\mu = 2.718$ $\sigma = 0.353$*
Piedmont	3.145
Trentino-Alto Adige/Südtirol	3.102
Friuli-Venezia Giulia	2.948
Lombardy	2.731
Emilia-Romagna	2.727
Veneto	2.637
Aosta Valley	2.252
Liguria	2.204
Central Italy:	*$\mu = 2.250$ $\sigma = 0.221$*
Umbria	2.423
Tuscany	2.389
Marche	2.251
Lazio	1.938
Southern Italy:	*$\mu = 0.912$ $\sigma = 0.540$*
Sardinia	1.486
Abruzzo	1.460
Molise	1.252
Campania	1.209
Apulia	0.925
Sicily	0.540
Basilicata	0.423
Calabria	0.000

a. Regions are listed in descending order of institutional quality within Northern, Central, and Southern Italy.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Model:	Controls	H1a/b	H2	H2	H3a	H3b	H3a	H3b
Buyer legal status	0.408+	0.383+	0.370+	0.378+	0.430+	0.409+	0.387+	0.386+
	[0.217]	[0.214]	[0.214]	[0.211]	[0.220]	[0.219]	[0.211]	[0.213]
Buyer institutional development	-0.011	-0.011	-0.011	-0.012+	-0.008	-0.009		
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]		
Same legal status	0.138	-0.079	-0.038	-0.068	-0.065	-0.095	-0.048	-0.081
	[0.132]	[0.174]	[0.170]	[0.171]	[0.170]	[0.176]	[0.169]	[0.174]
Same territory	0.739*	-0.657	-0.527	-0.541			-0.769	-0.614
	[0.316]	[0.556]	[0.618]	[0.560]			[0.512]	[0.589]
Same region	0.210	0.163	0.240	0.234	0.210	0.144	0.194	0.179
	[0.198]	[0.207]	[0.208]	[0.205]	[0.207]	[0.206]	[0.222]	[0.216]
Same province	0.469	0.678*	0.591+	0.684*	0.553+	0.658*	0.621+	0.695*
	[0.297]	[0.300]	[0.303]	[0.296]	[0.302]	[0.301]	[0.361]	[0.346]
Same SIC	1.013***	1.007***	1.019***	0.994***	1.040***	1.016***	1.039***	1.011***
	[0.154]	[0.154]	[0.155]	[0.153]	[0.157]	[0.154]	[0.156]	[0.153]
Prior contacts	0.112***	0.111***	0.107***	0.110***	0.108***	0.111***	0.108***	0.113***
	[0.021]	[0.021]	[0.020]	[0.020]	[0.020]	[0.021]	[0.020]	[0.021]
Autoregression control	1.219*	1.244*	1.239*	1.277*	1.262*	1.251*	1.238**	1.300*
	[0.553]	[0.560]	[0.585]	[0.571]	[0.582]	[0.562]	[0.525]	[0.520]
Seller legal status		0.212+	1.677***	2.459***	-0.018	0.219+	-0.121	0.298*
		[0.11]	[0.211]	[0.347]	[0.113]	[0.115]	[0.126]	[0.1]
Seller in North		1.09	1.68**	1.03**			1.35**	1.33
		[0.64]	[0.62]	[0.41]			[0.57]	[0.60]
Seller institutional development		0.008*	0.008*	0.049***	0.009**	0.008*		
		[0.003]	[0.003]	[0.007]	[0.003]	[0.003]		
Seller legal status × Seller in North			-1.710***					
			[0.219]					
Seller legal status × Seller inst. dev.				-0.019***				
				[0.003]				
North-South					-3.897***	-0.599+		
					[0.609]	[0.329]		
South-North					0.910	1.342		
					[0.869]	[0.986]		
Seller legal status × North-South					1.685***			
					[0.219]			
Seller legal status × South-North						-0.166		
						[0.218]		
Relative institutional development buyer > 0							-0.049***	-0.008
							[0.011]	[0.006]
Relative institutional development buyer < 0							0.012+	0.035**
							[0.006]	[0.013]
Seller legal status × Rel. inst. dev. buyer > 0							0.020***	
							[0.004]	
Seller legal status × Rel. inst. dev. buyer < 0								-0.012*
								[0.005]
Constant	-3.284**	-4.353***	-7.431***	-8.896***	-4.088***	-4.025***	-4.108***	-4.922***
	[1.178]	[1.137]	[1.325]	[1.369]	[1.145]	[1.154]	[0.748]	[0.753]
Log likelihood	-1,494.47	-1,486.12	-1,455.00	-1,461.67	-1,457.09	-1,487.12	-1,468.85	-1,483.51
Pseudo R-squared	0.56	0.56	0.57	0.57	0.57	0.56	0.56	0.56

Robust standard errors in brackets; *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. All tests are two-tailed.

	(4)	(5)	(6)	(7)	(8)
01	-0.297	-0.299	-0.292	-0.290	-0.259
7]	[0.269]	[0.268]	[0.267]	[0.263]	[0.263]
***	2.117***	2.081***	2.156***	2.110***	2.148***
1]	[0.429]	[0.422]	[0.432]	[0.423]	[0.432]
***	0.905***	0.955***	0.726***	0.890***	0.740***
3]	[0.195]	[0.203]	[0.186]	[0.197]	[0.187]
***	3.084***	3.109***	2.904***	3.090***	2.924***
8]	[0.348]	[0.358]	[0.339]	[0.351]	[0.339]
***	5.255***	5.300***	5.050***	5.232***	5.066***
5]	[0.318]	[0.324]	[0.303]	[0.317]	[0.305]
***	-5.352***	-5.336***	-5.285***	-5.348***	-5.288***
1]	[0.223]	[0.221]	[0.219]	[0.224]	[0.221]
3+	0.469+	0.530+	0.475+	0.507+	0.467+
4]	[0.271]	[0.275]	[0.273]	[0.274]	[0.272]
***	-1.096***	-1.055***	-1.082***	-1.076***	-1.089***
5]	[0.286]	[0.287]	[0.287]	[0.287]	[0.288]
]	[0.32]	[0.32]	0.189	0.178	0.151
]	[0.32]	[0.32]	[0.322]	[0.315]	[0.314]
3*	1.347*	1.288*	1.354*	1.335**	1.292**
7]	[0.548]	[0.566]	[0.561]	[0.488]	[0.482]
**	1.272**	1.328**	1.362**	1.337**	1.313**
5]	[0.451]	[0.481]	[0.480]	[0.453]	[0.450]
2	-0.198	-0.179	-0.170	-0.149	-0.172
7]	[0.485]	[0.507]	[0.509]	[0.479]	[0.478]
***	-2.794***	-2.823***	-2.780***	-2.801***	-2.776***
6]	[0.285]	[0.287]	[0.282]	[0.280]	[0.279]
***	-2.757***	-2.775***	-2.715***	-2.747***	-2.726***
7]	[0.266]	[0.267]	[0.264]	[0.263]	[0.263]
***	-2.153***	-2.136***	-2.148***	-2.122***	-2.162***
9]	[0.310]	[0.310]	[0.312]	[0.306]	[0.312]
***	-2.596***	-2.567***	-2.670***	-2.504***	-2.650***
1]	[0.379]	[0.362]	[0.373]	[0.363]	[0.378]
***	-2.919***	-2.864***	-2.724***	-2.836***	-2.781***
6]	[0.278]	[0.276]	[0.274]	[0.273]	[0.278]
***	1.550***	1.550***	1.138***	1.522***	1.249***
9]	[0.321]	[0.308]	[0.284]	[0.326]	[0.304]
02	-0.185	-0.008	-0.078	-0.157	-0.158
9]	[0.317]	[0.321]	[0.320]	[0.317]	[0.320]
7	0.106	0.303	0.169	0.185	0.110
8]	[0.298]	[0.294]	[0.298]	[0.290]	[0.297]
0	-0.016	0.174	0.094	-0.008	0.016
3]	[0.231]	[0.237]	[0.235]	[0.237]	[0.237]
7	0.090	0.211	0.167	0.134	0.130
2]	[0.285]	[0.287]	[0.287]	[0.286]	[0.286]
***	0.855**	0.997***	0.960***	0.882**	0.909**
6]	[0.280]	[0.280]	[0.280]	[0.279]	[0.279]
3+	-0.512*	-0.368	-0.346	-0.460+	-0.395
4]	[0.255]	[0.256]	[0.254]	[0.257]	[0.256]

tests are two-tailed.

...and, after all conceivable robustness checks...

Findings

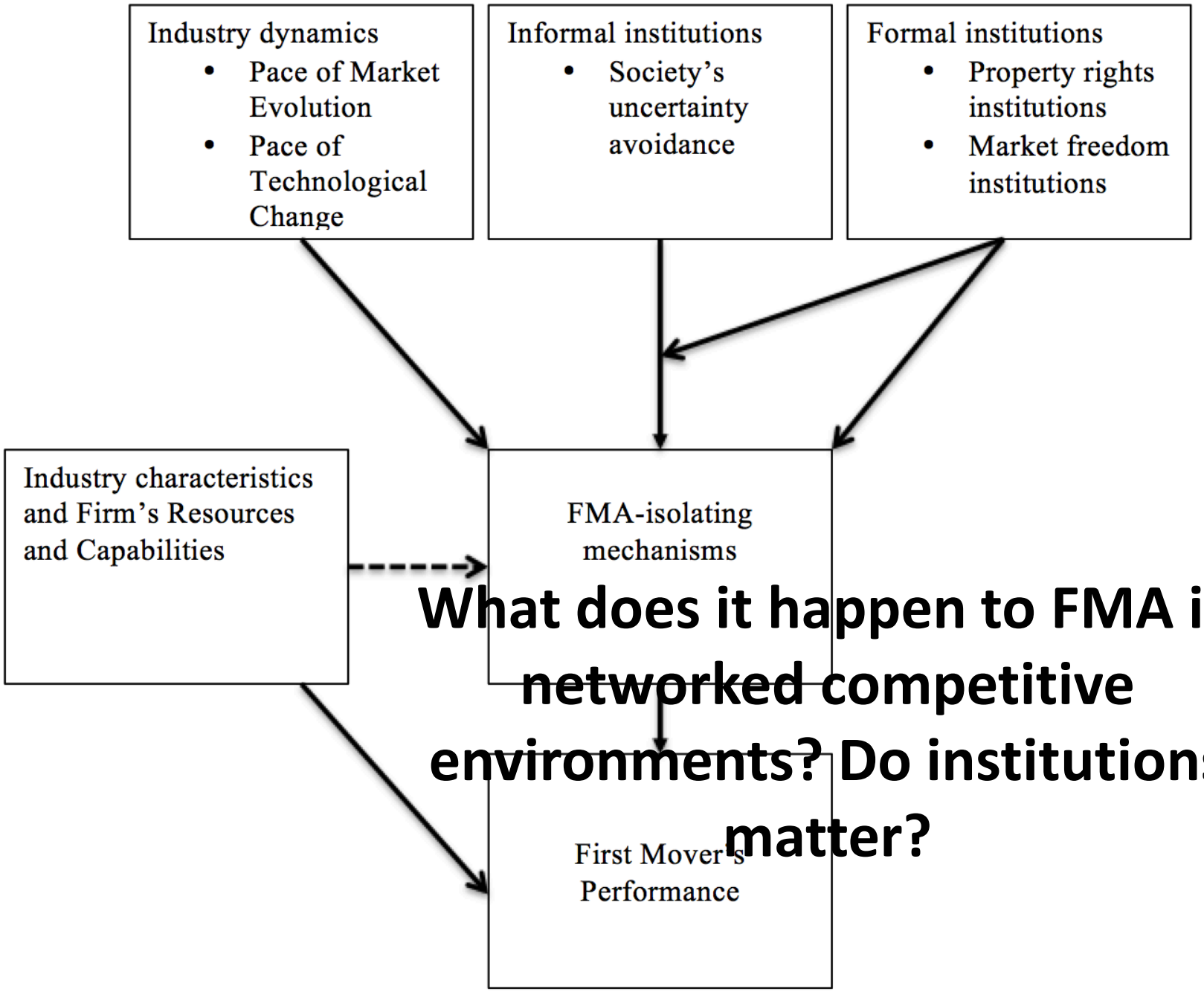
- Both sellers' local institutional quality and their legal statuses affect a buyer's likelihood of contacting a seller.
- A buyer's own local institutional quality generates a relevant reference point against which sellers are evaluated and a buyer is progressively more likely to contact sellers the higher their local institutional quality relative to the buyer.
- Jointly, our findings imply that in online B2B marketplaces, signals conveyed by sellers' geographic locations and legal statuses may constitute substantive sources of competitive heterogeneity and market segmentation.

So what?

- Our findings imply that in online B2B marketplaces, signals conveyed by sellers' geographic locations and legal statuses **may constitute substantive sources of competitive heterogeneity and market segmentation.**
- **Some companies do not even get the chance to compete!**

Three research areas

- Competitive dynamics in digital marketplaces
- **Pioneering (dis)advantages and network effect**
- Digital transformation of business models, risks and corporate governance



What does it happen to FMA in networked competitive environments? Do institutions matter?

Source: Gomez, Jaime, Lanzolla, Gianvito, and Juan Maicas. "Institutions and FMA." Working Paper

Firm's institutional environment

- Society's uncertainty avoidance
  - The extent to which society rejects ambiguity
- Property rights institutions
  - The degree to which formal rules and regulations protect property rights
- Market freedom institutions
  - The degree to which formal rules and regulations enable free market transactions

Hypotheses

- Hypothesis 1: Society's uncertainty avoidance positively moderates first-mover advantages
- Hypothesis 2a. The degree to which formal institutions are pro market freedom negatively moderates first-mover advantages
- Hypothesis 2b. The degree to which formal institutions are property-rights supporting positively moderates first-mover advantages
- Hypothesis 3a: The positive effect of society's uncertainty avoidance in first-mover performance, diminishes with the degree of development of market freedom institutions
- Hypothesis 3b: The positive effect of society's uncertainty avoidance in first-mover performance, diminishes with the degree of development of property rights institutions

Empirical Setting

- World mobile communications sector
  - Entry into mobile communications is highly structured and controlled by governments through licensing.
  - Significant “variance” across all dimensions of interest
- Sample covers the five continents
- Database contains information at operator-country level for 38 markets and 137 operators that belong to the five continents and for the period spanning from 1998 to 2009
- The information on mobile companies is mainly obtained from GSMA Intelligence and the Merrill Lynch Global Wireless Matrix
- Hand collected data to augment firm-level’s data

Variables

- *Firm profitability* of operator *i* in market *j* at time *t* = ratio of the firm's earnings before interests, taxes, depreciation, and amortization (EBITDA) to sales.
- Society's uncertainty avoidance: Global Leadership and Organizational Behavior Effectiveness project (GLOBE; House, Hanges, Javidan, Dorfman, & Gupta, 2004)
- Market-freedom and Property rights institutions: Index of Economic Freedom (EFI), published by the Heritage Foundation (Kane, Holmes, & O'Grady, 2007)

Control variables

- *GDP per capita, GDP growth, and population.*
- *Number of operators*
- *Market penetration*
- *Common standard and Leadtime (monopoly period).*
- *3G and 4G, (dummies)*
- *Geographical areas (North America, South America, Asia, Africa, Pacific and Europe)*
- *Firm size (subscribers)*
- *Incumbent, (dummy = 1 if the firm was providing telephone services through fixed lines before the mobile market was created in the country).*
- *Number of countries*
- *Year (dummies)*

Uncertainty Avoidance, Market Freedom and Property Rights Institutions

Countries	Uncertainty Avoidance	Market Freedom Institutions	Property Rights Institutions
Argentina	3.65	66.75	40.00
Australia	4.39	75.61	90.00
Austria	5.16	64.05	90.00
China	4.94	59.26	27.27
Colombia	3.57	70.08	37.27
Czech Republic	4.44	71.09	70.00
Denmark	5.22	66.28	90.45
Egypt	4.06	59.16	47.27
Finland	5.02	66.80	90.45
France	4.43	58.22	70.00
Germany	5.20	66.53	90.00
Greece	3.39	62.94	55.45
Hong Kong	4.32	91.09	90.00
Hungary	3.12	65.23	70.00
India	4.15	54.63	50.00
Indonesia	4.17	62.14	33.64
Ireland	4.30	79.81	90.00
Israel	4.01	64.02	70.00
Italy	3.79	64.24	62.73
Japan	4.07	68.47	75.45
Korea	3.55	71.38	77.27
Mexico	4.18	70.16	50.00
Morocco	3.65	65.24	36.36
Netherlands	4.70	70.64	90.00
New Zealand	4.75	77.62	90.45
Nigeria	4.29	57.96	31.82
Philippines	3.89	65.63	42.73
Poland	3.62	63.38	59.09
Portugal	3.91	65.15	70.00
Russia	2.88	56.89	35.00
Singapore	5.31	86.11	90.00
South Africa	4.54	68.77	50.00
Spain	3.97	69.18	70.00
Sweden	5.32	63.47	86.36
Switzerland	5.37	75.70	90.00
Thailand	3.93	69.56	59.09
United Kingdom	4.65	75.76	90.00
Venezuela	3.44	56.82	29.55
Mean population	**4.25**	**67.52**	**65.47**
SD population	**0.64**	**7.72**	**21.74**

Authors' elaboration from the Index of Economic Freedom and GLOBE.

Firm's institutional environment and FMA (random effect)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Incumbent	0.0422	0.0443	0.0495	0.0510*	0.0413	0.0499
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Firm size	5.90e-08	5.57e-08	3.99e-08	-2.99e-08	0.000000186	0.000000162
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Number of firms	-0.0155***	-0.0157***	-0.0158***	-0.0145***	-0.0152***	-0.0135***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP per capita (mil)	-0.00957***	-0.00901***	-0.00910***	-0.00965***	-0.00851***	-0.00935***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP growth	0.000357	0.000519	0.000553	0.000413	0.000433	0.000241
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Population (mill)	-0.000166**	-0.000225***	-0.000222***	-0.000190***	-0.000240***	-0.000198***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Common standard	0.0637	0.0860*	0.0943**	0.0821*	0.0869*	0.0853*
	(0.04)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)
Lead time	-0.000888	-0.000812	-0.000772	-0.000655	-0.000870	-0.000662
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Number of countries	0.000117	0.000185	0.000214	-0.000117	0.00021	-0.000246
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Penetration	0.00604	-0.0136	-0.0144	-0.0111	-0.0104	-0.00228
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
3G	0.0219**	0.0239***	0.0240***	0.0254***	0.0228***	0.0245***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
4G	-0.0356	-0.0334	-0.0345	-0.0318	-0.0348	-0.0387
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Pioneer	0.0995***	0.0973***	-0.145	0.553***	-0.109*	0.342*
	(0.03)	(0.03)	(0.18)	(0.08)	(0.06)	(0.18)
Uncertainty avoidance (UA)		0.0295	0.00288	0.0304	0.0282	0.0199
		(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Market freedom (MF)		-0.00216**	-0.00216**	0.000561	-0.00208**	0.00260***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Property rights (PR)		-0.000197	-0.000194	-0.0000689	-0.00149**	-0.00268***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Pioneer x UA			0.0563			0.0201
			(0.04)			(0.05)
Pioneer x MF				-0.00662***		-0.0110***
				(0.00)		(0.00)
Pioneer x PR					0.00314***	0.00651***
					(0.00)	(0.00)
UA x MF						
Pioneer x UA x MF						
UA x PR						
Pioneer x UA x PR						
Constant	0.393***	0.394**	0.502***	0.219	0.468***	0.295*
	(0.12)	(0.16)	(0.17)	(0.16)	(0.16)	(0.17)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly dummies	Yes	Yes	Yes	Yes	Yes	Yes
Geographic area dummies	Yes	Yes	Yes	Yes	Yes	Yes
Vs. Model 1	---	8.20**	10.16**	46.28***	25.19***	109.64***
Vs. Model 2	---	---	1.98	37.88***	16.85***	101.17***

...and, after all conceivable robustness checks..

Findings

- ***Hypothesis 1: Society's uncertainty avoidance positively moderates first-mover advantages***

- **Hypothesis 2a. The degree to which formal institutions are pro market freedom negatively moderates first-mover advantages**

- **Hypothesis 2b. The degree to which formal institutions are property-rights supporting positively moderates first-mover advantages**

Findings, continued

- **Hypothesis 3a: The positive effect of society's uncertainty avoidance in first-mover performance, diminishes with the degree of development of market freedom institutions**

- ***Hypothesis 3b: The positive effect of society's uncertainty avoidance in first-mover performance, diminishes with the degree of development of property rights institutions***

So what?

- Formal institutions matter and property rights protect first movers
- Informal institutions matter and conservative culture decreases the impact of market freedom instituons

Three research areas

- Competitive dynamics in digital marketplaces
- Pioneering (dis)advantages and network effect
- Digital transformation of business models, risks and corporate governance

The So What of the So What?

- Institutional quality, market freedom institutions, and property rights institutions do matter in "shaping" competitive dynamics
- Institutions can make legacy firm "advantages" even stronger


PLONK
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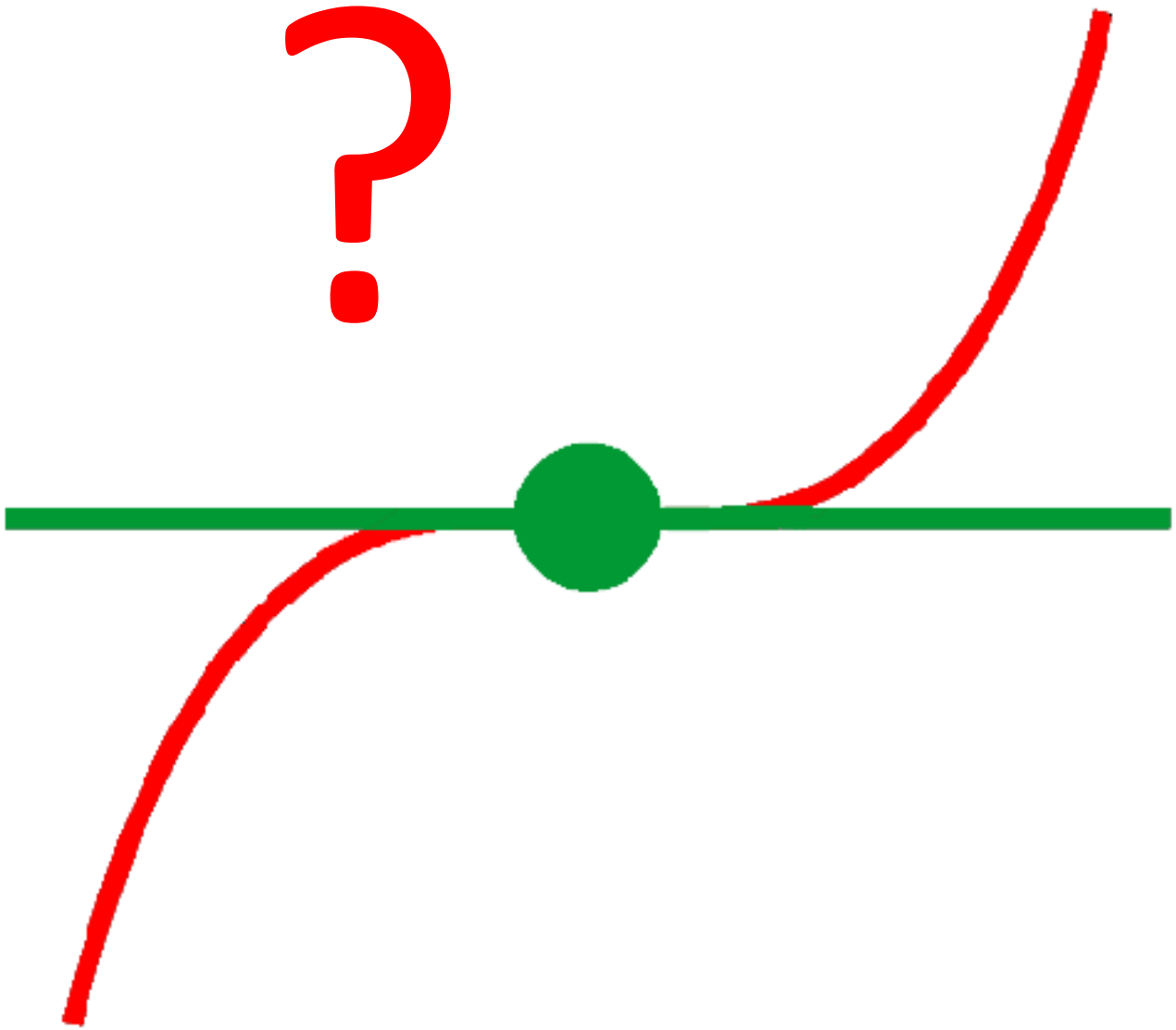
186,000 miles per second. It's not just a good idea…
It's the law!



Do we need new frameworks?

DIGITAL TRANSFORMATION OF COMPETITIVE DYNAMICS: THE ROLE OF (LEGACY) INSTITUTIONS

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