

# The ICT Revolution and Italy's Two Lost Decades

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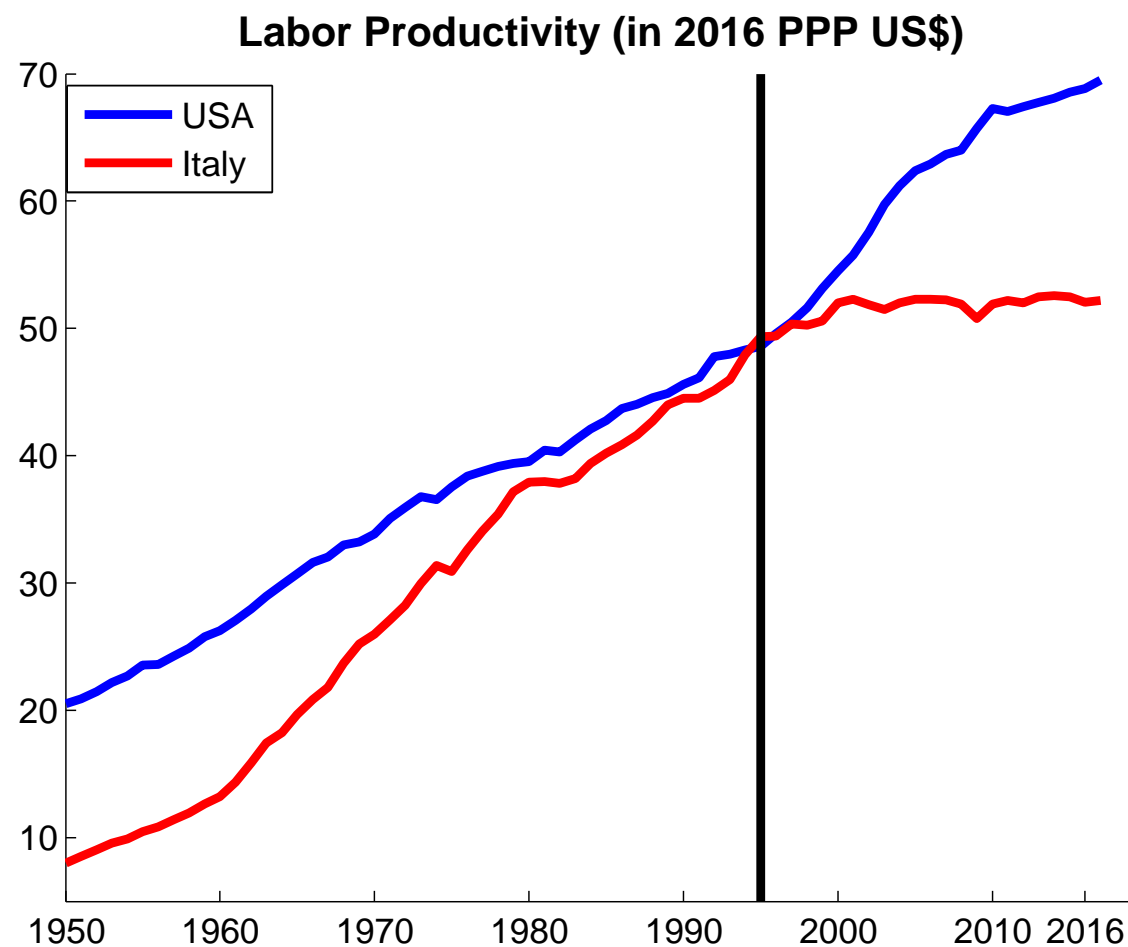
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Discussion by Georg Duernecker  
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Discussion by Georg Duernecker

# Italy's Growth Dilemma



- **USA:** 2.4% (1955-75), 1.3% (75-95), 1.8% (95-15)
- **ITA:** 5.6% (1955-75), 2.4% (75-95), 0.2% (95-15)

## Paper in a Nutshell

- Paper proposes explanation for **Italy's growth dilemma**

- Two key inputs

1. Italian firm's are poorly managed
2. Good management and ICT capital are complements

⇒ **Low technology adoption** of ICT capital

⇒ Italy failed to exploit the growth potential of the ICT revolution

$$y(i) = a(i) \xi^{1_M} \varphi^{1_{M^{ICT}}} \left( l^{1-\beta} Y_S^\beta \right)$$

- $\xi^{ITA} < \xi^D$
- $\varphi^{ITA} < \varphi^D$

## Discussion

- Thought-provoking paper
- Comments about
  - Empirical part and motivation
  - Model and quantitative part

**Question 1:** Is the **lack of ICT adoption** behind the Italian growth slowdown?

**Question 2:** Is the **level of management quality** lower in Italy than in Germany/U.S.?

## Question 1: Source of Slowdown

- **Growth accounting** to identify source of slowdown/stagnation

$$Y_t = A_t F(K_t, H_t L_t)$$

$$Y_t = A_t F(K_t^{ICT}, K_t^N, H_t L_t)$$

$$\Delta Y_t / L_t = \Delta A_t + s_t^{ICT} \Delta K_t^{ICT} + s_t^N \Delta K_t^N + s_t^H \Delta H_t$$

- What is the contribution of  $s_t^{ICT} \Delta K_t^{ICT}$ ?

## Question 1: Source of Slowdown

- **Growth accounting** (1995-2015, Source: TED)

	$\Delta Y_t/L_t =$	$\Delta A_t$	$+ s_t^{ICT} \Delta K_t^{ICT}$	$+ s_t^N \Delta K_t^N$	$+ s_t^H \Delta H_t$
USA	1.8% =	0.5	<b>0.4</b>	0.7	0.2
GER	1.3% =	0.3	<b>0.2</b>	0.7	0.1
ITA	0.2% =	-0.8	<b>0.1</b>	0.7	0.2

- **ICT capital plays little role** for dismal growth performance of Italy

⇒ **Need a Theory of TFP slowdown**

## Question 1: Source of Slowdown

		$\Delta A_t$	$s_t^{ICT} \Delta K_t^{ICT}$
GER	1975 – 95	1.2	0.2
	1995 – 09	0.4	0.3
ITA	1975 – 95	0.6	0.2
	1995 – 09	−0.6	0.2

(Source: EU-KLEMS)

- Missing: smoking gun that lack of ICT adoption is source of stagnation
- Data suggests that **TFP slowdown matters**

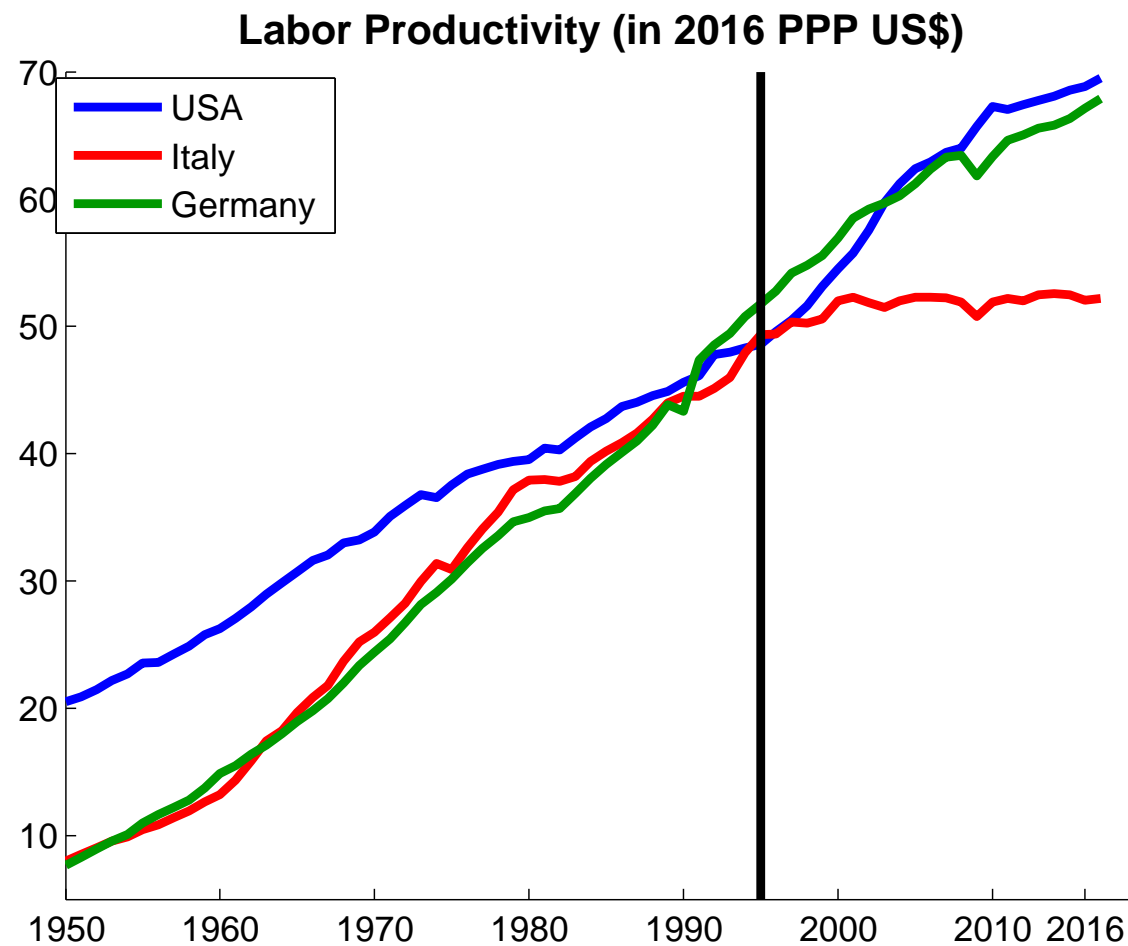
## Question 2: Management Quality, Italy vs Germany

- Bloom et al. (2016): small difference in management quality between GER and Italy going from Italian to German management 3.6% productivity increase
- Little direct evidence in the paper that Italian firms adopt less ICT
  - Dummy variable whether firm employs ICT specialist
  - No intensive margin, rather proxy for firm size
- Other barriers to technology adoption: regulation, unions (ICT is labor-saving and replaces routine labor)
- Why not be agnostic about source of low ICT adoption?

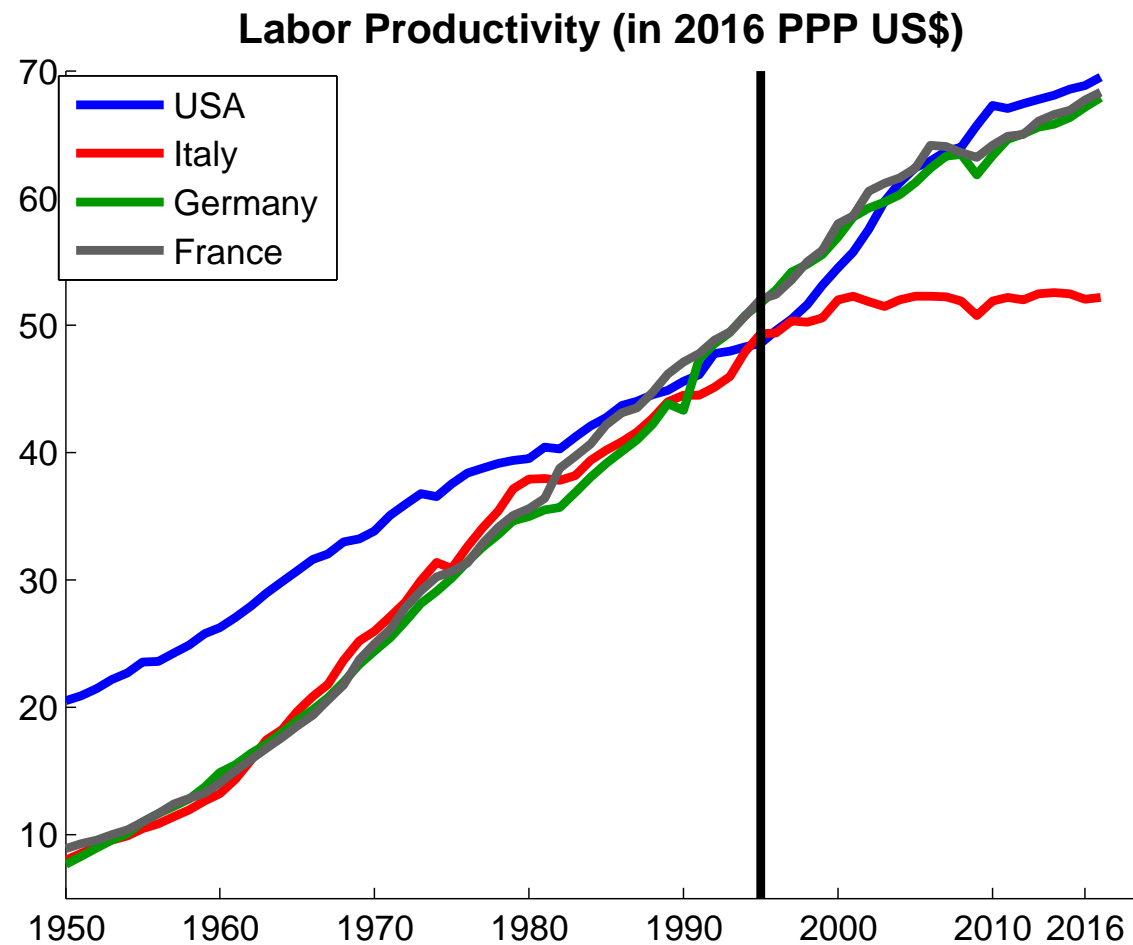
## More Thoughts on the Empirics I

- Is this a story of **Europe vs. USA?**
- Do certain (European) institutions prevent technology adoption?
- Similar to:
  - Prescott: hours worked and taxes
  - Ljungqvist-Sargent: unemployment and welfare state

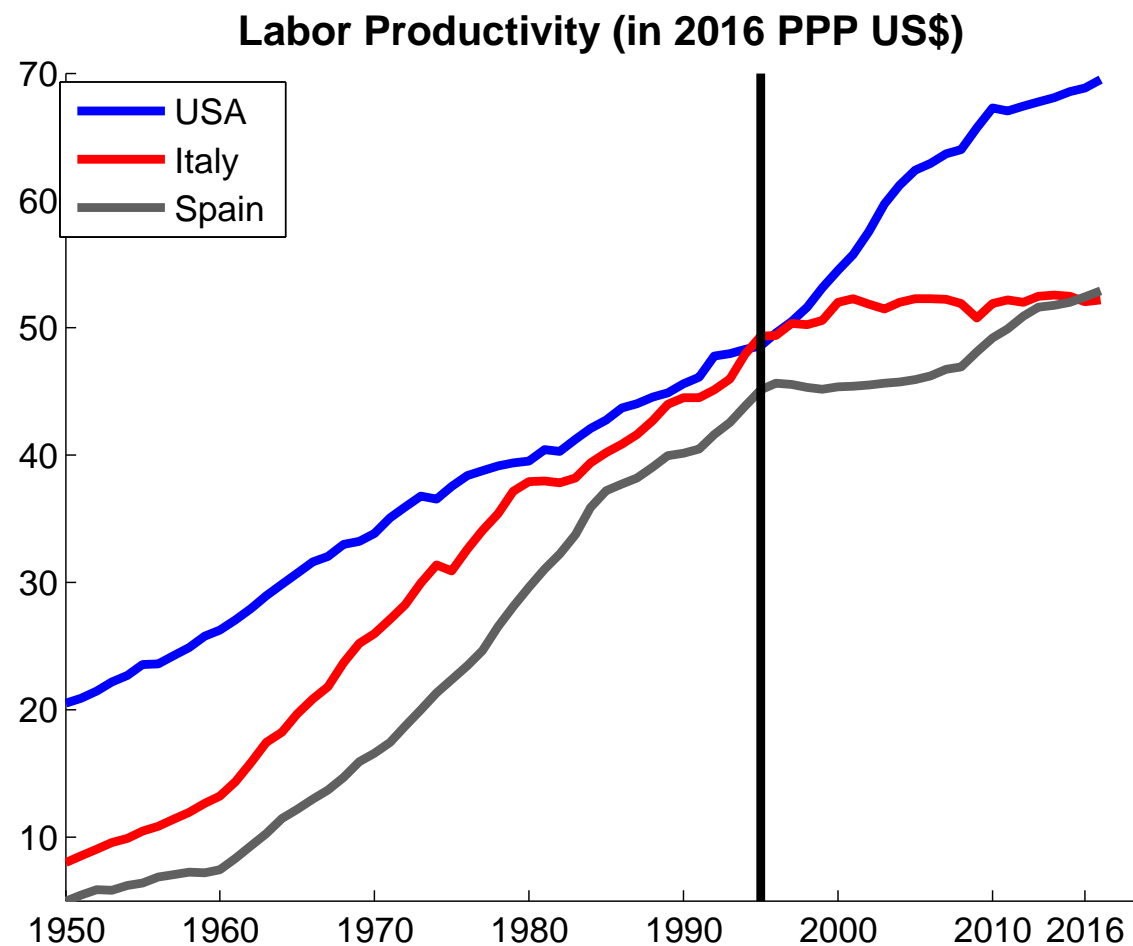
## Europe vs. USA? **NO!**



## Europe vs. USA? NO!

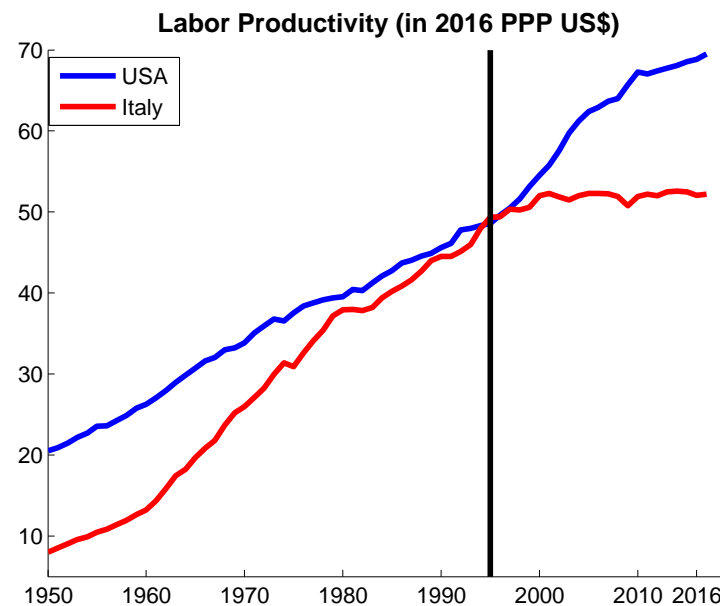


## Not a story of Italian institutions



- **Use: Cross-country variation in management quality and technology adoption**

## More Thoughts on the Empirics II



- Paper: why **Italy has not taken off** like the U.S.
- Data: Italy has slowed down
- Need a **theory of the slowdown** and not of the lack of acceleration
- Story works if
  - Management quality in mid-1990s has deteriorated (?)
  - Productivity growth since 1995 was largely due by to ICT
- Adoption of previous technologies: **Why did it work before the 1990?**

## Model and Quantitative Part I

- Very stylized, hard to connect to data
- How to connect fixed costs to observables?
- Empirical validation of calibrated model
  - Does calibrated model match non-targeted statistics?
  - Implications for aggregate outcomes: TFP growth, ICT shares, firm size distribution

## Model and Quantitative Part II

- Most of the effect comes from  $\varphi_D > \varphi^I$
- Negligible quantitative effect of
  - Management differences between ITA and GER
  - Supply-chain spillovers
- Simplify model and get rid of supply chain