The Governance of Growth: A Multi-Layer Approach

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EU versus US

- 1970’s: EU average annual growth rate of per capita GDP: 3.5% versus 1.5% in US
- 1995-2006: EU per capita GDP grows at less than 2% versus 3% in US

Two main ideas

- Growth-enhancing policies or institutions depend upon (technological) development, because the engines of growth vary with stage of development (AAZ).....hence departing from Washington consensus!!
- A comprehensive growth policy package must be multi-layered

Five Layers
for Growth Policy Design

- The Lisbon Layer: Invest in R&D and Skills
- The Structural Reforms Layer
- The Organizational Layer
- The Cultural Layer: Invest in Changing Beliefs
- The Macroeconomic Layer

Lisbon Layer: More R&D and skills

- Europe invests 2.5% of GDP in R&D…versus more than 3% in US
- Europe invests 1.3 % of GDP in higher education…versus 3% in US

Lisbon Layer (2)

- Theoretical Front: New growth theories: long run growth is driven by innovations, innovations require R&D and skills
- Practical Front: Advent of the New Economy (Lisbon)

This cannot be the whole story…

- Europe has always invested less than US in R&D, yet it used to grow faster until mid 1970s….and at same rate until mid-1990s….

Lisbon Layer (3)

- R&D and Innovation matter more for growth in more technologically advanced countries/sectors …or as countries/sectors become more technologically advanced

Table 1

R&D Intensity Increases as Industries Get Closer to the Frontier

	SPECIFICATIONS		
	(1)	(2)	(3)
Proximity to the frontier	**0.031**	**0.018**	**0.009**
	(0.006)	(0.004)	(0.004)
Year dummies	YES	YES	YES
Country dummies	NO	YES	YES
Industry dummies	NO	YES	YES
Country-Industry dummies	NO	NO	YES
No. of observations	1801	1801	1801

Note: Standard errors are in parentheses. The dependent variable is the ratio of R&D added at the industry level

Source: Acemoglu, Aghion & Zilibotti (2006)

Yet, investing in R&D is not enough….

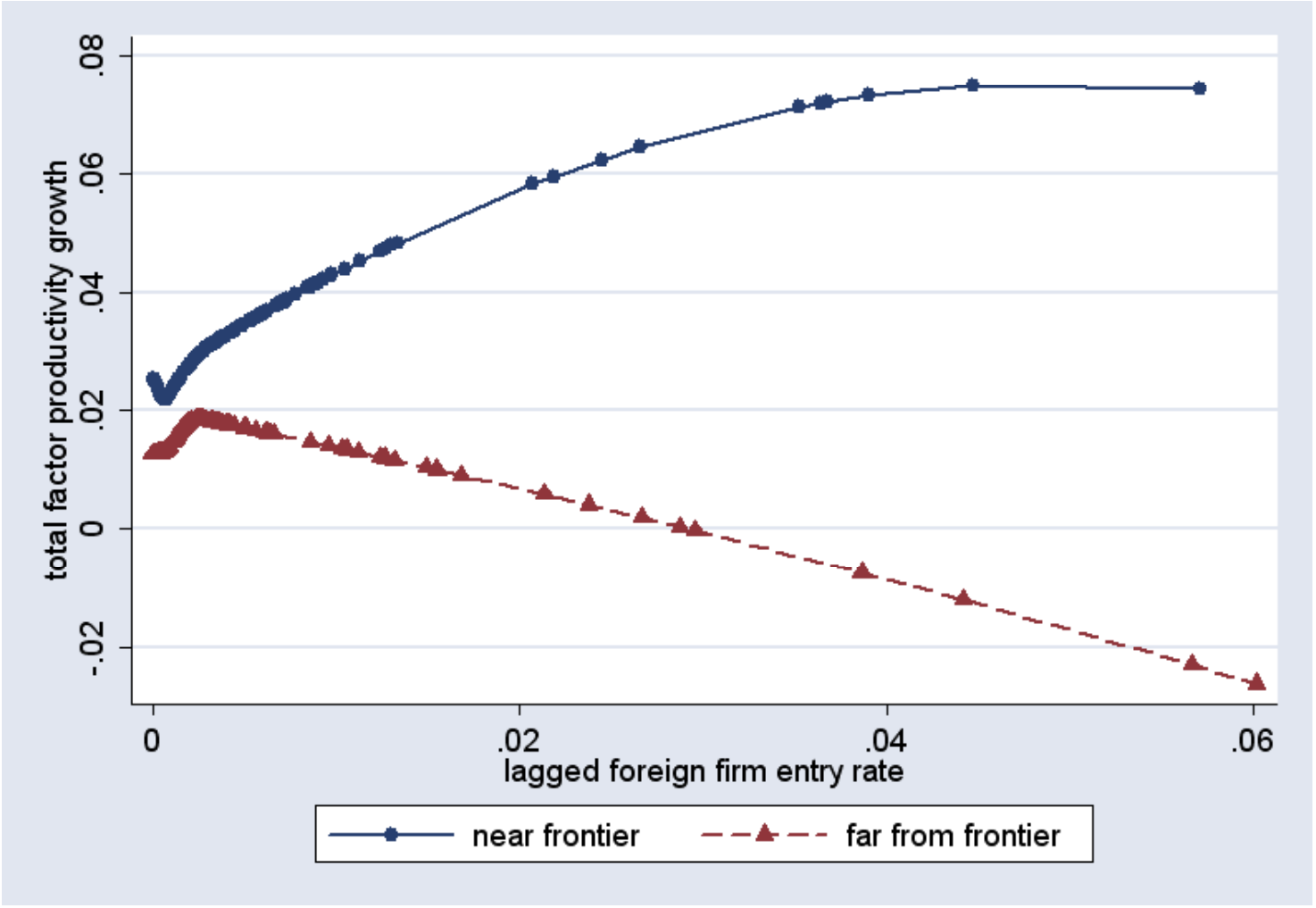
- Kok and Sapir reports on the failing Lisbon agenda

Structural Economic Reforms Layer

- Supply side policies that are good at fostering capital accumulation or imitation, are not necessarily good at fostering innovation
- Thus Europe that has moved closer to technological frontier, must reform its policies in order to achieve and then sustain high growth

Structural Policy Reform: Competition

- Escape competition effect for sectors close to frontier
- Discouragement for sectors far below frontier

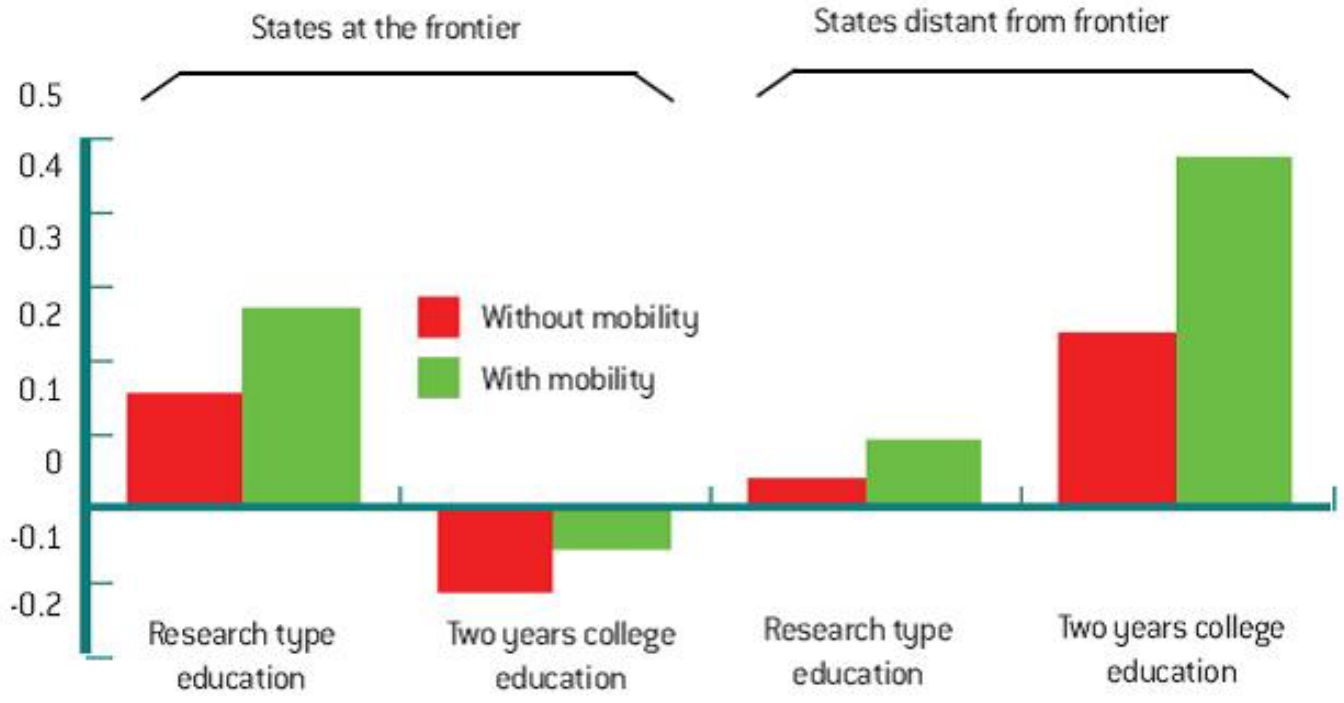

total factor productivity growth
-.02
0
.02
.04
.06
.08
0
.02
.04
.06
lagged foreign firm entry rate
near frontier
far from frontier

Structural Policy Reform: Education

- Prediction that higher education is more growth-enhancing closer to technological frontier

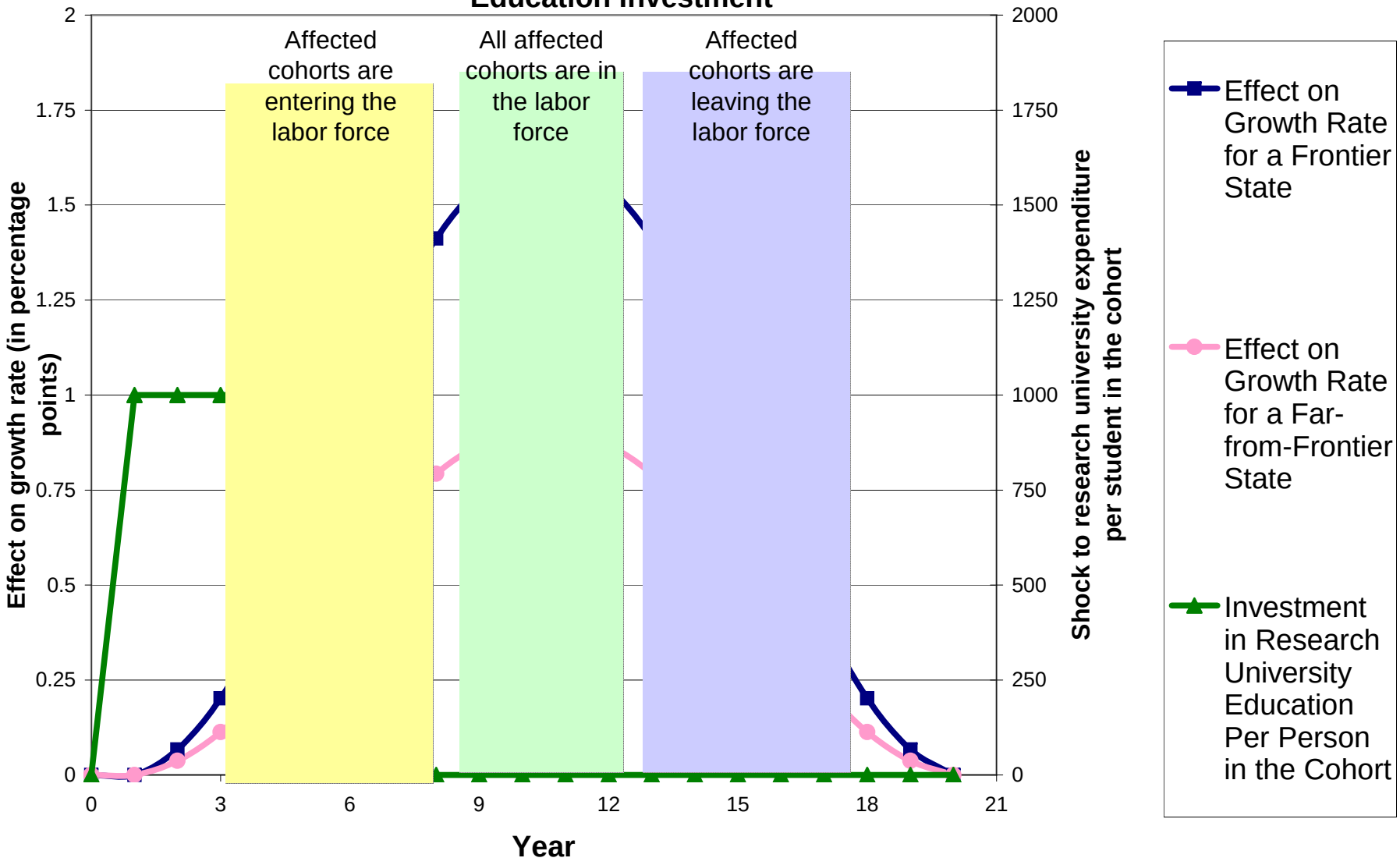
Fig. 3

Long-term growth effects of $1000 per person spending on education, US States



Source: Aghion, Boustan, Hoxby and Vandenbussche (2005)

Figure 15: Effect on Growth Rates for Typical Shock to Research-Type Education Investment



Structural Policy Reform: Labor Market Flexibility

- Labor market flexibility is more growth enhancing the closer a country is to the technological frontier

EPL

Variable	eq5
Leader MFP growth	
Gap to Leader	
EPL	
EPL, for highest tercile	-0.00015***
EPL, for middle tercile	0.00001
EPL, for lowest tercile	0.00003
MFP Gap, for highest tercile	-0.00547
Gap, for middle tercile	-0.00210
Gap, for lowest tercile	-0.01173***
EPL*Gap, for highest tercile	-0.00029*
EPL*Gap, for middle tercile	-0.00003
EPL*Gap, for lowest tercile	0.00014**

legend: * p<.1; ** p<.05; *** p<.01

Organizational Layer

- Not only economic policy…but also the decision making process itself requires reform

Organizational Layer (1)

- Aghion-Alesina-Trebbi (2007): Democracy is more growth-enhancing as country approaches technological frontier
- Acemoglu, Aghion, Lelarge, Van Reenen, Zilibotti (2007): Decentralization of firm is more growth-enhancing as firm approaches technological frontier
- Aghion-Hoxby (2007): Autonomy of universities is more growth-enhancing in more advanced US states

Democracy and growth

Differential effect of democracy depending on distance to frontier			
F.E. SIC country year			
1975-1985-1995	10-year VA growth rate		
L10. Distance to frontier in VA/Emp	10.689	11.224	12.987
	[2.503]***	[5.250]**	[5.384]**
L10. Dist. to front. x Polit. rights		-0.447	
		[0.223]**	
L10. Polit. rights		0.046	
		[0.042]	*
Observations	3900	3114	3114
Number of industry-country	1864	1831	1831
R-squared	0.22	0.15	0.16

Clustered standard errors in brackets

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

Decentralization of firms and innovation

Figure 2: Productivity and Decentralization

Decentralisation to Profit Centres (COI)

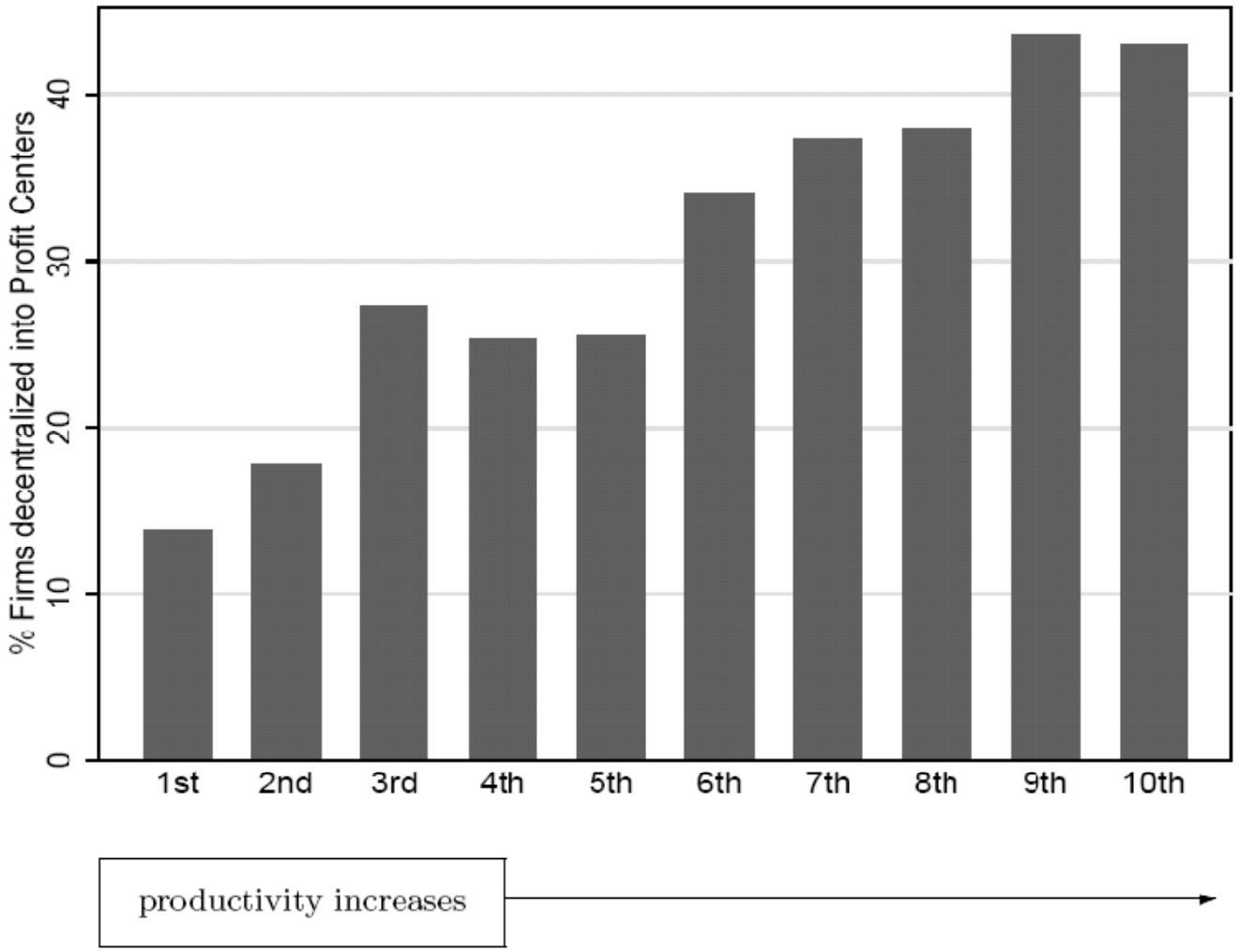


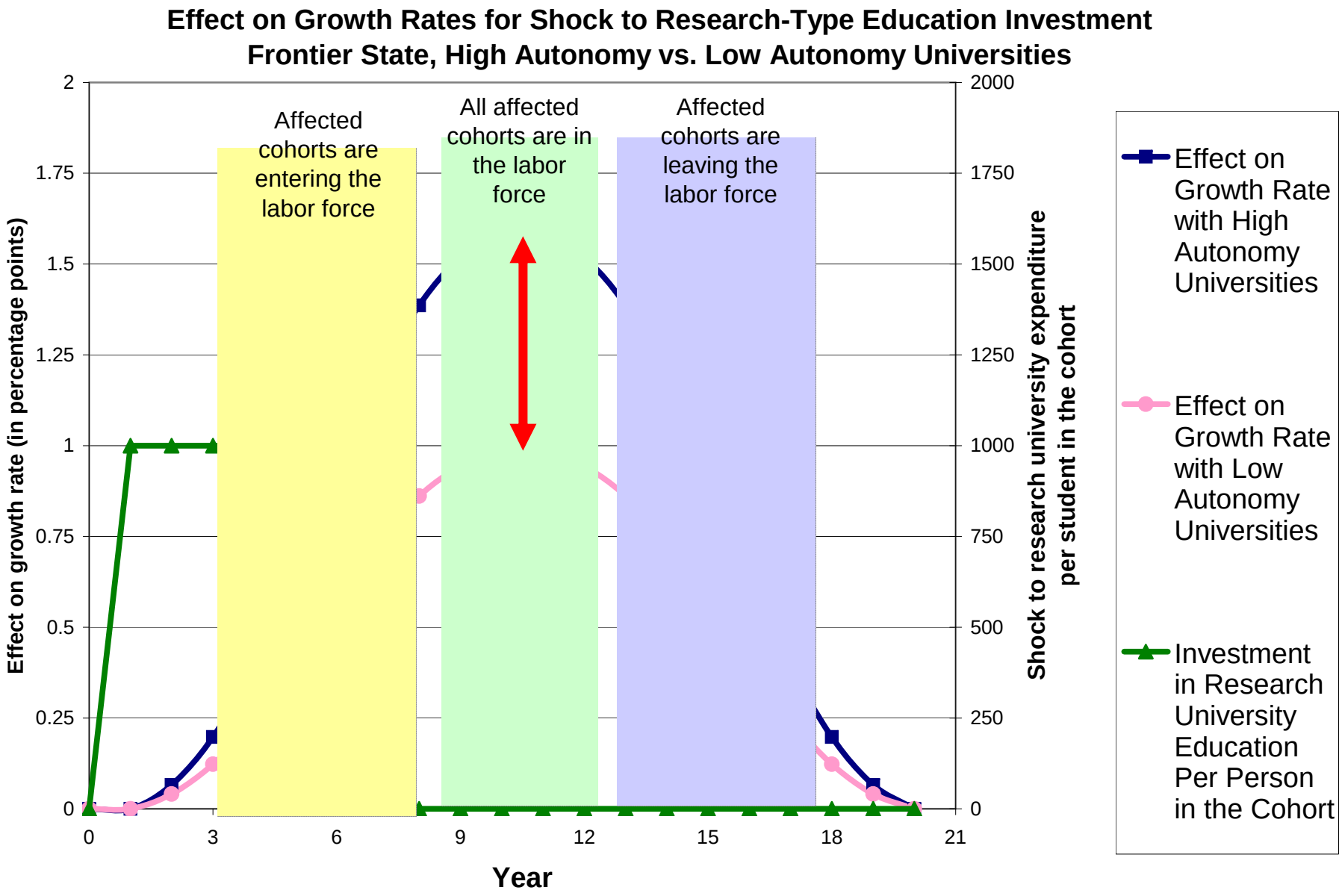
Table 3: Probability of firm being decentralized broken down into high and low tech sectors (Enquête COI)

dependent variable	Firm decentralized into Profit Centers		
	Full Sample *(1)*	**High Tech** *(2)*	**Low Tech** *(3)*
log Homogeneity /10	-0.063	-0.098	-0.019
(IT weighted)	(0.031)	(0.048)	(0.037)
Heterogeneity	-	-	-
Proximity to Frontier	0.159	0.208	0.104
	(0.028)	(0.039)	(0.043)
Firm age<5 years	0.177	0.214	0.123
	(0.041)	(0.060)	(0.056)
5≤ Firm age<10 years	0.067	0.068	0.049
	(0.022)	(0.032)	(0.029)
10≤Firm age<20 years	0.041	-0.005	0.082
	(0.019)	(0.027)	(0.028)
20 years≤Firm age	*ref*	*ref*	*ref*

Table 6: Probability of Delayering
(Enquête Reponse)

dependent variable (mean=0.389)	Some delayering between 1996 and 1998			
specification of frontier	Frontier: Level			
	(1)	*(2)*	*(3)*	*(4)*
log Homogeneity /10 (IT weighed)	-0.067	-0.070	-0.079	-0.077
	(0.043)	(0.043)	(0.042)	(0.043)
Frontier (99th percentile) (A)	-0.078	-	-0.123	-
	(0.037)		(0.041)	
Labour Productivity (firm) (B)	0.187	-	0.080	-
	(0.043)		(0.039)	
Proximity to Frontier (constrained term B-A)	-	0.130	-	0.103
		(0.033)		(0.032)
Other Firm and Indus. Controls	no	no	yes	yes

Autonomy of universities


Effect on Growth Rates for Shock to Research-Type Education Investment
Frontier State, High Autonomy vs. Low Autonomy Universities
Affected cohorts are entering the labor force
All affected cohorts are in the labor force
Affected cohorts are leaving the labor force
Effect on growth rate (in percentage points)
Shock to research university expenditure per student in the cohort
Year
0
0.25
0.5
0.75
1
1.25
1.5
1.75
2
0
250
500
750
1000
1250
1500
1750
2000
0
3
6
9
12
15
18
21
Effect on Growth Rate with High Autonomy Universities
Effect on Growth Rate with Low Autonomy Universities
Investment in Research University Education Per Person in the Cohort

Organizational Layer (2)

- As country moves closer to frontier, needs to rely more on equity finance and stock markets

Preliminary results

Finance, Growth and Distance to Frontier				
	Value Added Growth, 1980-1990			
	OLS	IV	OLS	IV
Stock Market * Financial Dependence	0.065	0.035	-0.008	-0.139
	[.026]**	[.023]	[.058]	[.069]**
Stock Market * Fin Dep * Dist to Frontier			0.289	1.072
			[.327]	[.448]**
Private Lending * Fin Dep	0.059	0.029	0.059	0.036
	[.036]*	[.028]	[.034]	[.027]
Private Lending * Fin Dep * Dist to Frontier			-0.528	-0.919
			[.164]	[.243]***
Observations	972	661	887	638
R-squared	0.3	0.3	0.38	0.36

Country & Sector Dummies included.

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

Question

- How can we explain that policy and organizational reforms are not implemented if they are growth-enhancing?

Immediate answer

- Immediate answer: political economy constraints…
- …there are winners and losers from the reform….
- ..one approach is to just compensate losers...

Cultural Layer (1)

- More fundamental explanation: reform process is blocked by obstacles that have to do with trust and beliefs…
- …then policy should also be aimed at inducing changes in beliefs and trust building among agents…

Cultural obstacles in France

- Disbelief in market
- Distrust between employers and employees
- Absence of risk-taking and entrepreneurship

Cultural Layer (2)

- …(how) can economic policy try to change beliefs...?

Example of how policy can interfere with beliefs and social cooperation

- Aghion-Algan-Cahuc (2007)

The vicious circle of mistrust

- Mistrust justifies state intervention

- *Some* state interventions maintain mistrust

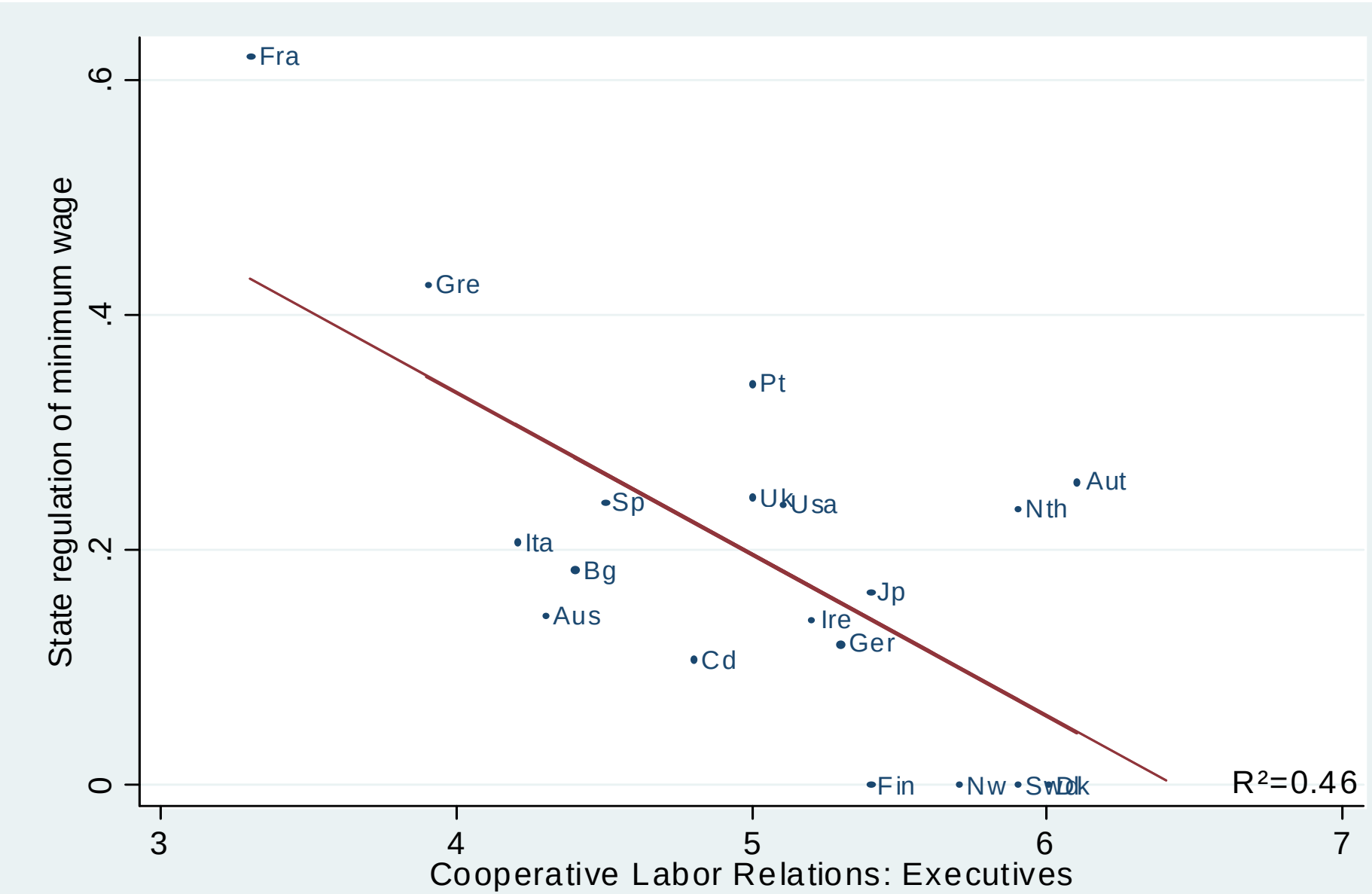
Two steps in the reasoning

⇨ 1. **Correlations between minimum wage and trust/social cooperation/unionization**
2. **The impact of minimum wage on belief formation, and the impact of beliefs on unionization/trust/cooperation**

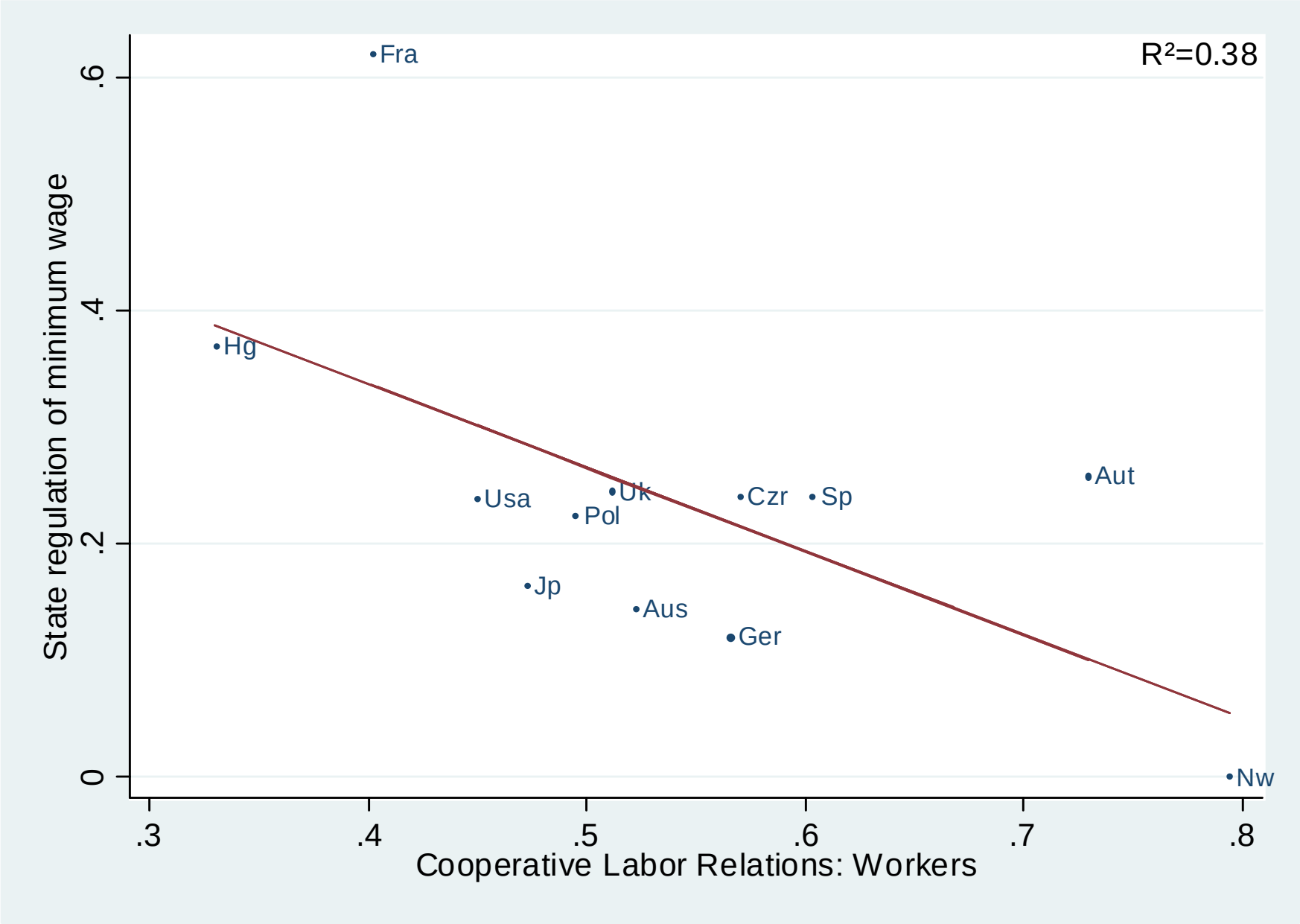
State regulation of minimum wage: *composite index*

-1. Stringency of the minimum wage legislation (ILO)

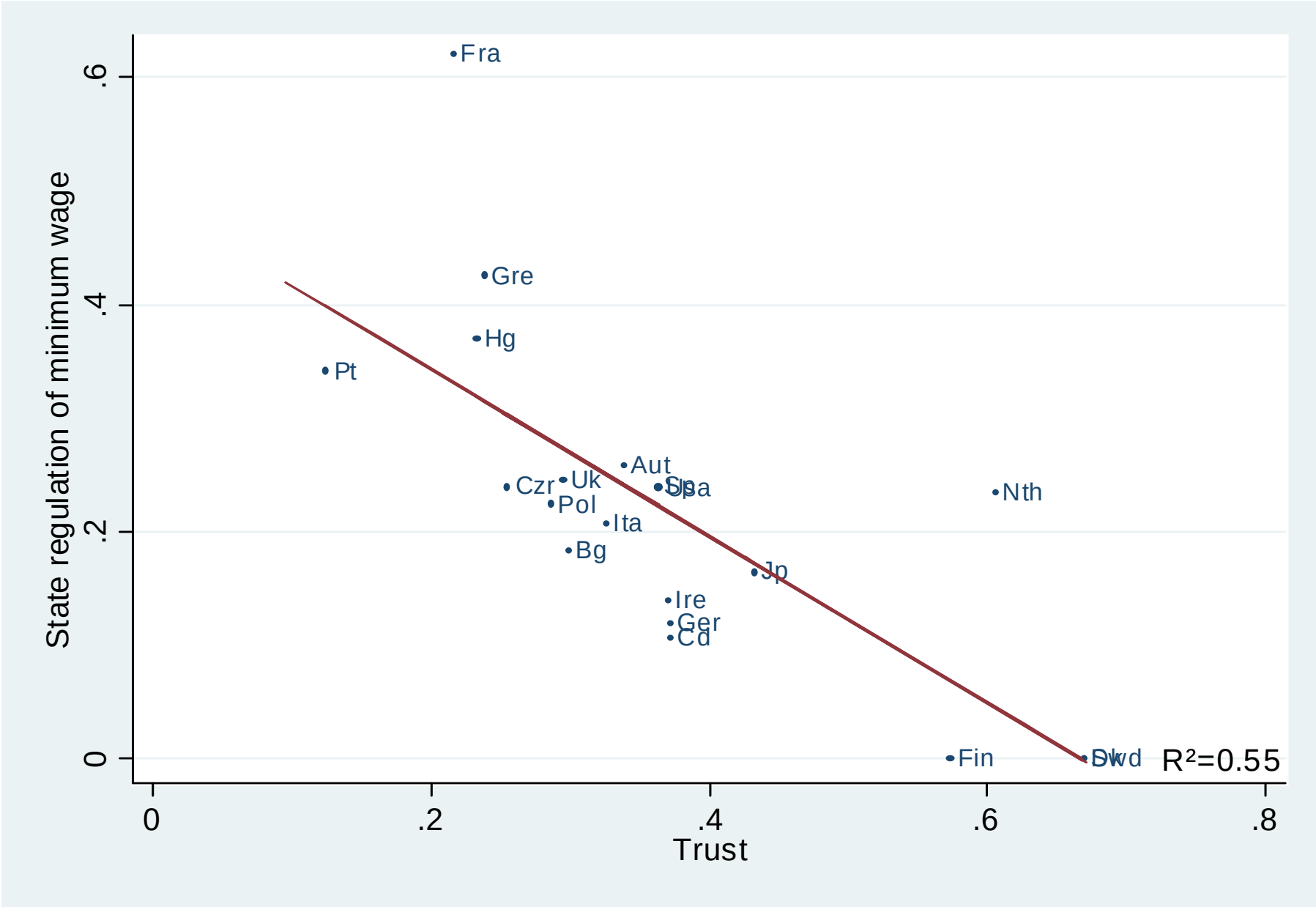
-2. Level of the minimum wage (OECD, Neumark and Wascher, 2004)



Global Competitivness Report 1999: « Labor/Employer relations are generally Cooperative ». Answers by executives. Score: 1-7. Union rates in 1999.



International Social Survey Program: « Labor/Employer relations are generally Cooperative ». Answers by workers. Score: 0-1. Union rates in 1999.



World Values Survey 2000: «Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? ». 1-0.

Period 1980-2003

Beliefs on social cooperation and learning process

• Social cooperation beliefs of Americans by country of origins

- General Social Survey database (1977-2002)

- Trust question: «Generally speaking, would you say that most people can be trusted or that you need to be very careful? ».

- Waves of immigration: 1st, 2d, 3d, 4th

⇨ Impact of state regulation on social cooperation

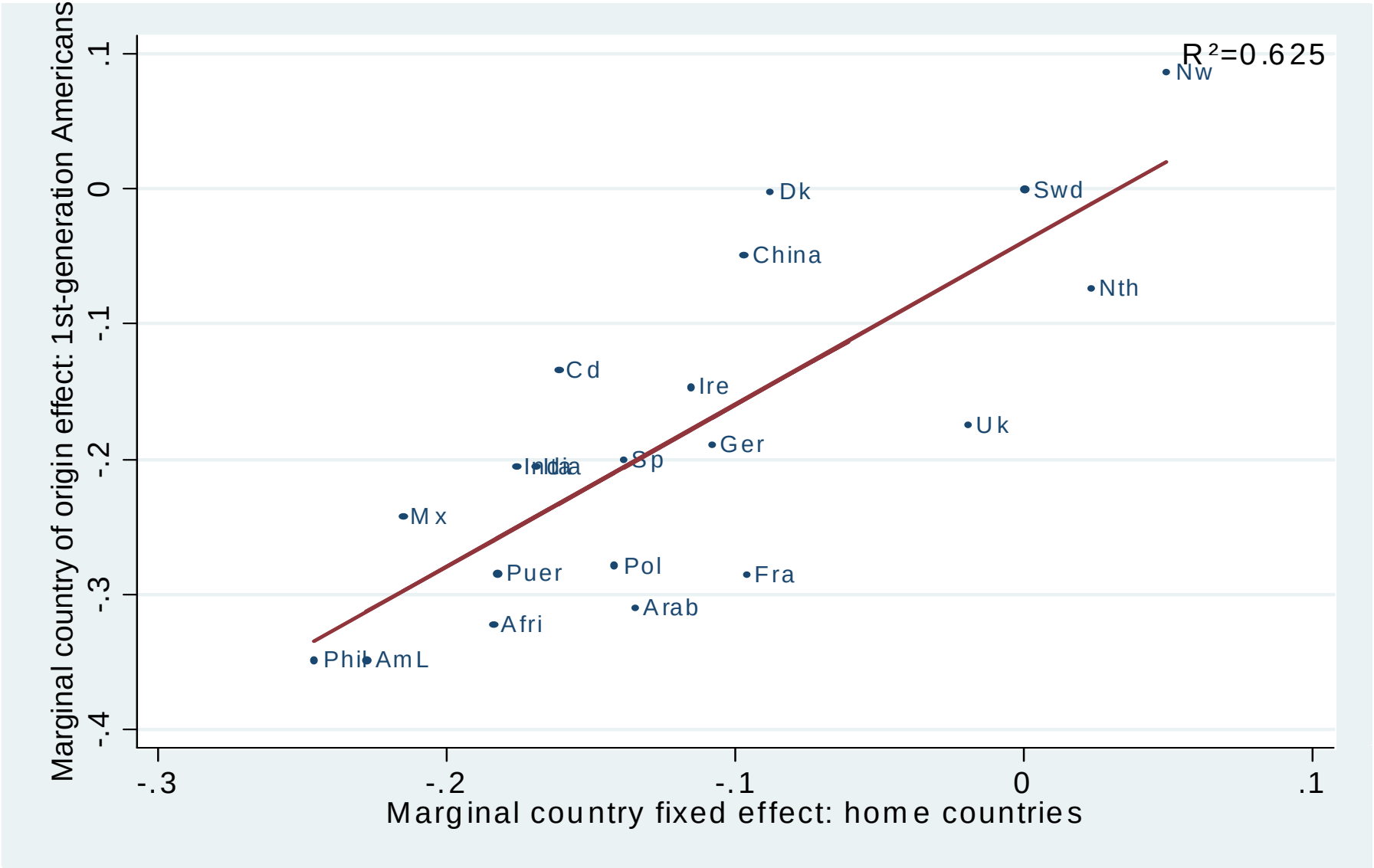
State regulation in the country of origins
and Trust of Second-generation Americans

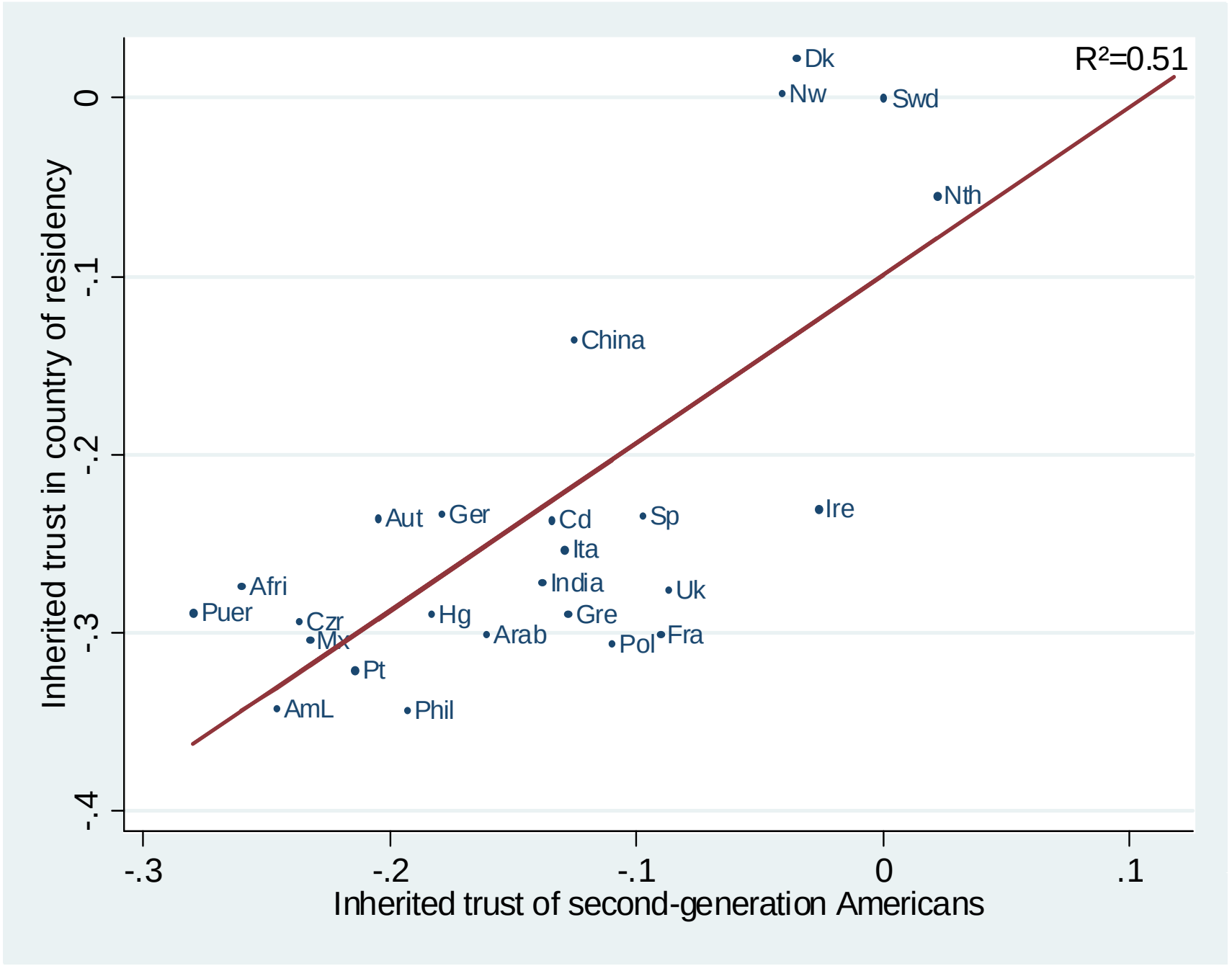
	Trust			
Legal Minimum wage in 1950	-.108***			
	(.015)			
Extent of restraint to the executive in 1950		.029***		
		(.001)		
Country of origin effects	Yes***	Yes***	No	Yes***
N	1225	1225	1225	1225
R^2	.078	.079	.071	.079

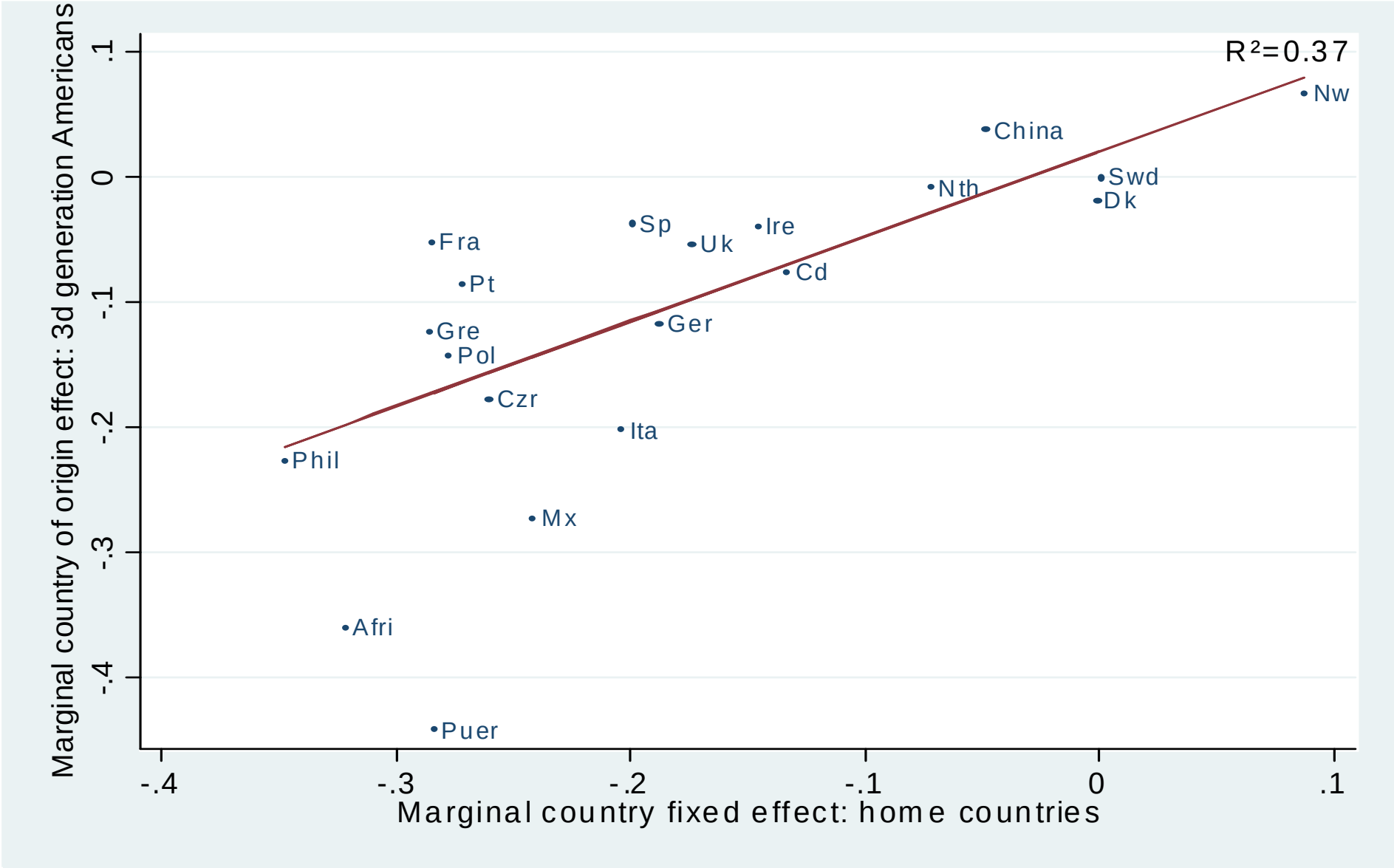
Marginal effects with robust standard error, ***:1%, **: 5%, *: 10

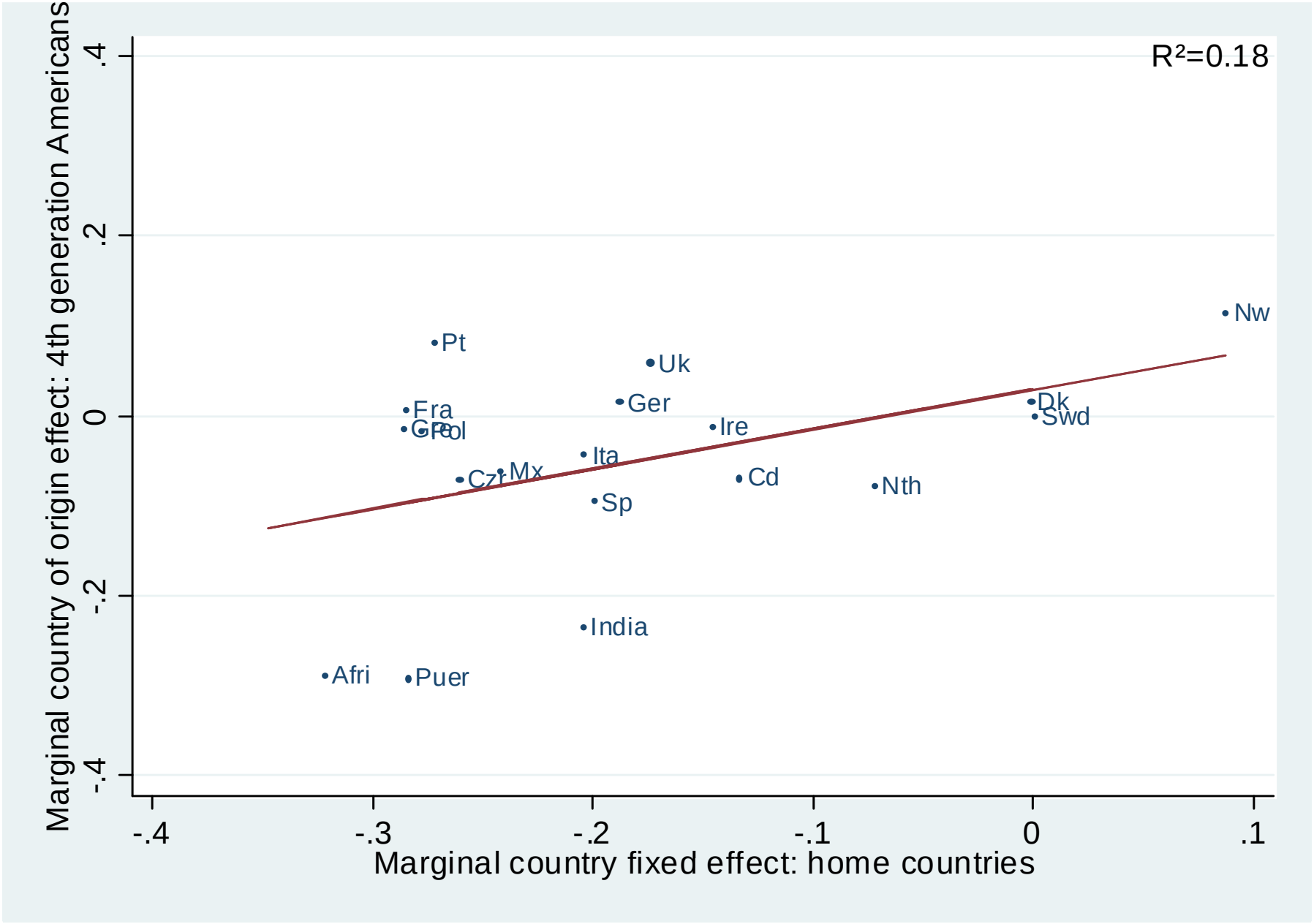
⇨ Learning process: convergence of social cooperation beliefs across different waves of immigration

Probit estimate of the trust question: country fixed effects




R²=0.51
Dk
Nw
Swd
Nth
China
Aut
Ger
Cd
Sp
Ire
Ita
India
Uk
Afri
Puer
Czr
Hg
Gre
Mx
Arab
Pol
Fra
Pt
AmL
Phil
Inherited trust in country of residency
0
-.1
-.2
-.3
-.4
-.3
-.2
-.1
0
.1
Inherited trust of second-generation Americans


R²=0.37
Nw
China
Swd
Nth
Dk
Sp
Ire
Uk
Fra
Cd
Pt
Ger
Gre
Pol
Czr
Ita
Phil
Mx
Afri
Puer
Marginal country of origin effect: 3d generation Americans
.1
0
-.1
-.2
-.3
-.4
-.4
-.3
-.2
-.1
0
.1
Marginal country fixed effect: home countries


R²=0.18
Marginal country of origin effect: 4th generation Americans
.4
.2
0
-.2
-.4
-.4
-.3
-.2
-.1
0
.1
Marginal country fixed effect: home countries
Nw
Pt
Uk
Ger
Fra
Dk
Swd
Ire
Ita
Mx
Cd
Nth
Sp
India
Afri
Puer

Conclusion 1: Technological development matters

- Competition, labor market flexibility, financing and governance of universities, decentralization and democracy,……
- …..all of these are more growth-enhancing in more advanced economies because they encourage innovation

Conclusion 2: Four layers of growth policy design

- Lisbon Layer: R&D and skills
- Structural Layer: Market liberalization
- Organizational Layer: Decentralization
- Cultural Layer: Induce experimentation and trust building

Conclusion 3: The Fiscal Layer?

- Financing the structural reforms?
- One or several models of innovation-enhancing tax systems?
- Innovation and fiscal policy over the business cycle?

GDP growth and budget cyclicality (AR(1))

	Country f.e.	Country year f.e.
lag(Procyclicality of government debt)	-0.023	-0.015
	(0.005)***	(0.005)***
lag(Private credit/GDP)	-0.003	-0.012
	(0.009)	(0.009)
lag(Procyclicality of government debt*Private credit/GDP)	0.017	0.011
	(0.005)***	(0.005)**
Inflation targeting	-0.003	-0.001
	(0.005)	(0.004)
Observations	460	460
R-squared	0.40	0.61

Robust standard errors in parentheses

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

The explained variable is the growth of GDP per capita. All regressions include the following controls: lagged log GDP per capita, average years of schooling for the population over 25 years old, trade openness, inflation, population growth, government share of GDP (in %), investment/GDP (in%).

Conclusion 4: Rethinking the role of the state

- Not necessarily less state, but differently state
- Importance of experimentation and ex post evaluation