Growth and the Smart State

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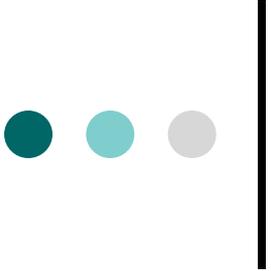
Introduction

- During the post-war period, growth in European countries was mainly driven by imitation
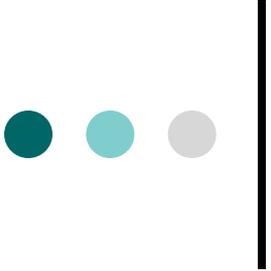
Introduction

- Example: French State during the Trente Glorieuses
  - Industrial policy based on national champions plus state-owned firms
  - Keynesian macroeconomic policy to deal with the business cycle
  - Welfare state to deal with social issues
- However innovation has become the driving force of growth, which in turn calls for a new role of the State
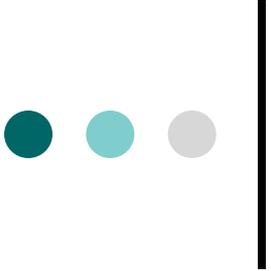
Example 1: Competition & Growth

- Competition/entry is more growth-enhancing for countries or sectors that are closer to technological frontier
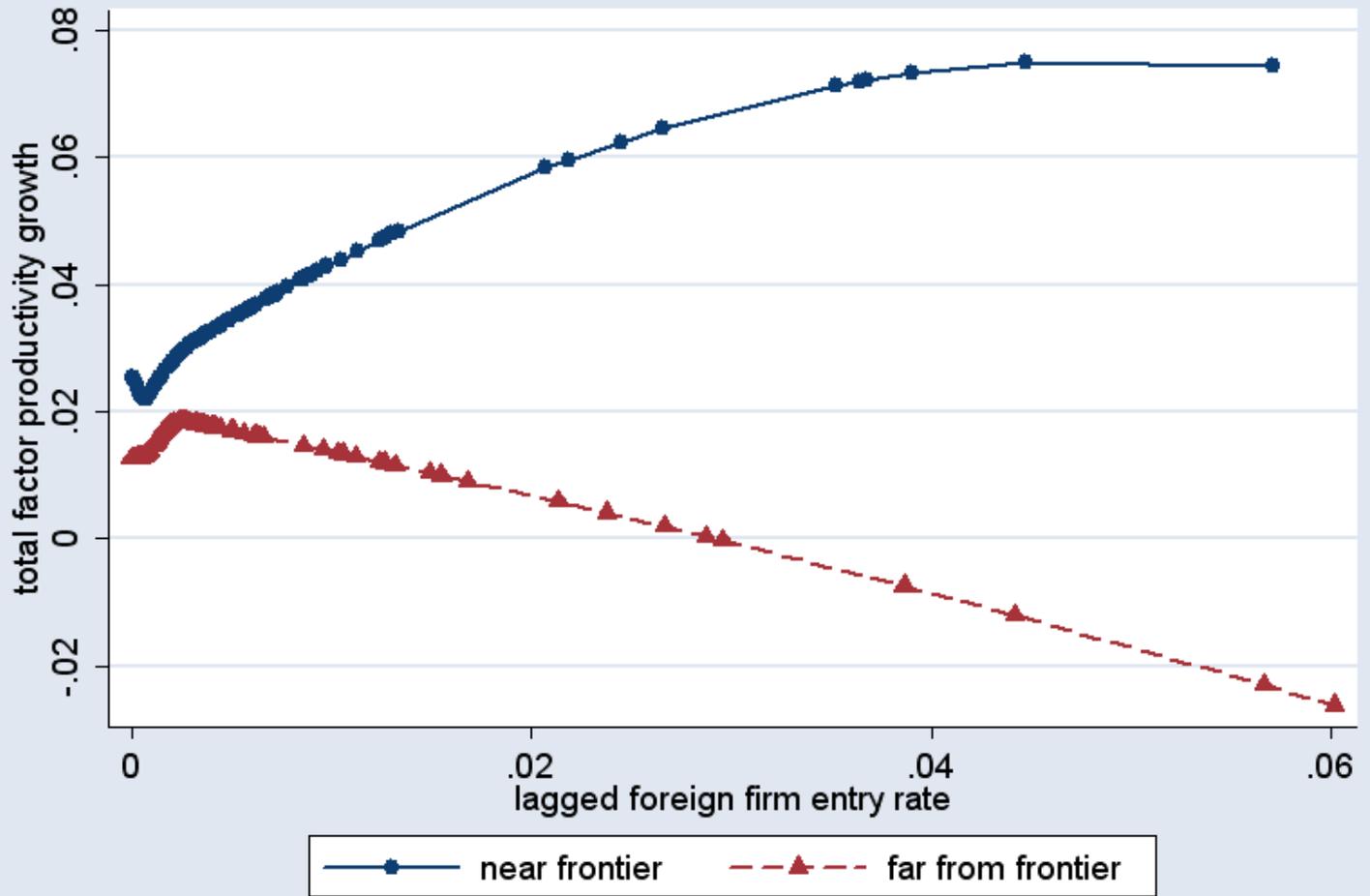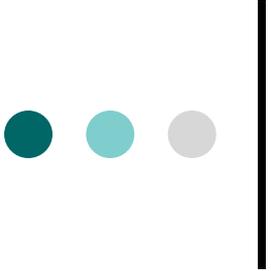
Example 2: Education

- Graduate education is more growth-enhancing closer to technological frontier
- Undergraduate +primary/secondary education is more growth enhancing farther below technological frontier

Fig. 3

Long-term growth effects of $1000 per person spending on education, US States
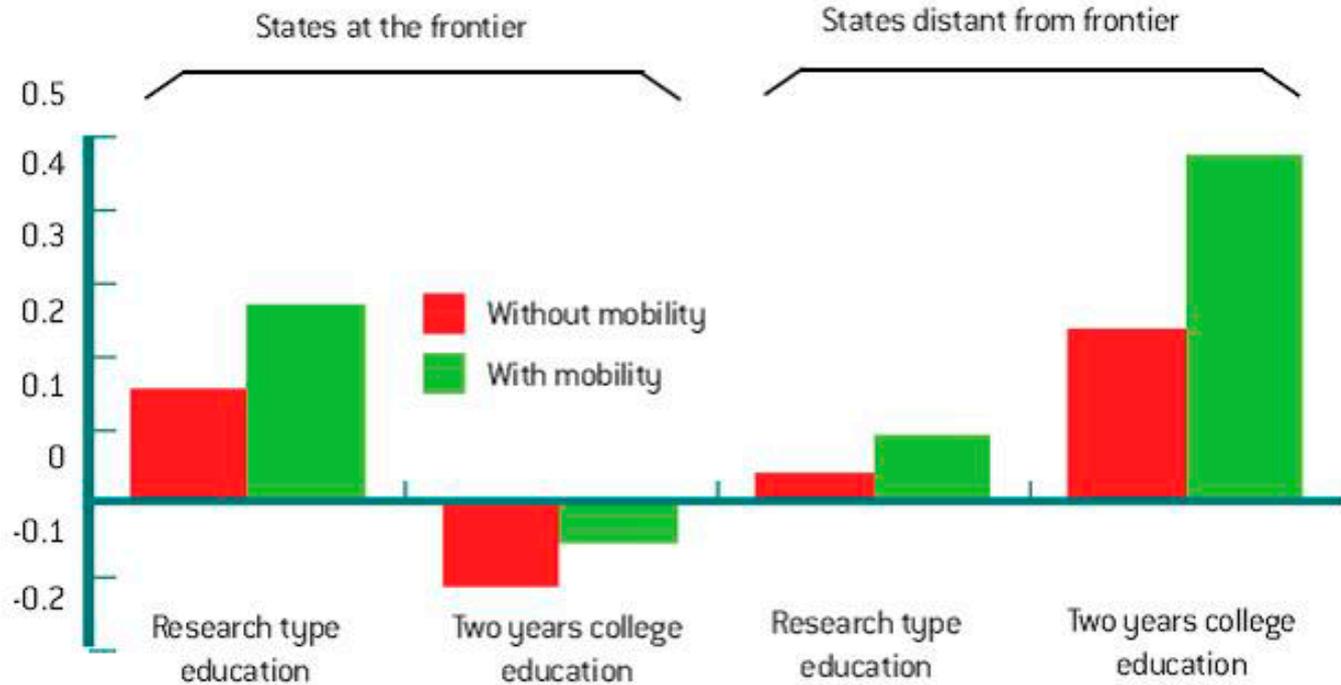
Source: Aghion, Boustan, Hoxby and Vandenbussche (2005)
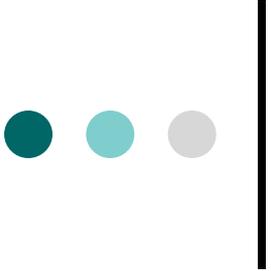
Introduction

- Number of scholars and policy makers recommend a reduction in the role and size of government….

- …as government intervention is often perceived as a constraint on market forces and thereby on innovation and economic growth.
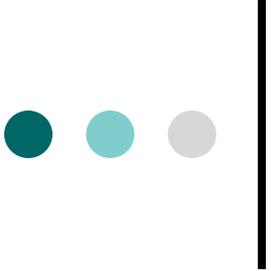
Introduction

○ Here we will argue that it is not so much a reduced state we need to foster innovation and growth…..

○ ….what we need is a "smart" state
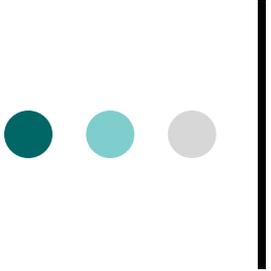
Introduction

- So far, debates on growth policy design have emphasized the knowledge layer and the market structure layer, but not so much the State or Government layer

- However this layer needs to be addressed when moving from an imitation-led to an innovation-led economy
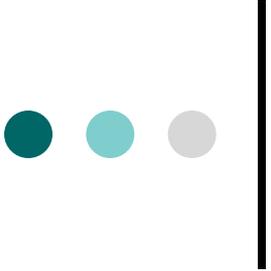
Introduction

- We will point to three main growth-enhancing functions of a smart state:
    - As an investor
    - As an insurer
    - As a redistributor
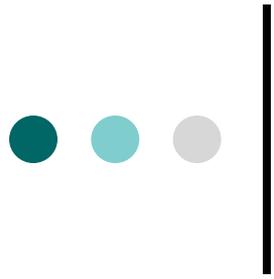
The State as a Strategic Investor
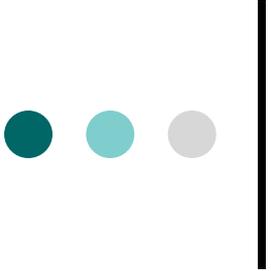
Why?

- Knowledge externalities (e.g in education and health) and credit constraints
- Budget constraints make it impossible to invest everywhere
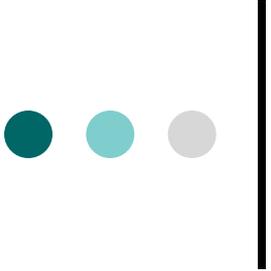
How?

- Targeted supply side investments (horizontal and vertical targeting)
- Link public investments to changes in governance
  - Education/Universities
  - Health
  - Industrial Policy

PISA and growth
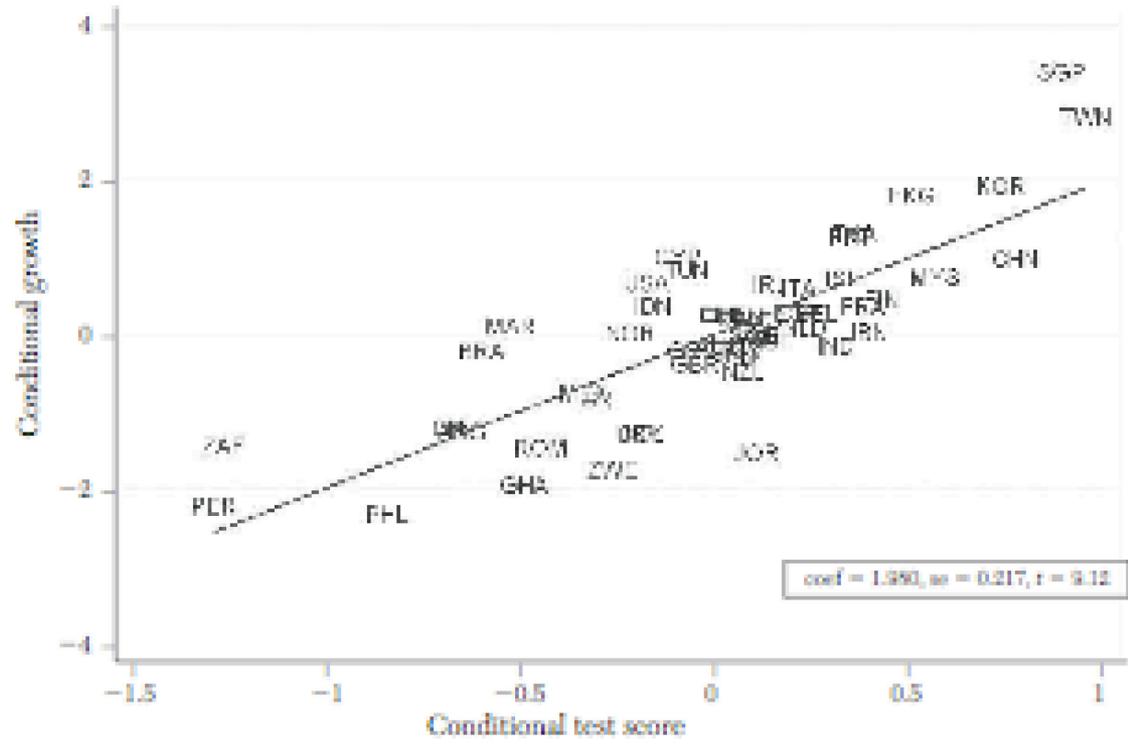
Figure 7. Added-Variable Plot of Growth and Test Scores

Notes: Added-variable plot of a regression of the average annual rate of growth (in percent) of real GDP per capita in 1960–2000 on the initial level of real GDP per capita in 1960, average test scores on international student achievement tests, and average years of schooling in 1960. Author calculations; see table 2, column 2.

Years of schooling and growth
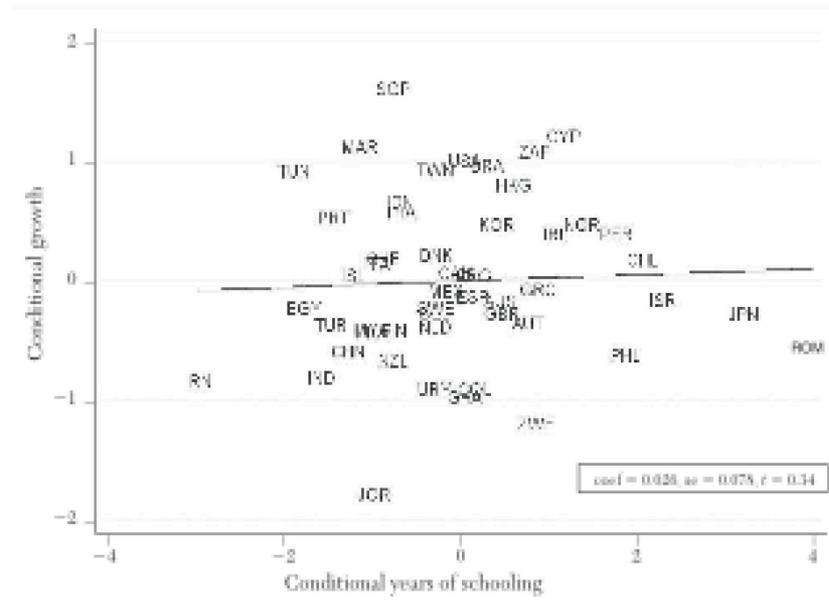
Figure 8. Added-Variable Plot of Growth and Years of Schooling with Test Score Controls

Notes: Added-variable plot of a regression of the average annual rate of growth (in percent) of real GDP per capita in 1960–2000 on the initial level of real GDP per capita in 1960, average test scores on international student achievement tests, and average years of schooling in 1960. Author calculations; see table 2, column 2.

Health and growth
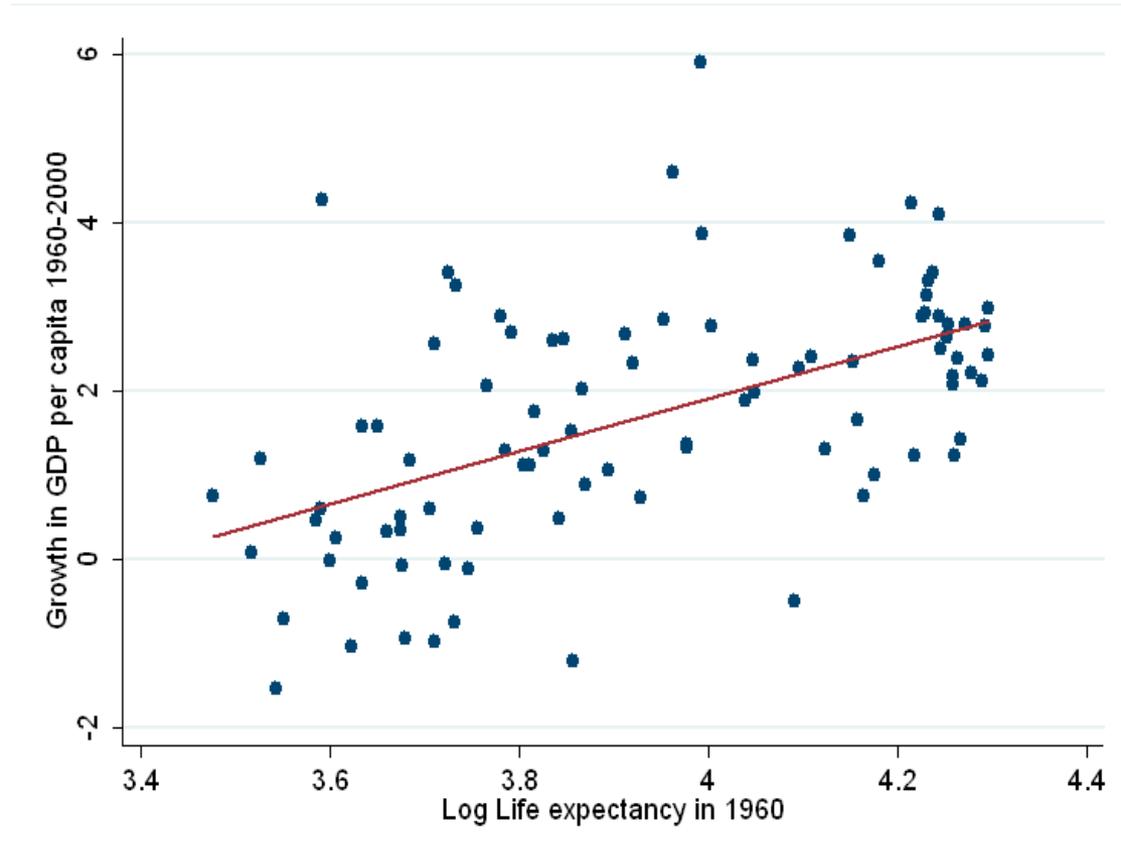
Health costs
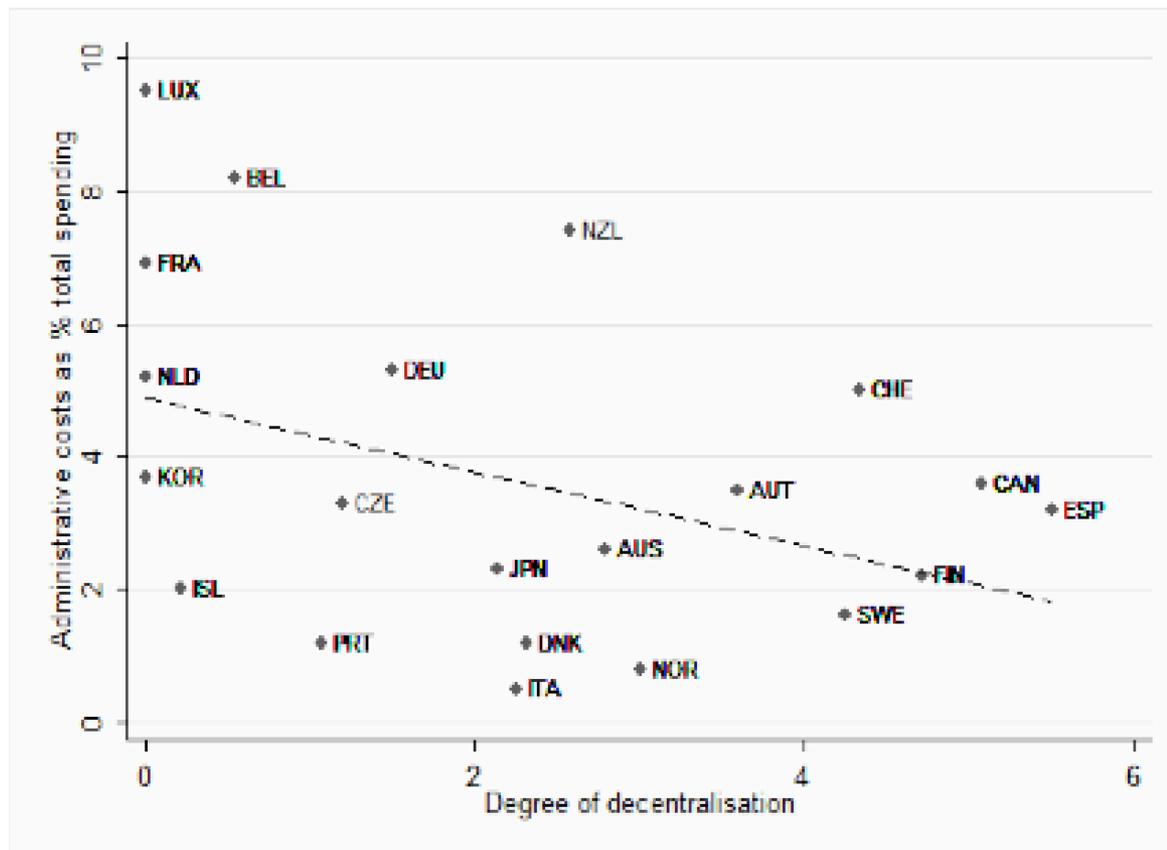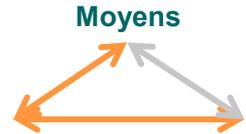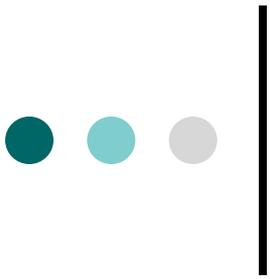
Figure 2: Relationship between expenditure per student and country performance

Country Performance Index

250

200

SE

150

DE

UK
NE
BE

US
100

FI

50

AU
DE
IE
FR
IT

GR
ES
CZ
HU

0

0   5   10   15   20   25   30   35   40

Expenditure per student, 1 000 euros
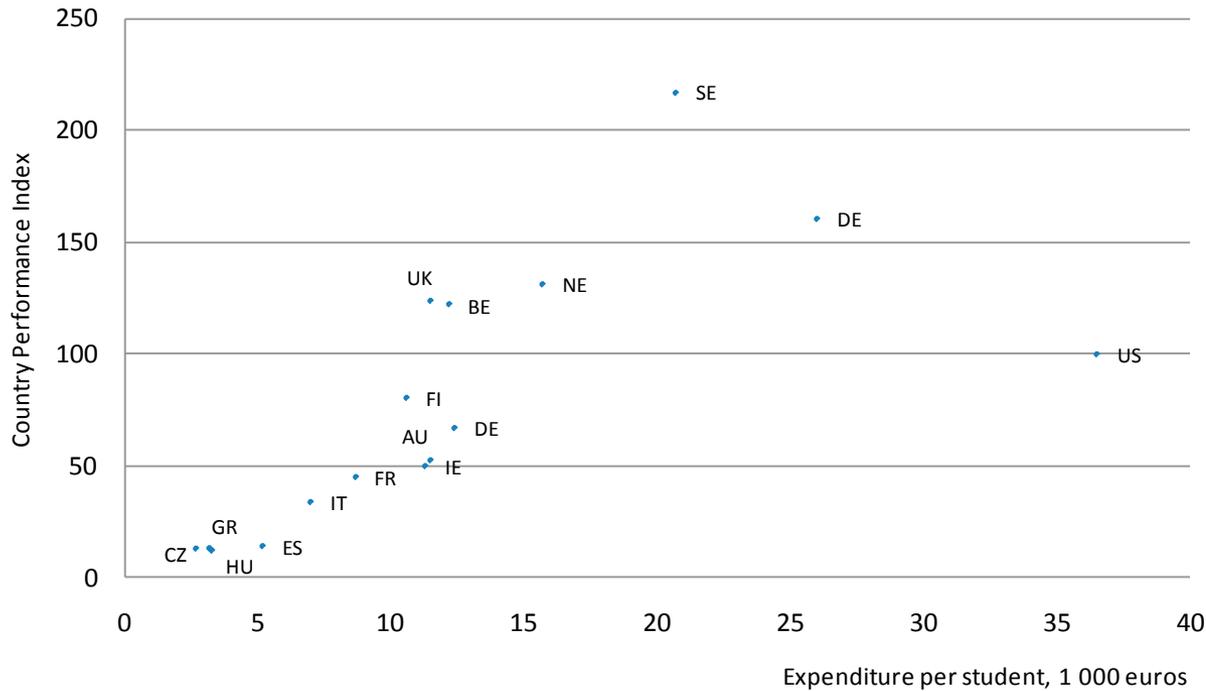
- Autant les meilleures universités de recherche américaines apparaissent comme des modèles , autant le système américain présente-t-il une performance globale très médiocre au regard des moyens mis en oeuvre

Autonomy of universities

Autonomie

Correlation between University Output and Autonomy

(coef=78.5,pvalue<0.001)

Source : The Governance and Performance of ResearchUniversities: Evidence from Europe and the U.S. – P. Aghion et alii – NBER avril 2009
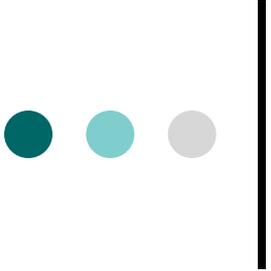
Industrial policy has a bad name

➢ Over time, and particularly since the 1980s, economists have come to dislike industrial policy on two grounds:

  ➢ (i) it focuses on big incumbents ('national champions);

  ➢ (ii) governments are not great in 'picking winners'.
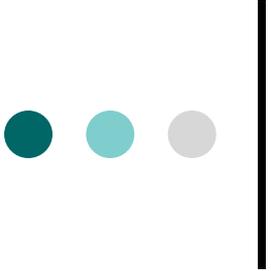
But…

- Nunn and Trefler (2011): Sectoral subsidies are more growth-enhancing if target more skill-intensive sectors
- Aghion et al (2012): Sectoral subsidies have a more positive effects on productivity and innovation when associated with greater competition
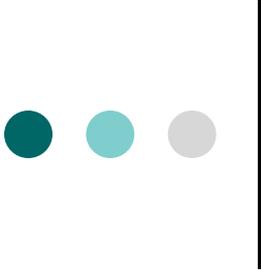
Rethinking industrial policy

- Aghion-Dewatripont-Du-Harrison-Legros
- Panel data of Chinese firms, 1988-2007
- Industrial firms from NBS: annual survey of all firms with more than 5 million RMB sales
- Regress TFP, TFP growth and product innovation on:
  - Subsidies received by firm as a share of sales
  - Competition
  - Dispersion of subsidies among firms within a sector
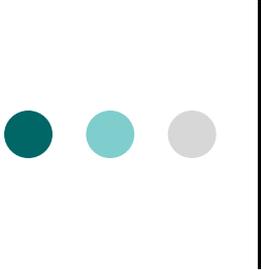
Rethinking industrial policy

- Findings are that:
  - The higher competition, the more positive (or less negative) the effect of subsidies on average TFP
  - The overall effect of subsidies on TFP is positive if competition is sufficiently high and/or subsidies are not too concentrated among firms in the sector
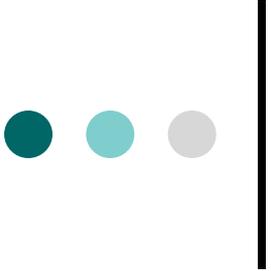
Estimation

$$\ln TFP_{ijt} = \alpha + \beta_1 Z_{ijt} + \beta_2 S_{jt} + \beta_3 SUBSIDY_{ijt} + \beta_4 COMP_{jt}$$

$$+ \beta_5 SUBSIDY * COMP_{jt} + \alpha_i + \alpha_t + \varepsilon_{ijt}$$

Z=Vector of firm-level controls, including state and foreign ownership

S=Vector of sector-level controls, including input and output tariffs, sectoral foreign shares.

All specifications allow for firm fixed effects and time effects.

Three Approaches: OLS, OLS with fixed effects, Olley-Pakes approach to measuring TFP in first stage

Results

<div align="center">Table 1</div>

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	lnTFP (based on Olley-Pakes regression)					
Stateshare	-0.00150	-0.00144	-0.00159	-0.00152	-0.00185	-0.00179
	(0.00337)	(0.00331)	(0.00337)	(0.00331)	(0.00329)	(0.00326)
Horizontal	0.322***	0.335***	0.323***	0.335***	0.178*	0.198*
	(0.0756)	(0.0793)	(0.0755)	(0.0793)	(0.0947)	(0.101)
Ratio_subsidy	-0.185***	-0.188***	-8.201***	-6.752***	-8.067***	-6.798***
	(0.0279)	(0.0276)	(1.769)	(1.404)	(1.748)	(1.392)
Competition_lerner		0.512		0.482		0.427
		(0.533)		(0.535)		(0.535)
Interaction_lerner			8.212***	6.724***	8.074***	6.773***
			(1.818)	(1.441)	(1.796)	(1.429)
Backward					0.779***	0.762***
					(0.278)	(0.273)
Forward					0.112	0.0995
					(0.0991)	(0.0990)
LnTariff	-0.0382**	-0.0348**	-0.0380**	-0.0348**	-0.0335	-0.0321
	(0.0162)	(0.0166)	(0.0162)	(0.0166)	(0.0214)	(0.0213)
LnbwTariff	-0.00764	-0.00672	-0.00770	-0.00682	-0.0223	-0.0213
	(0.0174)	(0.0172)	(0.0174)	(0.0172)	(0.0194)	(0.0189)
LnfwTariff	-0.00373	-0.00422	-0.00379	-0.00424	-0.00418	-0.00406
	(0.00260)	(0.00278)	(0.00260)	(0.00278)	(0.00544)	(0.00537)
Constant	1.726***	1.213**	1.725***	1.242**	1.699***	1.274**
	(0.0315)	(0.534)	(0.0314)	(0.535)	(0.0412)	(0.533)
Observations	1,072,034	1,072,034	1,072,034	1,072,034	1,072,034	1,072,034
R-squared	0.172	0.172	0.172	0.173	0.173	0.173

Notes: Robust clustered standard errors are shown in the parenthesises. Firm fixed effect and time effect are included in each specification. To exclude foreign-invested and state-owned firms, we estimate the results based on the sample of domestic non-state-owned firms.

Interacting with Herfindahl

<div style="text-align:center">Table 2</div>

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent: lnTFP (based on Olley and Pakes regression)					
	The second quartile: more dispersion in subsidies					
Ratio_subsidy	-0.197*	-0.193**	-16.25***	-12.00***	-16.49***	-11.96***
	(0.0962)	(0.0937)	(4.884)	(4.037)	(4.813)	(4.031)
Competition_lerner		1.818		1.763		2.001
		(1.286)		(1.285)		(1.308)
Interaction_lerner			16.63***	12.24***	16.88***	12.19***
			(5.096)	(4.186)	(5.023)	(4.178)
	The fourth quartile: least dispersion in subsidies (most concentrated)					
ratio_subsidy	-0.227***	-0.228***	-9.352**	-6.169**	-9.148**	-6.338**
	(0.0625)	(0.0627)	(3.615)	(2.854)	(3.710)	(2.860)
competition_lerner		1.179		1.153		1.029
		(0.981)		(0.982)		(1.042)
interaction_lerner			9.320**	6.069**	9.107**	6.238**
			(3.628)	(2.883)	(3.727)	(2.888)
Horizontal	Yes	Yes	Yes	Yes	Yes	Yes
Forward & Backward	No	No	No	No	Yes	Yes
Tariffs	Yes	Yes	Yes	Yes	Yes	Yes

Product innovation

○ Here, we use the new product ratio as the dependent variable. New product ratio is defined as the share of output value generated by new products to the total output value.

|	(1)	(2)	(3)	(4)	(5)	(6)
Table 6						
			Dependent: Ratio_newproduct			
			The second quartile			
Ratio_subsidy	0.00397	0.00364	-1.503*	-1.689**	-1.508*	-1.679**
	(0.0390)	(0.0388)	(0.821)	(0.755)	(0.816)	(0.755)
Competition_lerner		-0.0724		-0.0798		-0.0777
		(0.0789)		(0.0780)		(0.0720)
Interaction_lerner			1.562*	1.755**	1.568*	1.744**
			(0.841)	(0.780)	(0.837)	(0.780)
			The fourth quartile			
ratio_subsidy	0.00185	0.000920	-1.324	-1.029	-1.332	-1.022
	(0.0351)	(0.0352)	(1.475)	(1.442)	(1.468)	(1.432)
competition_lerner		0.117*		0.114*		0.122*
		(0.0662)		(0.0657)		(0.0622)
interaction_lerner			1.359	1.057	1.368	1.049
			(1.503)	(1.470)	(1.495)	(1.460)
Horizontal	Yes	Yes	Yes	Yes	Yes	Yes
Forward & Backward	No	No	No	No	Yes	Yes
Tariffs	Yes	Yes	Yes	Yes	Yes	Yes

Inducing green growth

➢ Another argument for sectoral policy
  ➢ Redirect technical change when there is damaging **path-dependence** in the direction of innovation under laissez-faire (AABH)
  ➢ Current work with Antoine Dechezlepretre, David Hemous, Ralf Martin and John Van Reenen
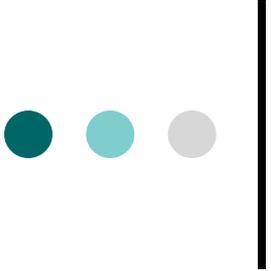
Inducing green growth

- Basic idea: firms' propensity to innovate "clean" versus dirty:
  - Is positively correlated with stock of past clean innovation
  - Is negatively correlated with stock of past dirty innovation
- Hence a role for government intervention in redirecting technical change (carbon tax, research subsidies)

Inducing green growth

| Dep.Variable	Difference between Clean and Dirty Patent applications ln(1+number of clean applications)-ln(1+number of dirty applications)					
	1	2	3	4	5	6
Stock of clean patents	0.142***		0.141***	0.140***	0.113***	-9.45
	(0.014)		(0.014)	(0.014)	(0.015)	(6.238)
Stock of dirty patents	-0.053***		-0.053***	-0.052***	-0.01	4.61
	(0.014)		(0.014)	(0.014)	(0.019)	(4.945)
Fuel Price		0.662***	0.590***	0.335**	0.457***	0.406***
		(0.154)	(0.150)	(0.138)	(0.142)	(0.145)
GDP				-2.846***		-2.085***
				(0.607)		(0.468)
GDP per capita				1.494**		0.15
				(0.697)		(0.587)
Stock of clean patents X Fuel Price					-0.099**	-0.169*
					(0.041)	(0.095)
Stock of dirty patents X Fuel Price					0.167***	0.07
					(0.029)	(0.063)
Stock of clean patents X GDP						0.474*
						(0.266)
Stock of dirty patents X GDP						-0.495*
						(0.272)
Stock of clean patents X GDP per capita						-0.44
						(0.339)
Stock of dirty patents X GDP per capita						0.974**
						(0.385)
Firm Fixed Effects	yes	yes	yes	yes	yes	yes
Country X Year Controls	yes	yes	yes	yes	yes	yes
Observations	141284	141284	141284	141284	141284	141284
Firms	6422	6422	6422	6422	6422	6422

The State as an Insurer

State as insurer

- Labor market: flexsecurity
- Macroeconomic fluctuations

1. Labor market risks

Flexsecurity
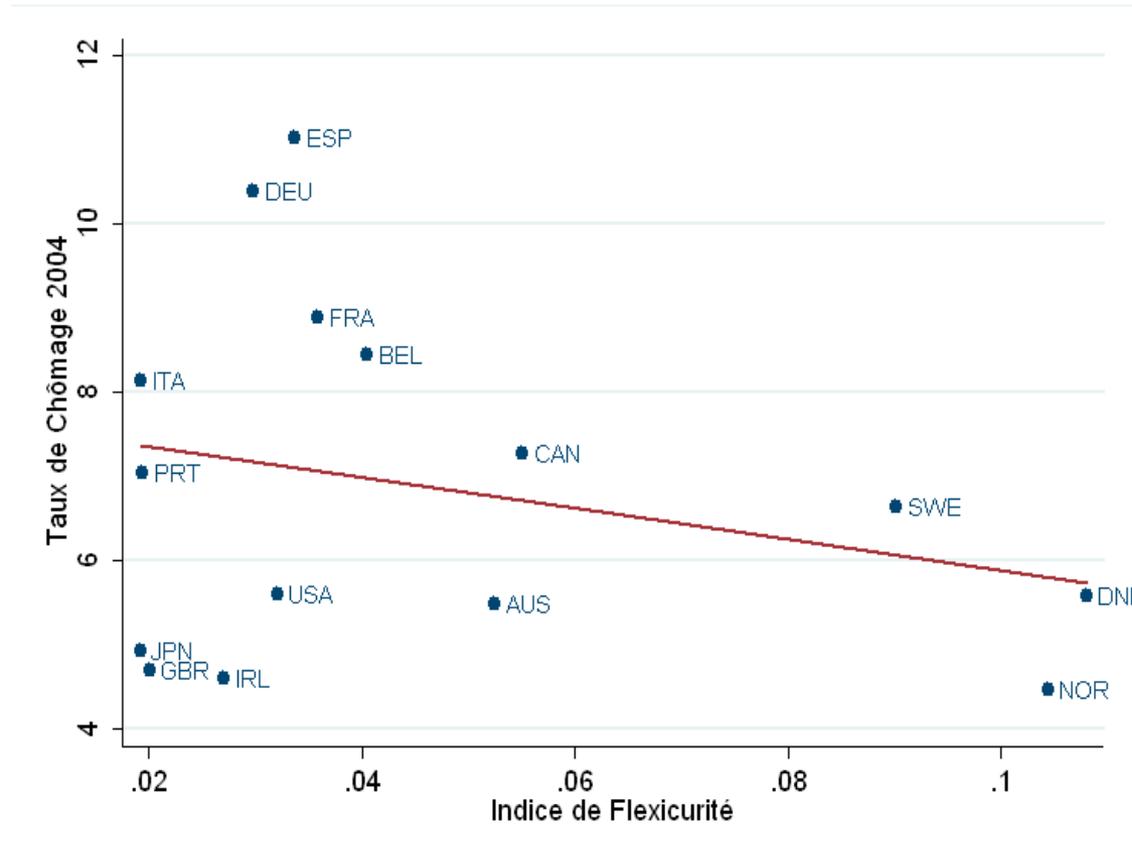
Flexsecurity
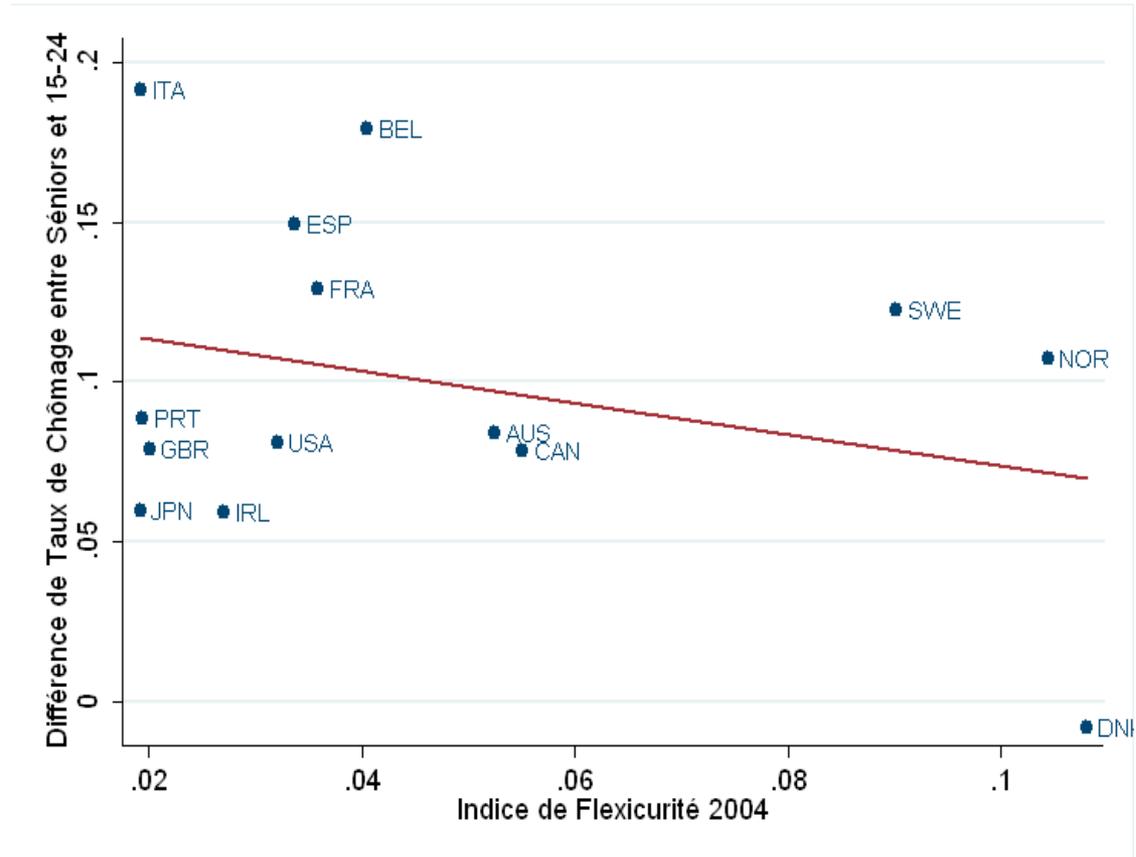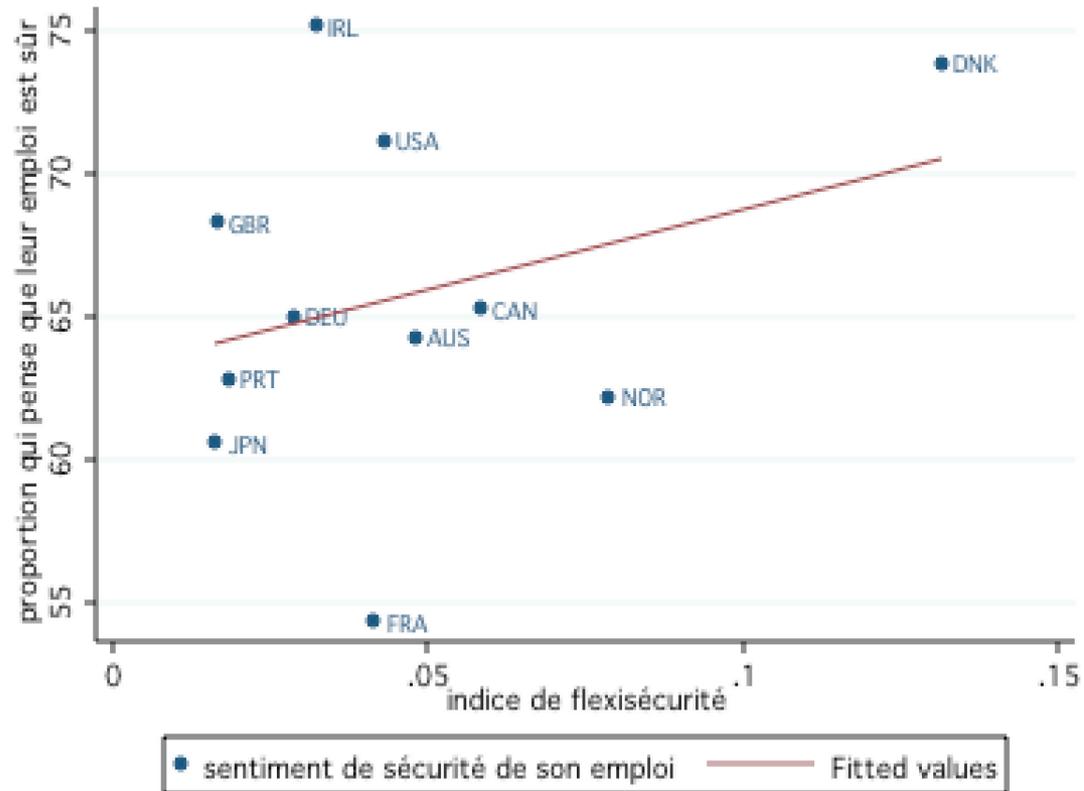
Flexsecurity

Flexsecurity
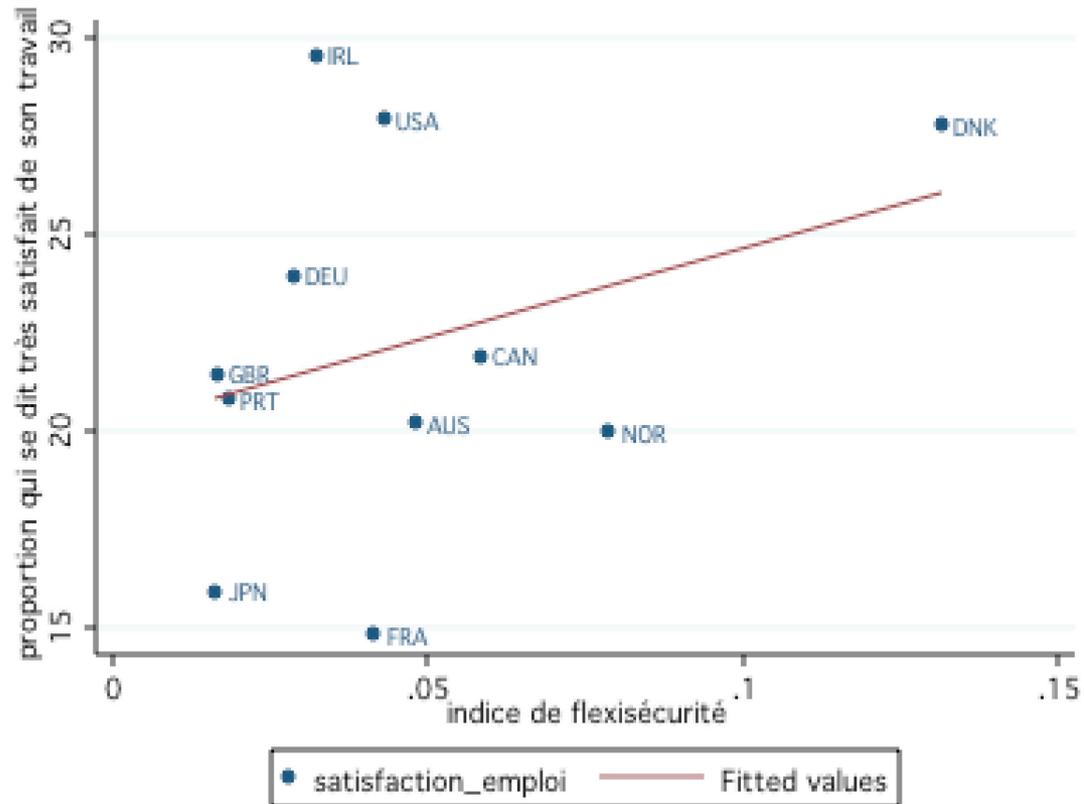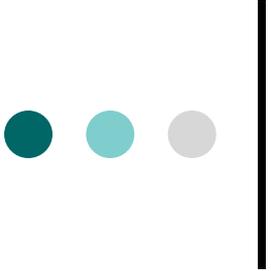
# 2. Macroecomic risk
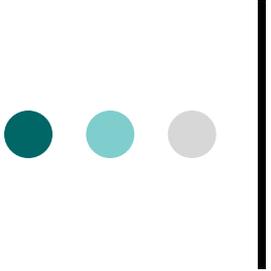
Two Contrasted Views

- Keynesian view (non-discriminatory increase in public spending)
- Neo-conservative view (tax and spending cuts)
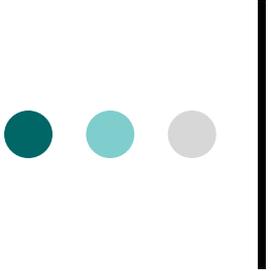
Keynesian policies do not work so well in a globalized economy

- Keynesian multiplier tends to be small, particularly in more open economies
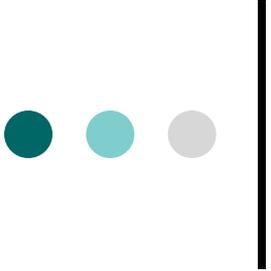
Laissez-Faire Policy May Be Harmful

- Macroeconomic volatility is detrimental to innovation, particularly in firms that are more credit constrained
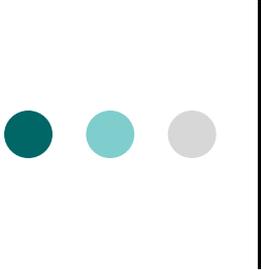
A Third Way

- There is a third way between keynesian and conservative approaches
    - namely, countercyclical fiscal and monetary policy to partly circumvent credit market imperfections and thereby help firms maintain their growth-enhancing investments over the cycle.
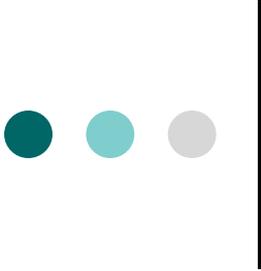
Fiscal policy over the cycle

- 17 OECD countries, 45 manufacturing industries, period 1980-2005
- **Countercyclical fiscal policy enhances growth more in sectors that are more dependent on external finance or in sectors with lower asset tangibility**
- **Budgetary discipline helps achieve more countercyclical fiscal policies**

Fiscal countercyclicality across OECD countries

Fiscal Policy Counter-Cyclicality Estimates

Primary Fiscal Balance to GDP sensitivity to output gap
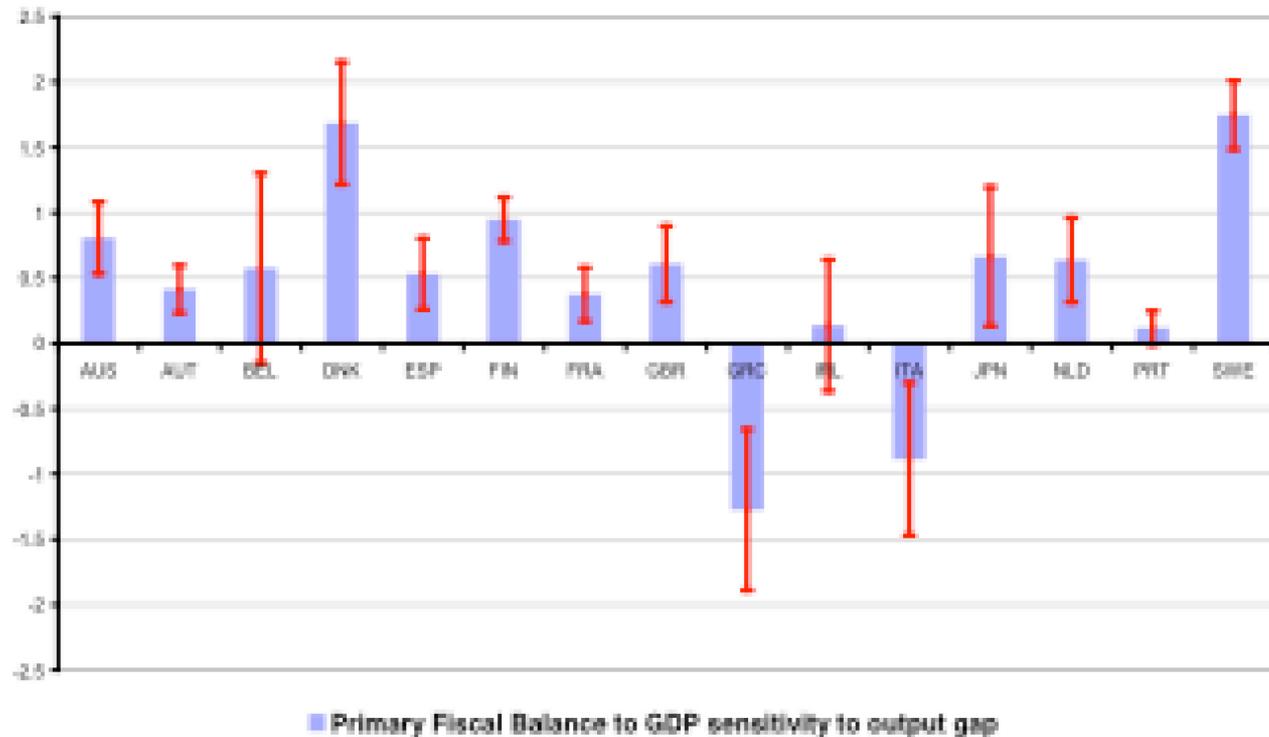
Dependent variable: Real Value Added Growth

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Log of Initial Share in Manufacturing Value Added	-0.797** (0.280)	-0.808** (0.278)	-0.809*** (0.246)	-0.811*** (0.247)	-0.528 (0.350)	-0.530 (0.350)	-0.508 (0.351)	-0.510 (0.352)
Interaction (Financial Dependence and Total Fiscal Balance to GDP Counter-Cyclicality)	6.687*** (1.510)							
Interaction (Financial Dependence and Total Fiscal Balance to potential GDP Counter-Cyclicality)		6.701*** (1.419)						
Interaction (Financial Dependence and Primary Fiscal Balance to GDP Counter-Cyclicality)			4.661*** (0.878)					
Interaction (Financial Dependence and Primary Fiscal Balance to potential GDP Counter-Cyclicality)				4.680*** (0.860)				
Interaction (Asset Tangibility and Total Fiscal Balance to GDP Counter-Cyclicality)					-13.30*** (4.406)			
Interaction (Asset Tangibility and Total Fiscal Balance to potential GDP Counter-Cyclicality)						-13.24*** (4.251)		
Interaction (Asset Tangibility and Primary Fiscal Balance to GDP Counter-Cyclicality)							-8.942*** (2.895)	
Interaction (Asset Tangibility and Primary Fiscal Balance to potential GDP Counter-Cyclicality)								-9.039*** (2.830)
Observations	528	528	528	528	528	528	528	528
R-squared	0.579	0.581	0.579	0.579	0.560	0.561	0.560	0.560
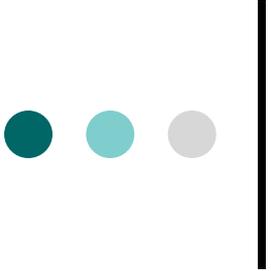
From fiscal to monetary policy

- More countercyclical monetary policy, i.e with lower short-run real interest rates in recessions and higher rates in booms...

- ....is more growth-enhancing in more credit constrained or more liquidity-constrained sectors
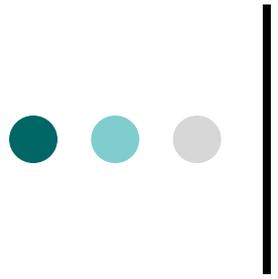
The State as a Redistributor
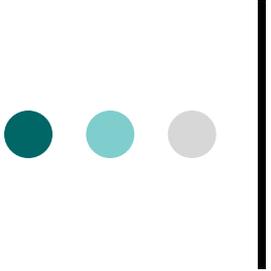
Why make growth inclusive?

- Elicit effort and trust
- Avoid exclusion from top and bottom of wealth/income distribution
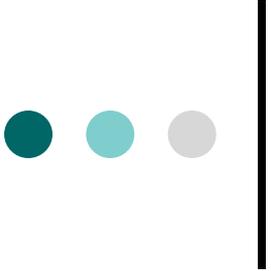
Why care about trust?

- For its own sake…

- …but also, as it turns out, trust helps sustain reform towards more market flexibility.

Distrust and regulation of product market
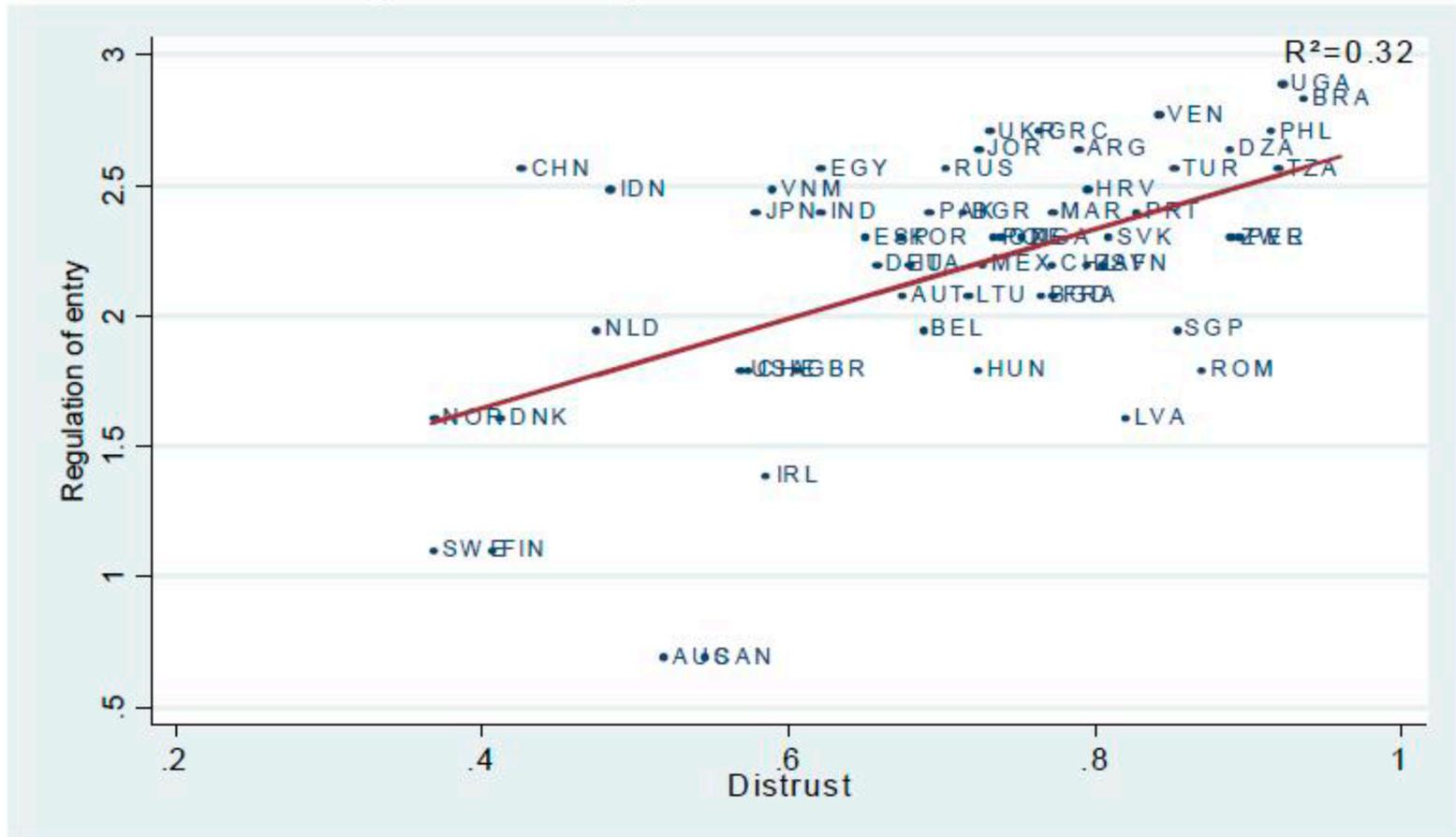
# Distrust and regulation of labor market
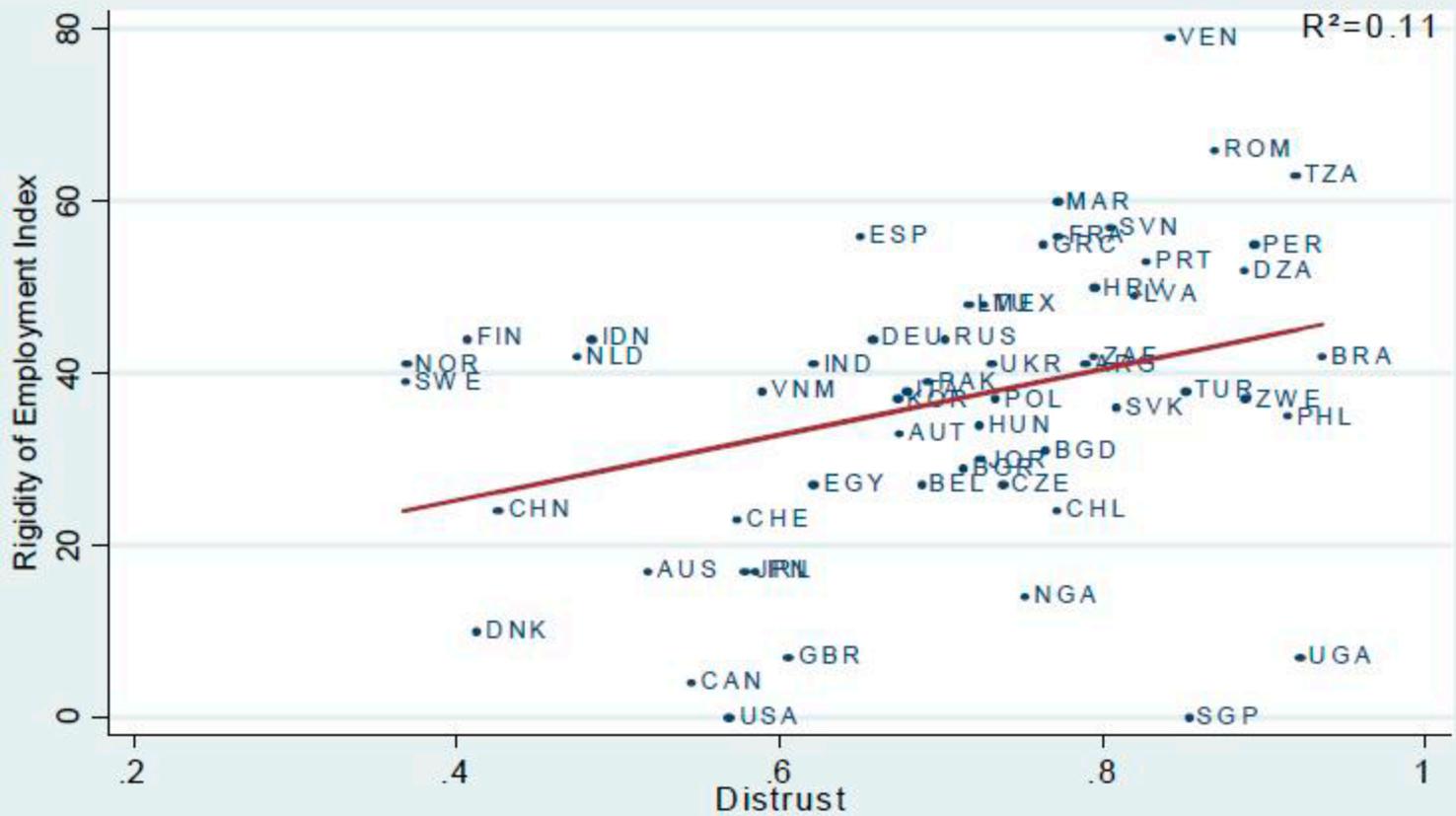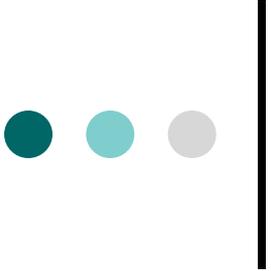
Three objectives of a good taxation system

- It should be fair in order to enhance trust and social capital
- It must yield a good return to finance public growth investments
- It must not discourage innovation
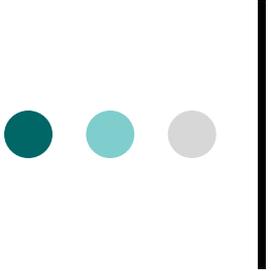
Finding

- Raising taxes may enhance growth if high government efficiency or low corruption

Growth Rate and Tax Burden
High Corruption Countries

OECD Countries - High Corruption Countries (ICRG)
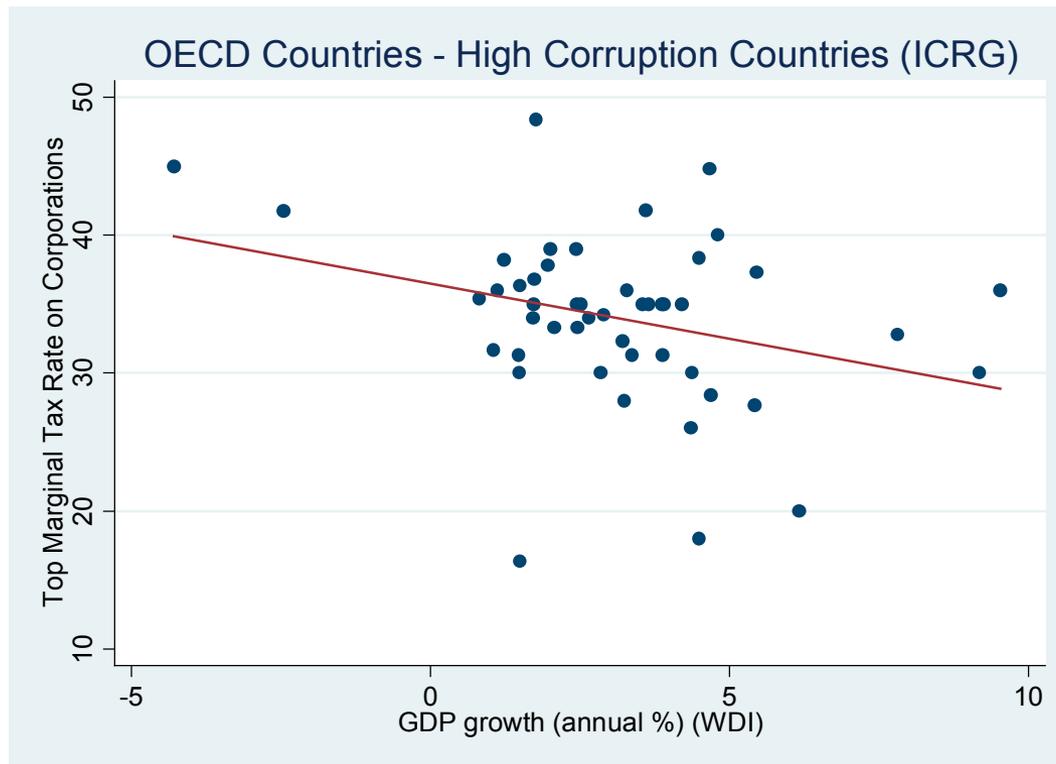
Growth Rate and Tax Burden
Low Corruption Countries

OECD Countries - Low Corruption Countries (ICRG)
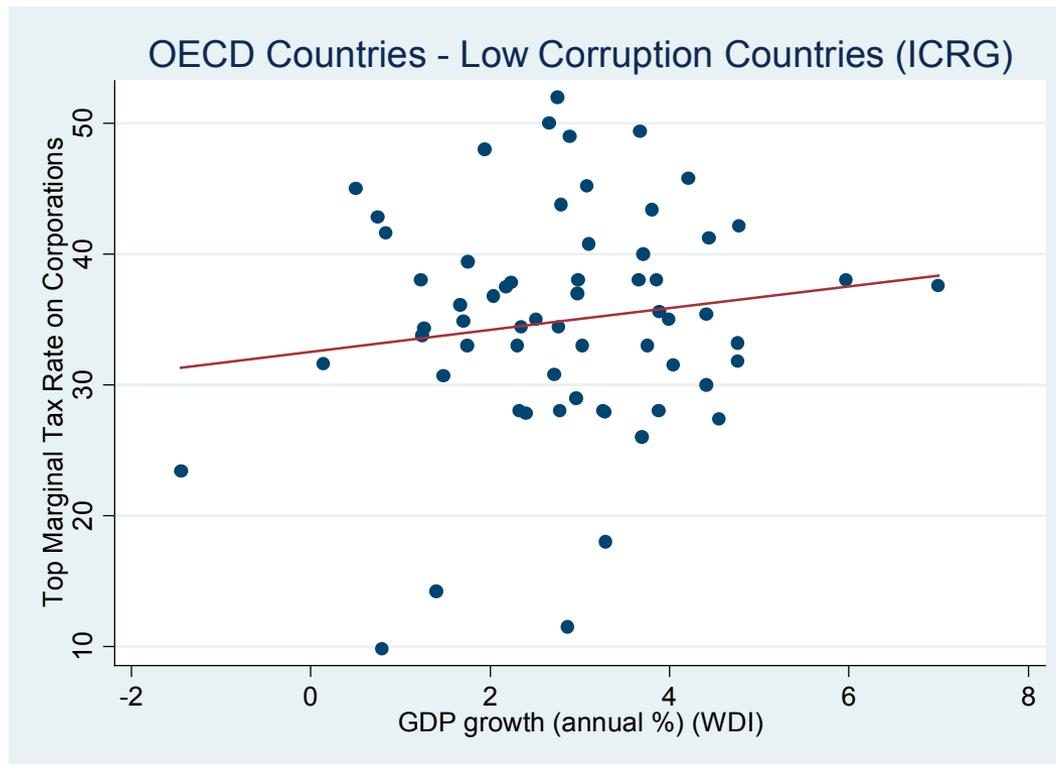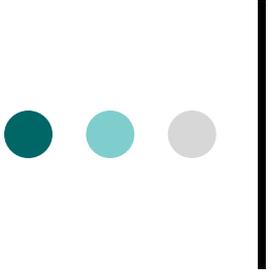
Conclusion 1: State as Investor

- Need for fiscal consolidation should not lead to give up on investments in health, education, support to SMEs,..

- Investments should go along with changes in governance (like in universities)

- Industrial policy can work if properly governed
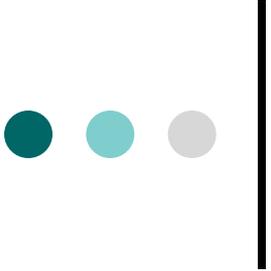
Conclusion 2: State as Insurer

- A macroeconomic policy which is neither Keynesian nor laissez-faire
  - Government should pursue actively countercyclical fiscal and monetary policies
  - Automatic stabilizers should also target R&D, support to SMEs, to higher education, to training and labor reallocation
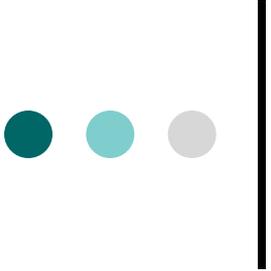
Conclusion 3: The Virtuous Triangle

- Budgetary discipline
- Growth
- Inclusiveness
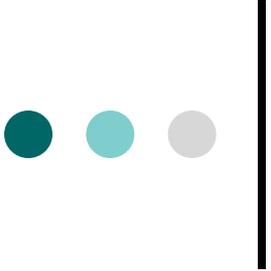
Conclusion 4: Euro zone

- Budgetary discipline part is there, often not the other two sides of the triangle
- How can Europe help enhance growth in the Eurozone:
  - Structural funds to help countries implement equitable and therefore acceptable structural/governance reforms
  - Project bonds to finance industrial/infrastructure projects to help countries restore growth competitiveness in spite of budgetary obligations
  - Deficit and debt targets that are adjusted for the cycle
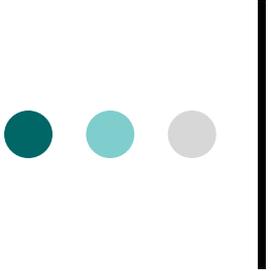
Should we all become Scandinavians?

- Priority investments in R&D, higher education, green innovation
- Flexsecurity, countercyclical macroeconomic policies, environmental policy
- Transparency, trust, and progressive taxation systems