

Human Resource Management (HRM) and Productivity

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Introduction

1. What is HRM?
2. Some “facts” about productivity & HRM
3. Theoretical Perspectives
4. Some determinants of HRM
 - Incentive Pay
 - Work Organization (decentralization)
5. Effects of HRM on productivity
6. Conclusions & areas for research

Scope: What aspects of HRM do we look at?

- **Pay**
 - Individual incentive pay
 - Group incentive pay
- **Work organization**
 - Decentralization/delegation
 - Teams, job design
- Promotion (e.g. appraisals, tournaments)
- Hiring (e.g. screening)
- Firing
- Hierarchy – span of control, levels
- Skill acquisition

“Facts” on productivity and HRM

Theories

Determinants of HRM

Effects of HRM on productivity

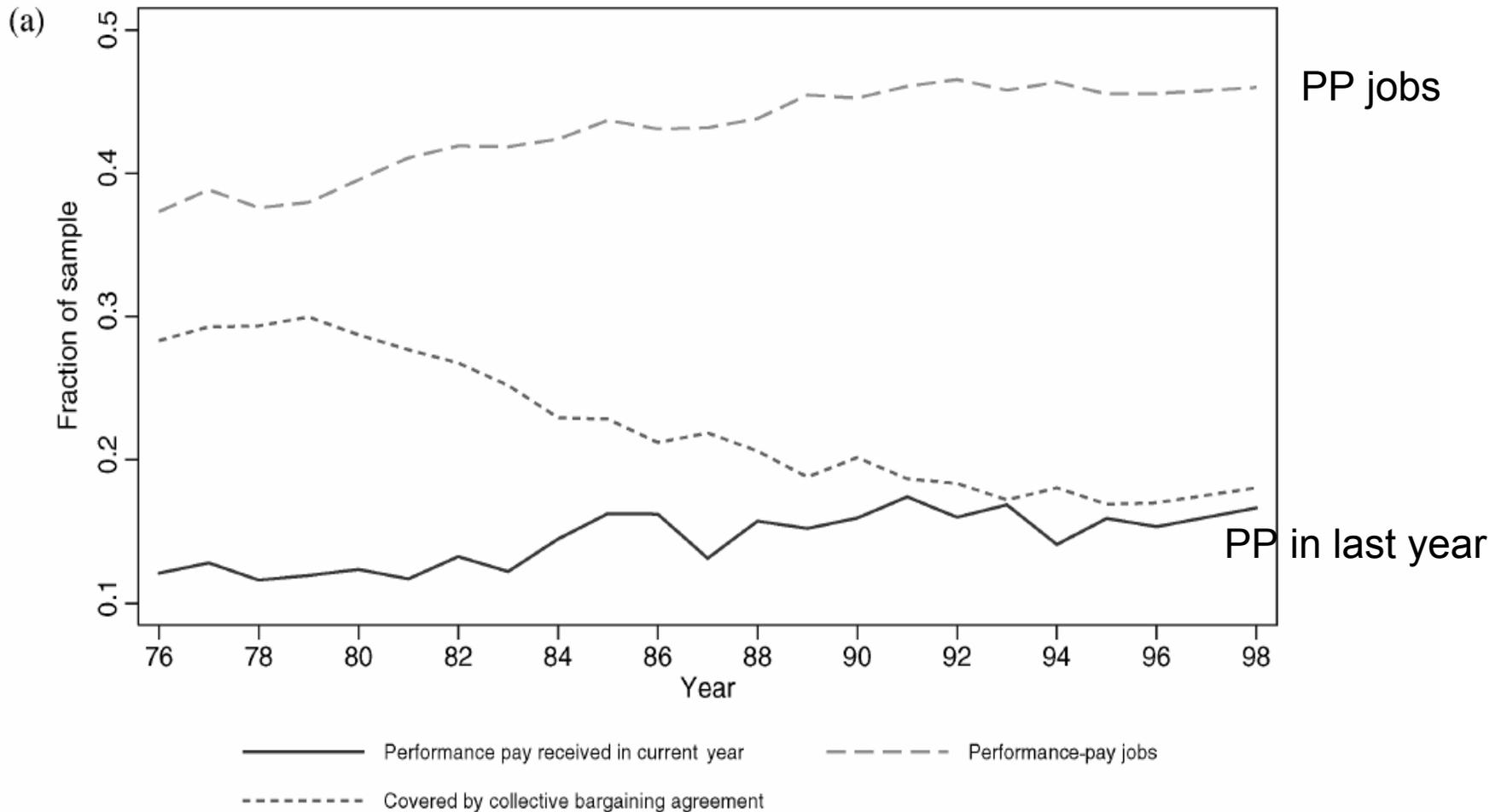
Some Facts on Productivity

1. Aggregate growth basically a productivity story (Solow; post 1995 US “miracle”; reallocation)
 2. Large cross country variation (Jones and Romer, 2009)
 3. Large cross sectional dispersion *within* countries
 - e.g. Syverson (2004, 2009) Within 4 digit sector (in US) a plant at 90th percentile 4x output per worker as 10th percentile. TFP 2x
 - These plant differences are persistent
- **Measurement Issues**
 - Plant-specific prices (Foster et al,2009, TFPQ/ TFPR)
 - Large econometric lit on estimating production functions (utilizing new firm/plant level datasets). Olley-Pakes (1996), Blundell-Bond (2000), Akerberg et al (2007)

Some Facts on HRM

- **Incentive/Performance Pay**
 - Levels (e.g. Brown, 1990)
 - *Trends*
 - *NB*: Direct vs. Indirect measures
- **Other HRM Practices**
 - Levels
 - Trends
- **International Comparisons**
 - Bloom and Van Reenen (2009) CEP Management and Organizational practice surveys

Fig 2.1 Growth of performance pay in the US (PSID, full time males), 1976-1998



Source: Lemieux, MacLeod and Parent (2009), Figure IV

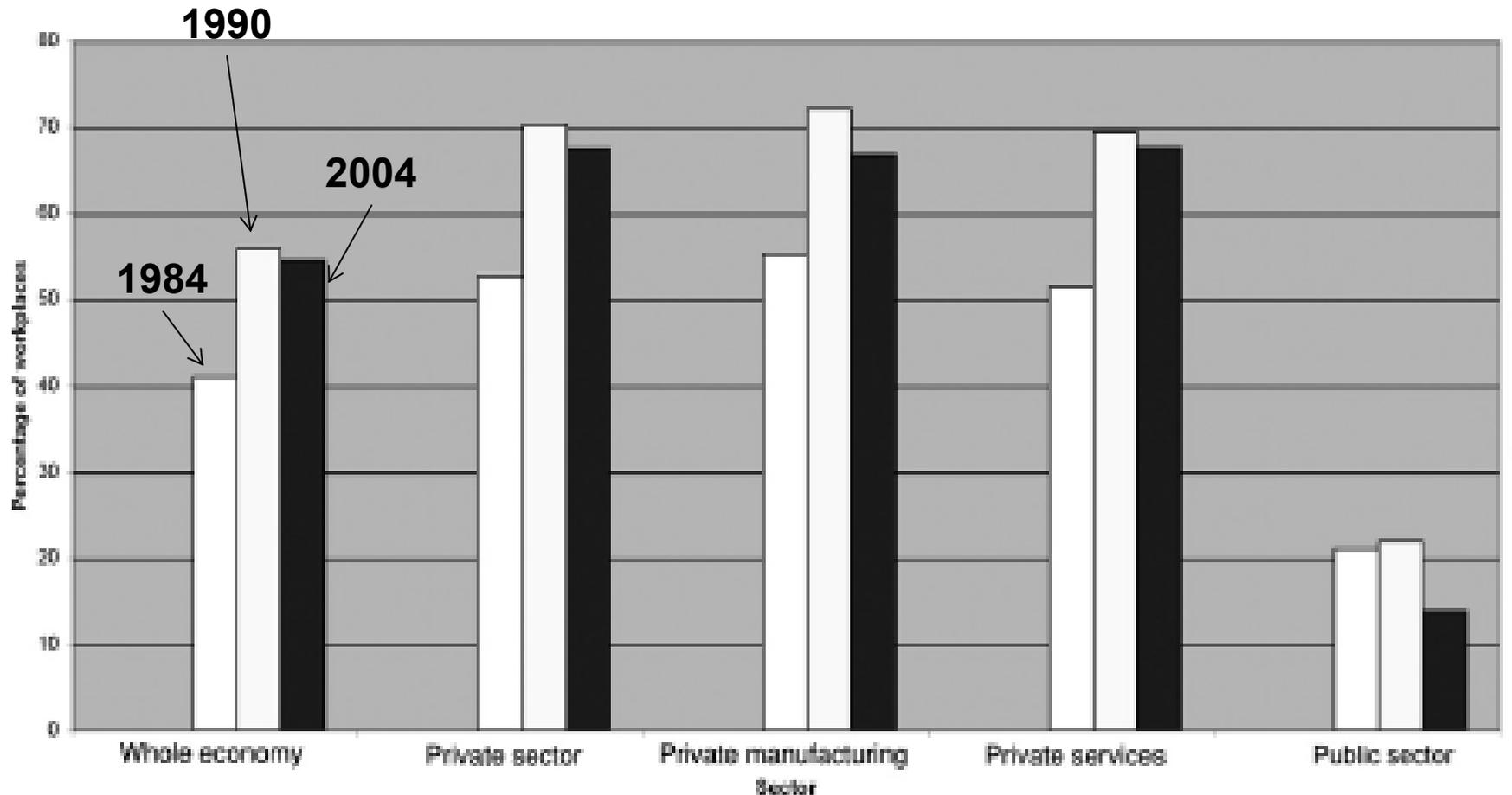
Figure 2.1: HRM Practices in large US firms, 1987-1999

Year of Survey	More than 20% of employees have Individual incentives (e.g. performance bonuses)	More than 20% of employees have gainsharing (e.g. team bonuses)	More than 20% of employees in teams
1987	38	7	37
1990	45	11	51
1993	50	16	65
1996	57	19	66
1999	67	24	61

Source: Lawler et al (2001).

Note: Fortune 1000 companies. Sampling response falls rapidly over time

Figure 2.3 : Trends in Performance Pay 1984-2004, UK WERS (individual, gain-sharing, profit related pay and ESOP)



Source: Pendleton, Whitfield and Bryson (2009). WERS covers c. 2000 plants

Note: Whether largest occupational group in establishment covered by any performance pay

Figure 2.5 Proportion of Workers in EU15 whose pay is partially determined by piece rate or productivity related payments

		1995	2005
isco1 -	<i>Legislators and Managers</i>	0.138436 <i>1362</i>	0.141878 <i>525</i>
isco2 -	<i>Professionals</i>	0.065222 <i>1683</i>	0.066596 <i>1644</i>
isco3 -	<i>Technicians</i>	0.10009 <i>1964</i>	0.088534 <i>2200</i>
isco4 -	<i>Clerks</i>	0.063295 <i>2413</i>	0.097777 <i>1902</i>
isco5 -	<i>Service and Sales Workers</i>	0.137954 <i>2111</i>	0.071358 <i>1806</i>
isco6 -	<i>Agricultural and Fishery Workers</i>	0.331649 <i>603</i>	0.211215 <i>83</i>
isco7 -	<i>Craft and Related Trade Workers</i>	0.184096 <i>2649</i>	0.179635 <i>1443</i>
isco8 -	<i>Plant and Machine Operators</i>	0.181857 <i>1071</i>	0.232106 <i>731</i>
isco9 -	<i>Elementary Occupations</i>	0.105694 <i>1861</i>	0.072706 <i>1609</i>
isco0 -	<i>Armed Forces</i>	0.040136 <i>125</i>	0.04847 <i>83</i>
isco - u	<i>Unknown</i>		0.117977 <i>79</i>
	<i>All</i>	<i>0.128</i> <i>15842</i>	<i>0.106</i> <i>12026</i>

Source: EWCS (European Working Conditions Survey)

<http://www.eurofound.europa.eu/working/surveys/>

Authors' calculations from question: "What does your remuneration include: piece rates or productivity payments"

Notes: First number is proportion answering "yes" with number in italics the number of workers giving an answer

BLOOM - VAN REENEN (2007) SURVEY METHODOLOGY

1) Developing management questions (Table A1)

- Scorecard for 18 monitoring, targets and people (7 HR practices around pay, promotions, retention and hiring). ≈45 minute phone interview of manufacturing plant managers

2) Obtaining unbiased comparable responses (“Double-blind”)

- Interviewers do not know the company’s performance
- Managers are not informed (in advance) they are scored
- Run from LSE, with same training and country rotation

3) Getting firms to participate in the interview

- Introduced as “Lean-manufacturing” interview, no financials
- Official Endorsement: Bundesbank, PBC, RBI, etc.
- Run by 55 MBA types (loud, assertive & business experience)

(16) EXAMPLE: Promoting high performers

Score	(1): People are promoted solely upon the basis of tenure	(3): People are promoted primarily upon the basis of ability and effort	(5): We actively identify, develop and promote our top performers
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(15) EXAMPLE: DEALING WITH POOR PERFORMERS

Score

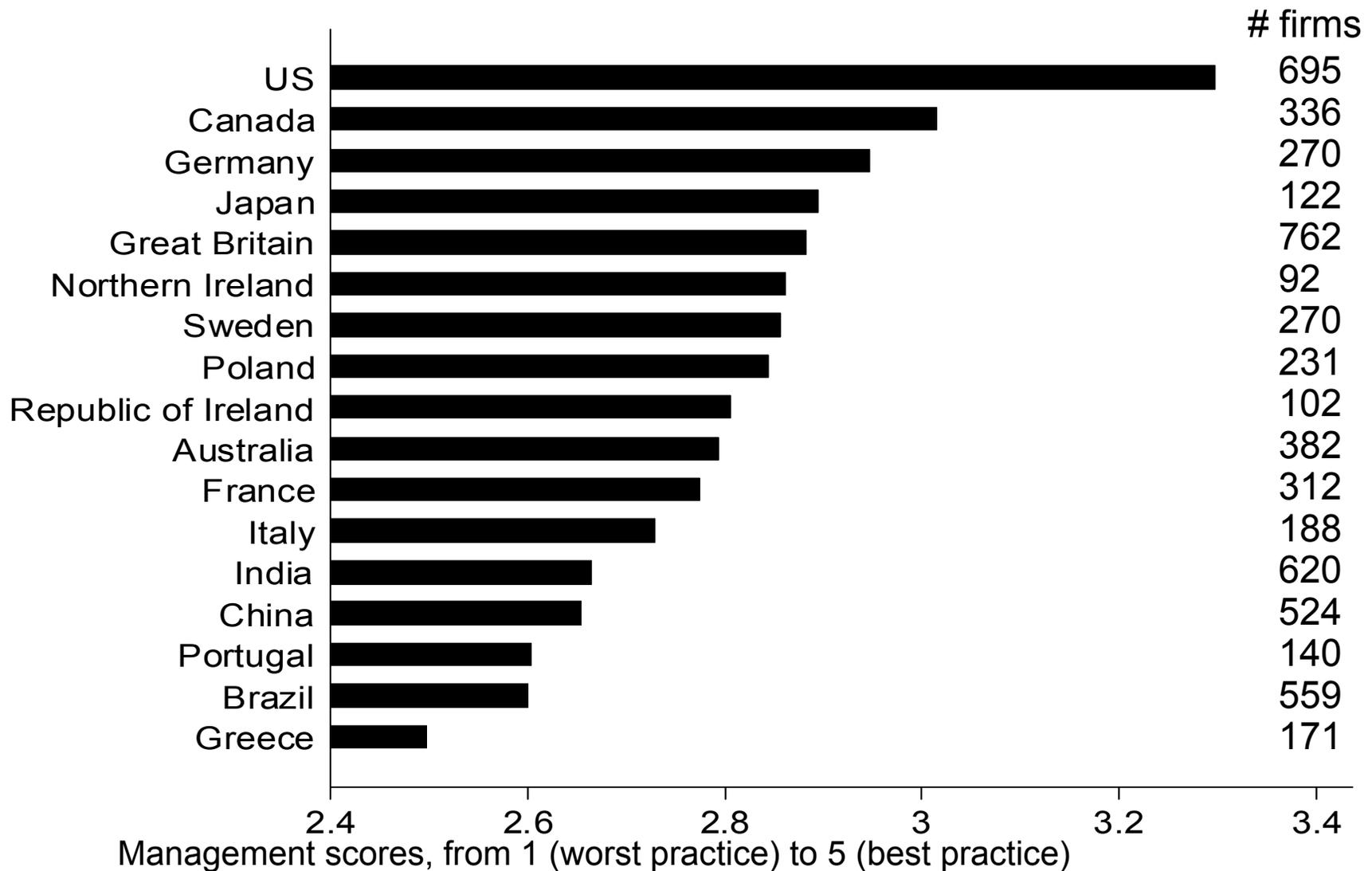
(1): Poor performers are rarely removed from their positions

(3) Suspected poor performers stay in a position for a few years before action is taken

(5): We retrain and move poor performers out of the position soon after a weakness is identified

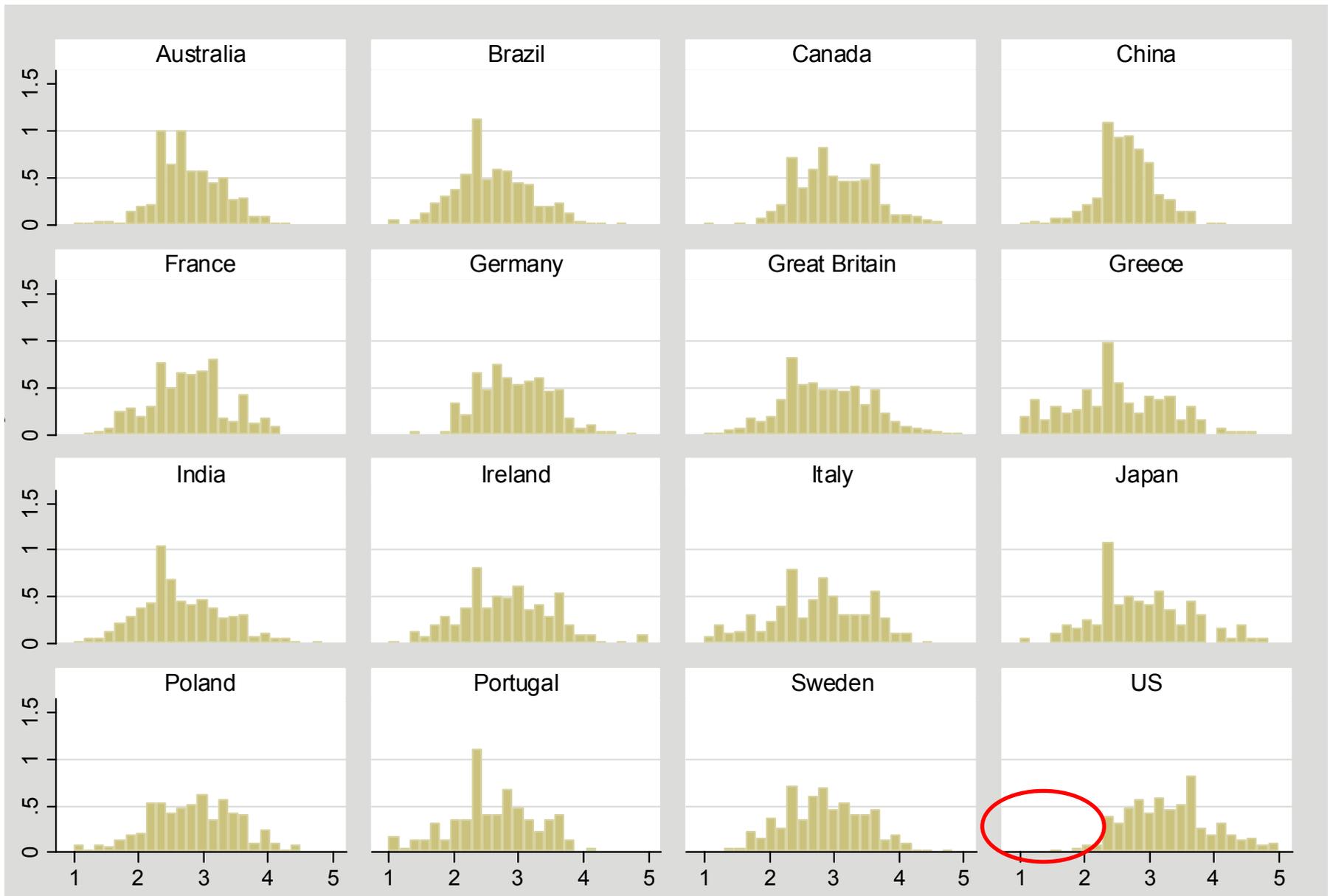
If you had an employee who could not do his job properly, what would you do? Could you give me a recent example? How long would underperformance be tolerated? Do some individuals always just manage to avoid being fixed/fired?

Figure 2.8 : HR Management Across Countries



Note: Averages taken from medium sized (100 to 5000 employees) manufacturing firms (5,850 observations). Scores averaged on seven practices around pay, promotions, retention and hiring. Higher scores indicate better practices.

Source: Bloom, Genakos, Sadun and Van Reenen (2009)



Firm level average people management scores, from 1 (worst practice) to 5 (best practice)

Note: Bars are the histogram of the actual density at the firm level on a country by country basis. Randomly sampled from all medium sized (100 to 5000 employee) manufacturing firms in each country. Source: Bloom, Genakos, Sadun and Van Reenen (2009)

Summary

- The data is not great!
- Incidence of performance pay probably increased over time
 - Group-based increased more than individual based incentive pay
- Team-based HRM practices have increased over time
- “Innovative”/Best Practice HRM more prevalent in US than elsewhere.
 - Mainly accounted for by an absence of firms with very low management scores

“Facts” on HRM and productivity

Theories

Determinants of HRM

Effects of HRM on productivity

Theoretical Perspectives

- **Traditional Personnel**
 - every situation different
- **Design/Personnel Economics**
 - Application of economics to HR issues (Lazear, 1996)
 - Generalizations (e.g. Lazear and Oyer, 2009; Gibbons and Waldman, 1999)
- **“Management as a technology”**
 - Incorporates firm heterogeneity in productivity
 - Barriers to adoption of best practice (cf. technological diffusion): e.g. information, imperfect competition, adjustment costs
 - Sources of best practices (a) always true; (b) new idea (e.g. lean manufacturing, Taylorism), (c) some other change (e.g. new ICT like SAP makes measuring output cheaper and therefore more PRP)

“Facts” on HRM and productivity

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Determinants of HRM. Two examples

- **Incentive Pay**
 - Product market Competition/Globalization
 - Labor Regulation
 - Risk and Uncertainty (Prendergast Problem)
- **Work Organization: Decentralization**
 - Measurement issues (formal vs. Real)
 - Theory: principal-agent (Information vs. Incentives trade off)
 - Acemoglu, Aghion, Lelarge, Van Reenen & Zilibotti (2007, QJE)

Figure 2: Proximity to frontier and decentralization
Decentralization to Profit Centers (COI)

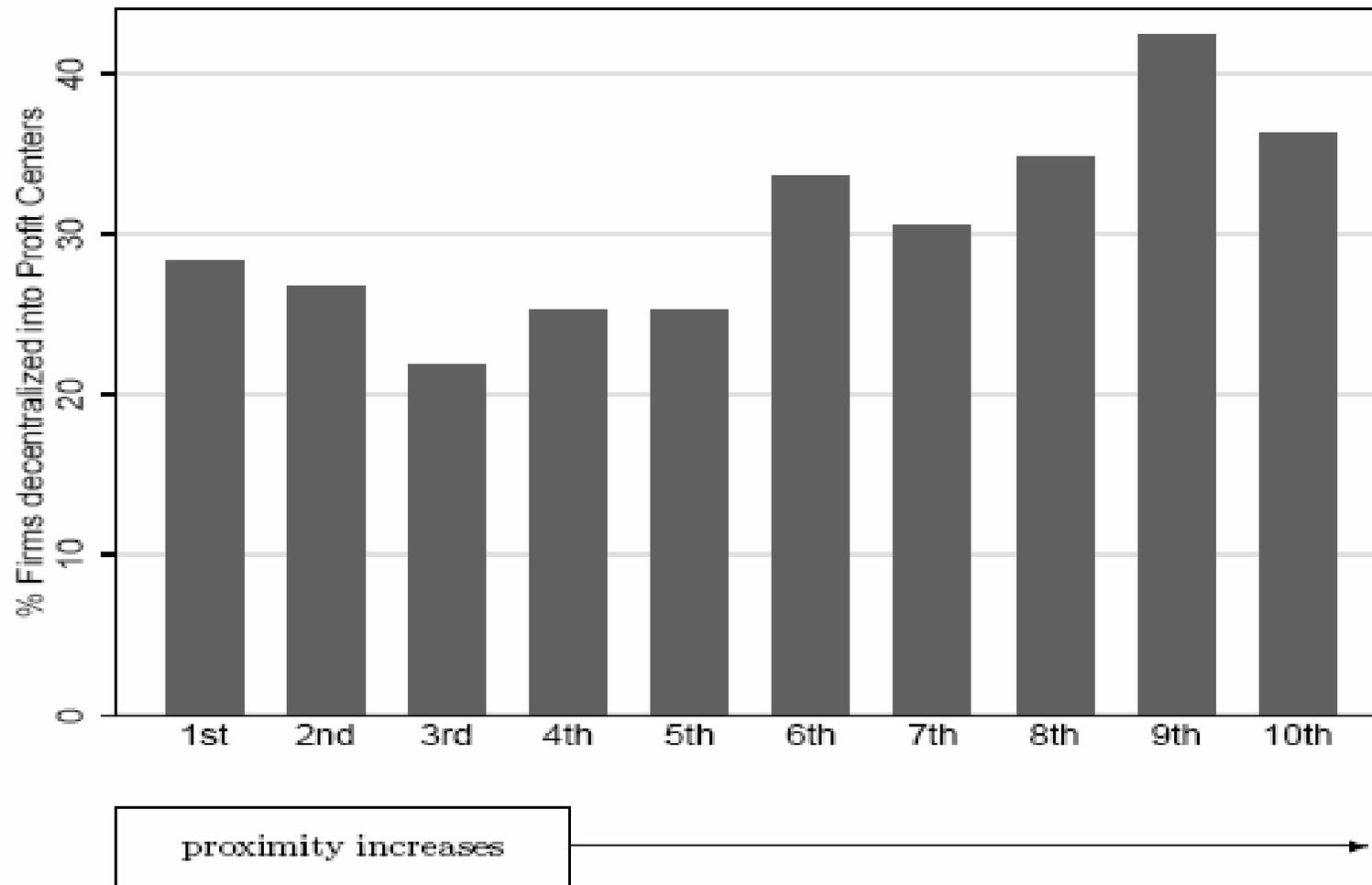
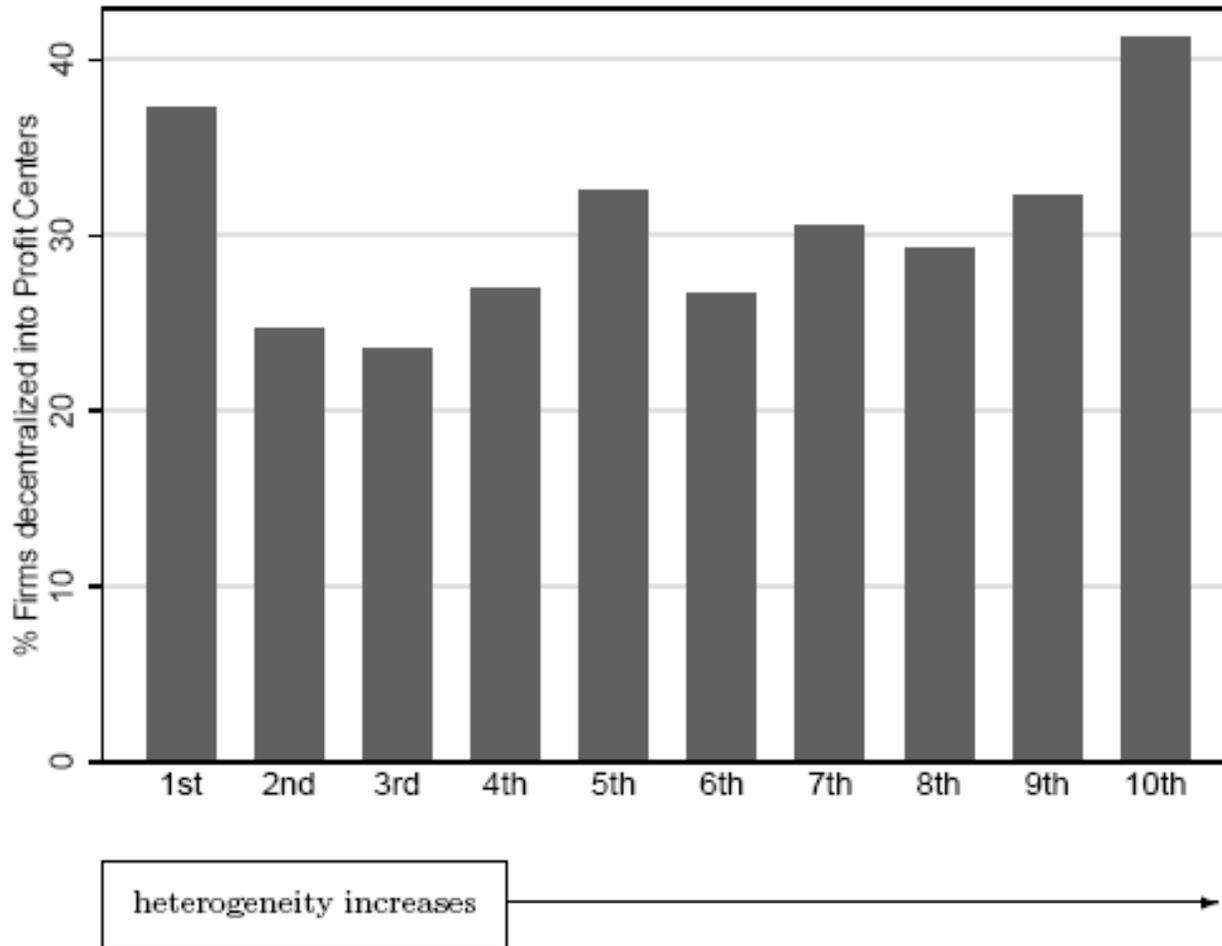


Figure 1: Heterogeneity and decentralization
Decentralization to Profit Centers (COI)



Determinants of Decentralization

- **Principal-Agent (AALVRZ)**
- **Knowledge Hierarchies**
 - Information costs vs. Communication costs (Garicano, 2000, JPE; Bloom, Garicano, Sadun & Van Reenen, 2009)
- **Human Capital complementarity**
 - Skills (e.g. Caroli and Van Reenen, 2001)
- **Cultural/legal**
 - e.g. trust, Bloom et al, 2009

“Facts” on HRM and productivity

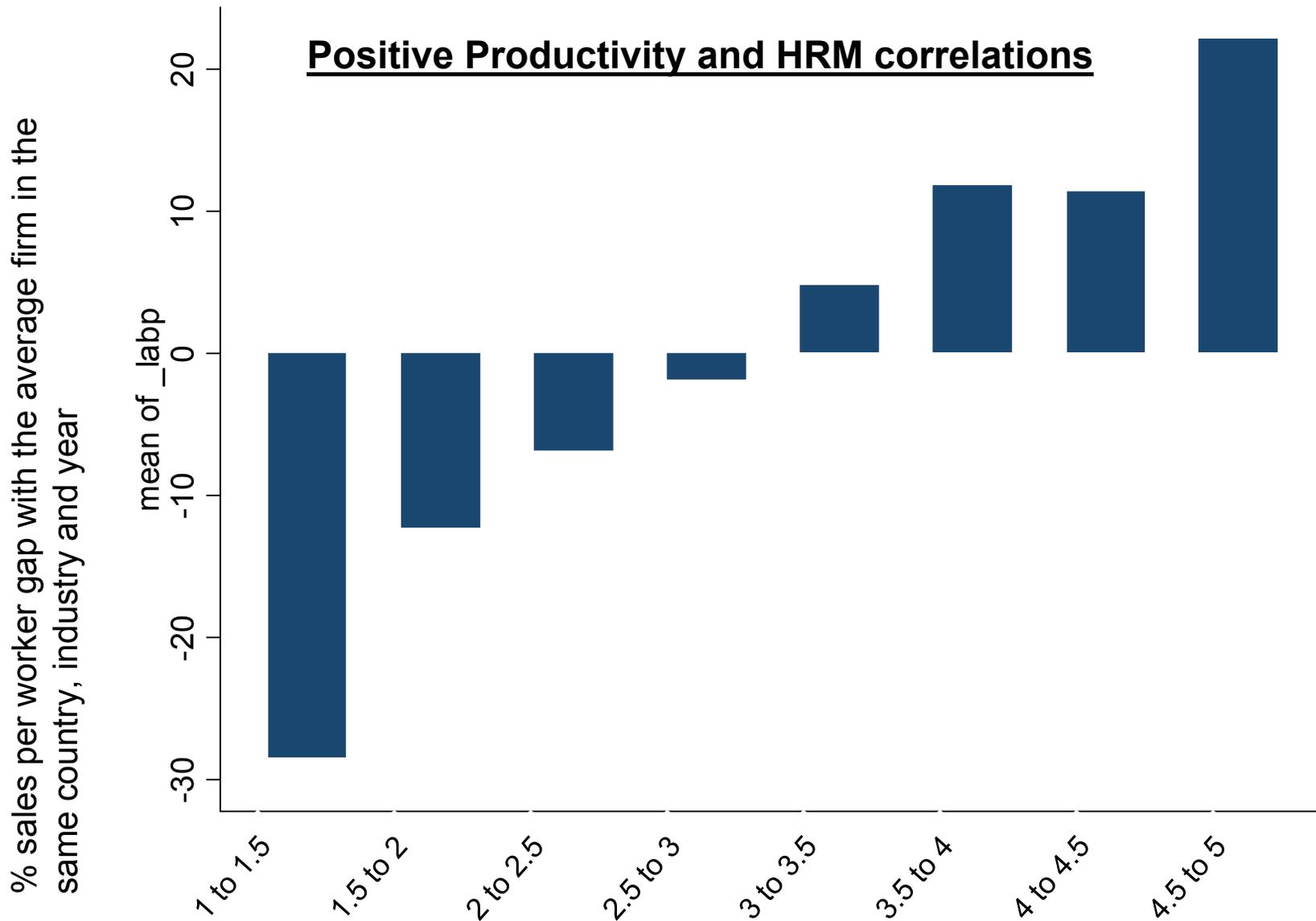
Theories

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What is the question?

- **If firms are optimizing why should there be any effect of HRM on productivity?**
 - Productivity not the same as profits
 - “Management as a technology”, inefficient firms, diffusion, etc.
- **Whether there is a positive effect of HRM on productivity may be less interesting than**
 - Magnitude of the effects (cf. production function)
 - Mechanisms (e.g. selection vs. same individuals)
 - Heterogeneity of the effect (e.g. complementarity between different HR practices; between HRM and other aspects of firm – ICT, skills, etc.)



People Management score bins, from 1 (worst practice) to 5 (best practice)

Note: Average across 3,803 firms in 13 countries. Revenue productivity=sales/employee. Cells show deviations from country, industry and year mean. e.g., the left column shows that firms with a management score of 1 to 1.5 have on average 50% lower revenue productivity than other firms in the same country, industry (grouped by 154 3 digit manufacturing cell) and year (2000 to 2008).

Identification

$$y_{it} = \beta_i m_{it} + \alpha' x_{it} + \eta_i + u_{it}$$

HRM practice



- Cross section
- Fixed effects
- Single firm studies (generalizability?
Comparison group?)
- Randomized control trials

A quick tour (Table 5.1).

- **Individual incentive pay (increase in productivity)**
 - Lazear (2000). *Safelite*. 44% (~22% selection)
 - Bandeira et al (2007, 2009). *Fruit farm*. 21% (~10% selection; social connections reduce in importance)
 - Freeman and Kleiner (2005). *Shoes* (6%)
 - Shearer (2004). *Tree Planters* – random assignment 22% (0% selection)
 - Lavy (2002, 2008). *Teachers*.
- **Distortions and Individual incentive Pay**
 - Many theory possibilities, but net effect positive above
 - Public sector: Asch (1990), Courty and Marschke (2004), Heckman et al (2004)
 - Private: Larkin (2007), Oyer (1998)

Group incentive pay (prody increase)

- Blasi, Freeman, Mackin & Kruse (2009). *Meta study* finds +ve mean effects (4.5%)
- Hamilton, Nickerson and Owan (2003). *Napa Garment factory* (18%, 4% selection)
- Knez and Simester (2001). *Continental Airlines*
- Boning, Ichinowski & Shaw (2007), *Steel mini-mills*
- Ichinowski, Shaw and Prenushi (1997). *Steel finishing lines. Complementarities.*
- Burgess et al (2007). *UK tax collection*
 - Generally all find positive effects

Summary of Results on HRM & productivity

- Increase in productivity from individual and group pay schemes
- True across many sectors/firms
- Large selection effect but also incentive effect
- More effective when introduced as a package of “complementary” practices
 - Teams
 - Human Capital
 - ICT (Bresnahan et al, 2002; Bloom, Sadun & VR “Americans Do IT Better”)
- Non-pay HRM practices have (i) had less high quality studies, (ii) positive correlations tend to disappear when fixed effects included (e.g. Black and Lynch, 2004)

Conclusions & Future Work

- Earlier surveys bemoaned paucity of data. Things are improving
 - But data on HRM over time for “stylized facts” weak
- HRM should be seen in context of general management in theory and empirics
- HRM effects on productivity
 - Surprisingly positive effects in general
 - Need for better identification (e.g. field experiments)
 - Links to theory still rather weak

Back Up

Questions

- Should we include more on estimation of productivity?
- Should we include papers looking at effects of human resources (e.g. education and training) on directly measured productivity

(16) Promoting high performers

Score	(1): People are promoted primarily upon the basis of tenure	(3): People are promoted primarily upon the basis of performance	(5): We actively identify, develop and promote our top performers
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(14) Rewarding high-performance

Score	(1): People within our firm are rewarded equally irrespective of performance level	(3): Our company has an evaluation system for the awarding of performance related rewards	(5): We strive to outperform the competitors by providing ambitious stretch targets with clear performance related accountability and rewards
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(15) Removing poor performers

Score	(1): Poor performers are rarely removed from their positions	(3): Suspected poor performers stay in a position for a few years before action is taken	(5): We move poor performers out of the company or to less critical roles as soon as a weakness is identified
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(7) Consequence management

Score	(1): Failure to achieve agreed objectives does not carry any consequences	(3): Failure to achieve agreed results is tolerated for a period before action is taken.	(5): A failure to achieve agreed targets drives retraining in identified areas of weakness or moving individuals to where their skills are appropriate
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(18) Retaining human capital

Score	(1): We do little to try and keep our top talent.	(3): We usually work hard to keep our top talent.	(5): We do whatever it takes to retain our top talent.
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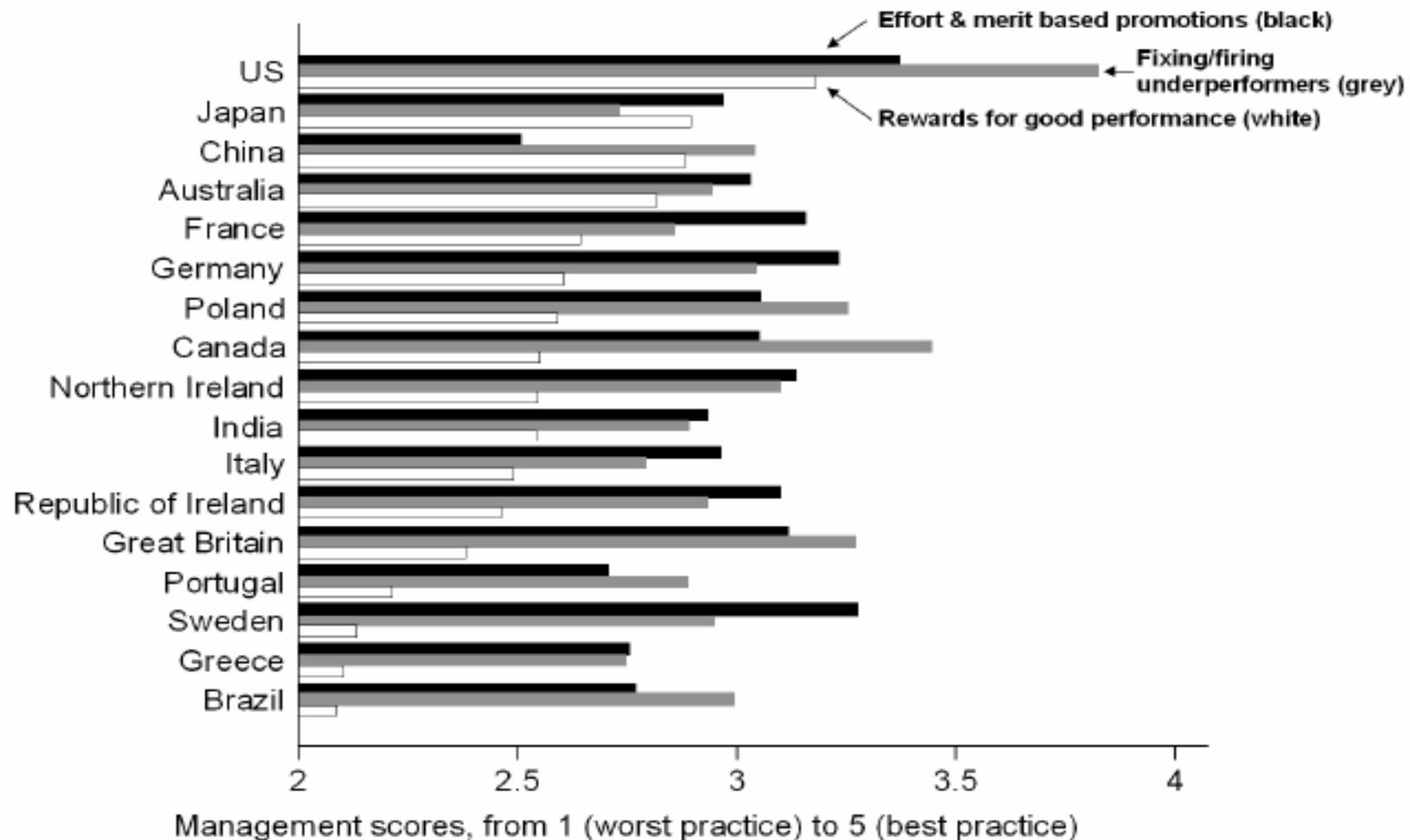
(17) Attracting human capital

Score	(1): Our competitors offer stronger reasons for talented people to join their companies	(3): Our value proposition to those joining our company is comparable to those offered by others in the sector	(5): We provide a unique value proposition to encourage talented people join our company above our competitors
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(13) Managing talent

Score	(1): Senior management do not communicate that attracting, retaining and developing talent throughout the organization is a top priority	(3): Senior management believe and communicate that having top talent throughout the organization is a key way to win	(5): Senior managers are evaluated and held accountable on the strength of the talent pool they actively build
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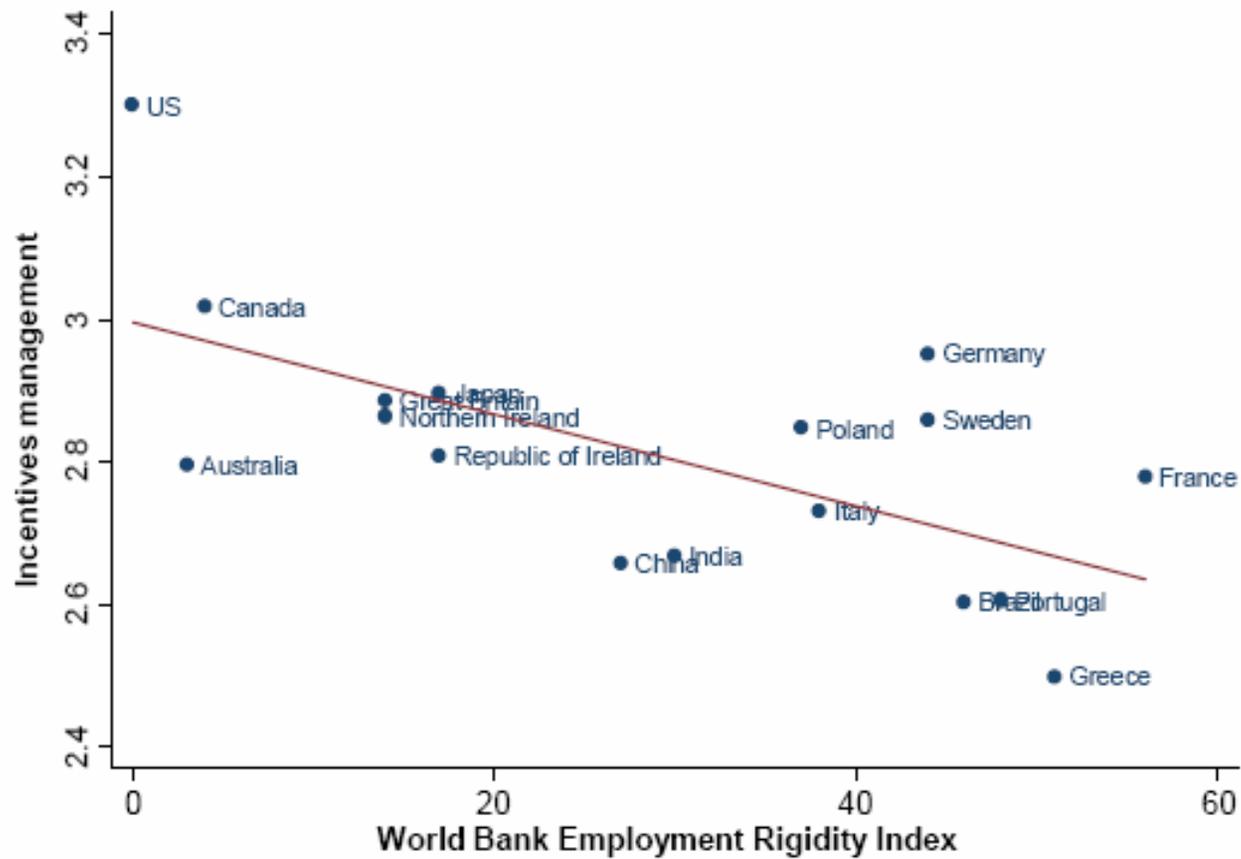
Figure 2.9: Promotions, fixing/firing and rewards practices across countries



Note: Averages taken across a random sample of medium (100 to 5000 employee) manufacturing firms within each country.

5,850 observations in total. Source: Bloom, Genakos, Sadun and Van Reenen (2009)

Figure 4.3: Labor market regulation and people management

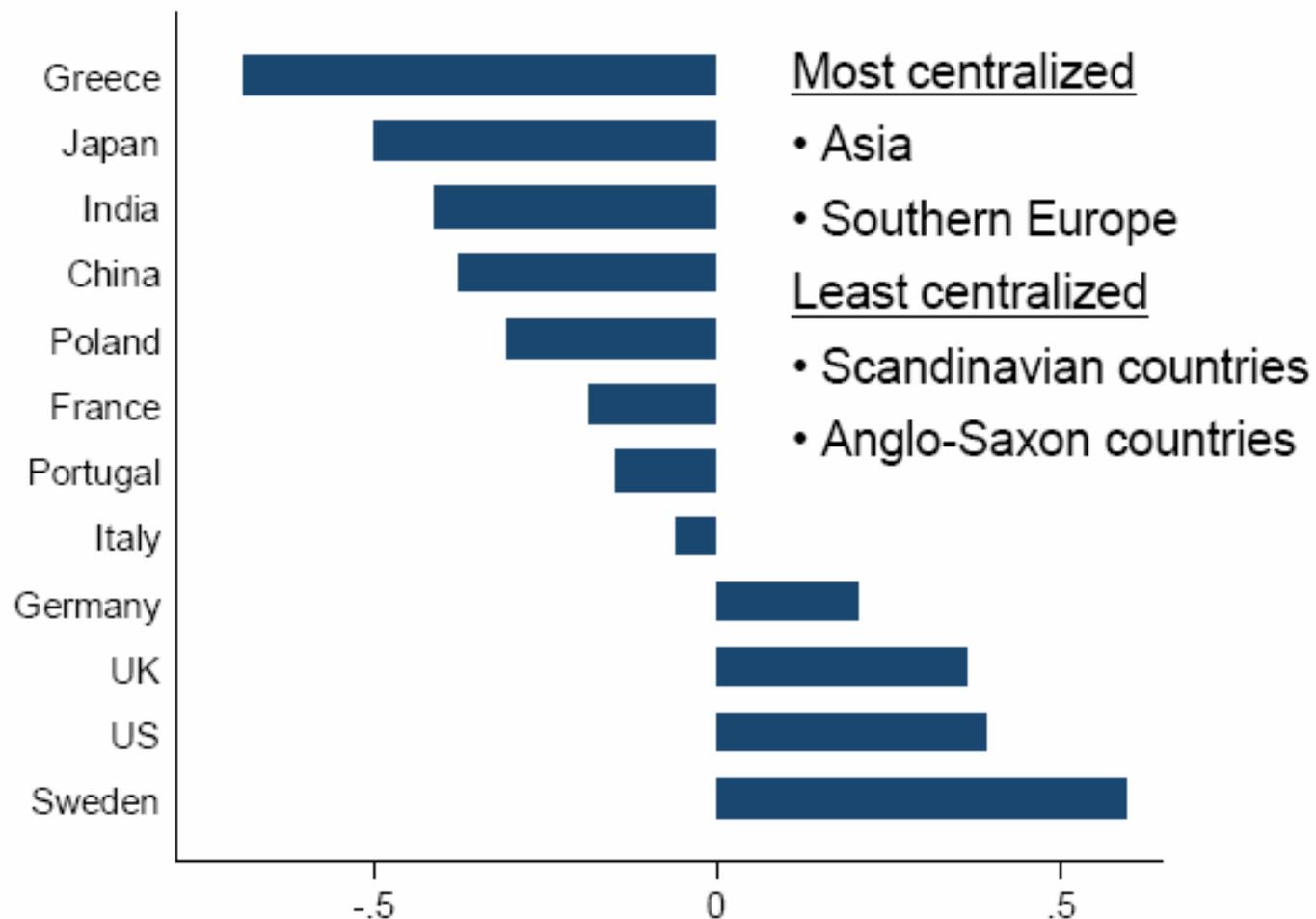


Note: World Bank index from the Doing Business database,
<http://www.doingbusiness.org/ExploreTopics/EmployingWorkers/>
Source: Bloom, Gunther, Sadun, and Van Reenen (2008)

Summary of empirical studies

- General HRM
- Individual Incentive Pay
- Group Incentive Pay
- Other topics
 - Unions
 - Peer effects
- Complementarities
- ICT
- Human Capital

FIGURE 4.4: DECENTRALIZATION ACROSS COUNTRIES



Source: Bloom, Sadun and Van Reenen (2009a)