JAPAN MOPS PROJECT

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1. Overview of JP-MOPS & the ESRI Pilot Survey
   (30minutes)
                    By Taisuke Kameda (ESRI)

2. The possible Analysis by using JP-MOPS
   (20 minutes)
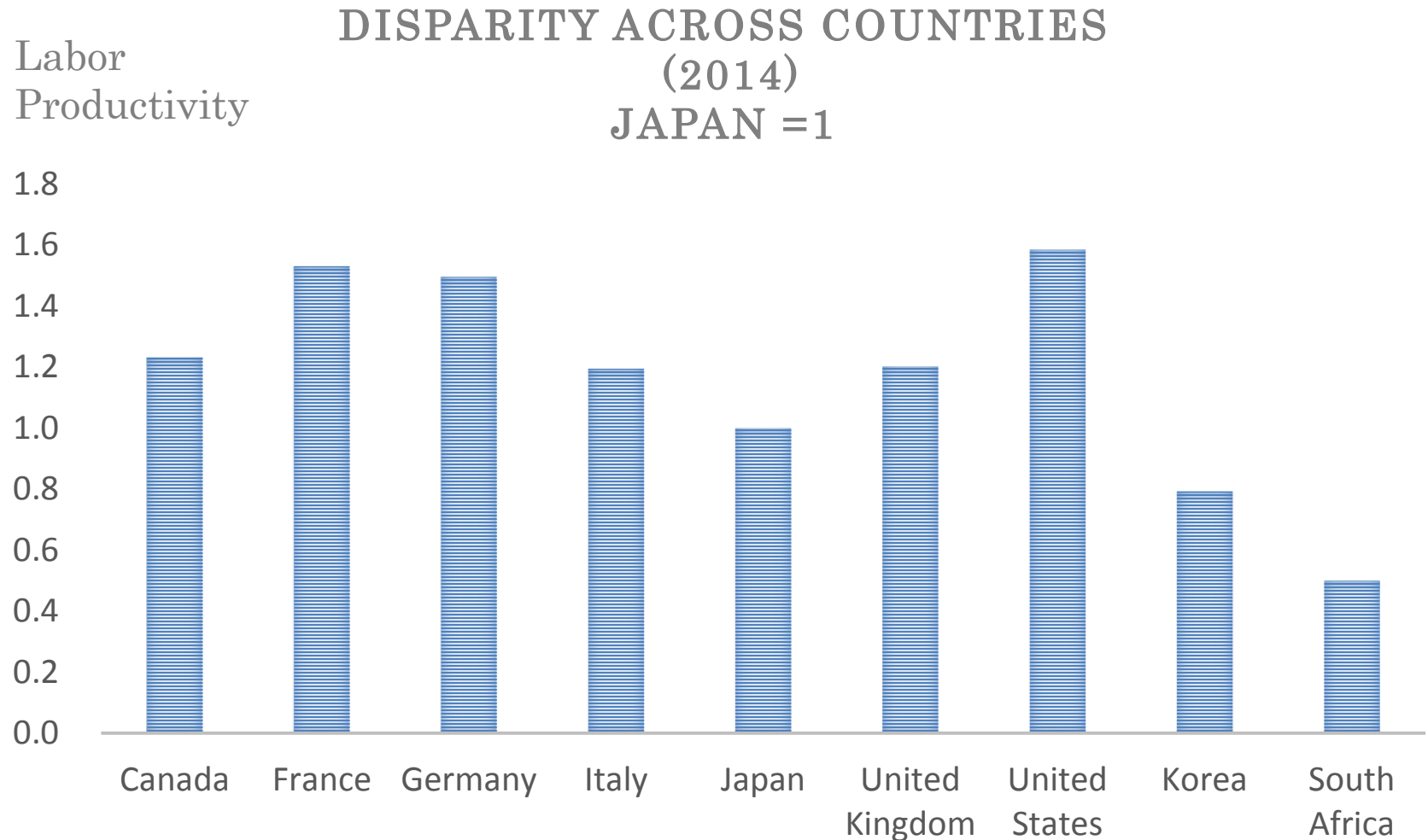   By Ryo Kambayashi (Hitotsubashi Univ.)

3. Discussion
                (10 minutes)

Motivation

- A growing literature has highlighted the huge disparity in productivity.
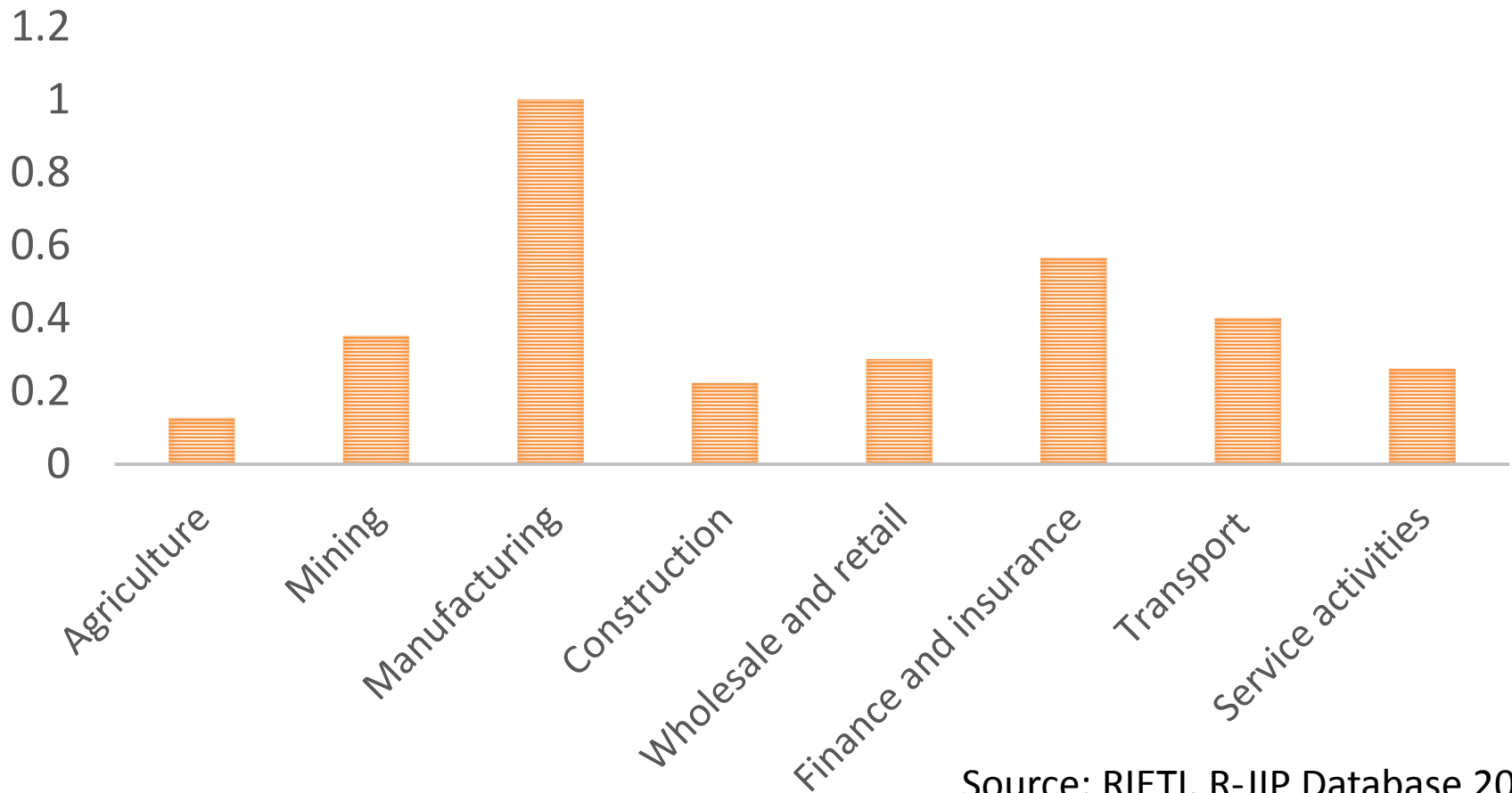
DISPARITY IN PRODUCTIVITY

DISPARITY ACROSS COUNTRIES (2014)
JAPAN =1

Labor Productivity

Source: OECD, Productivity Statistics 2016
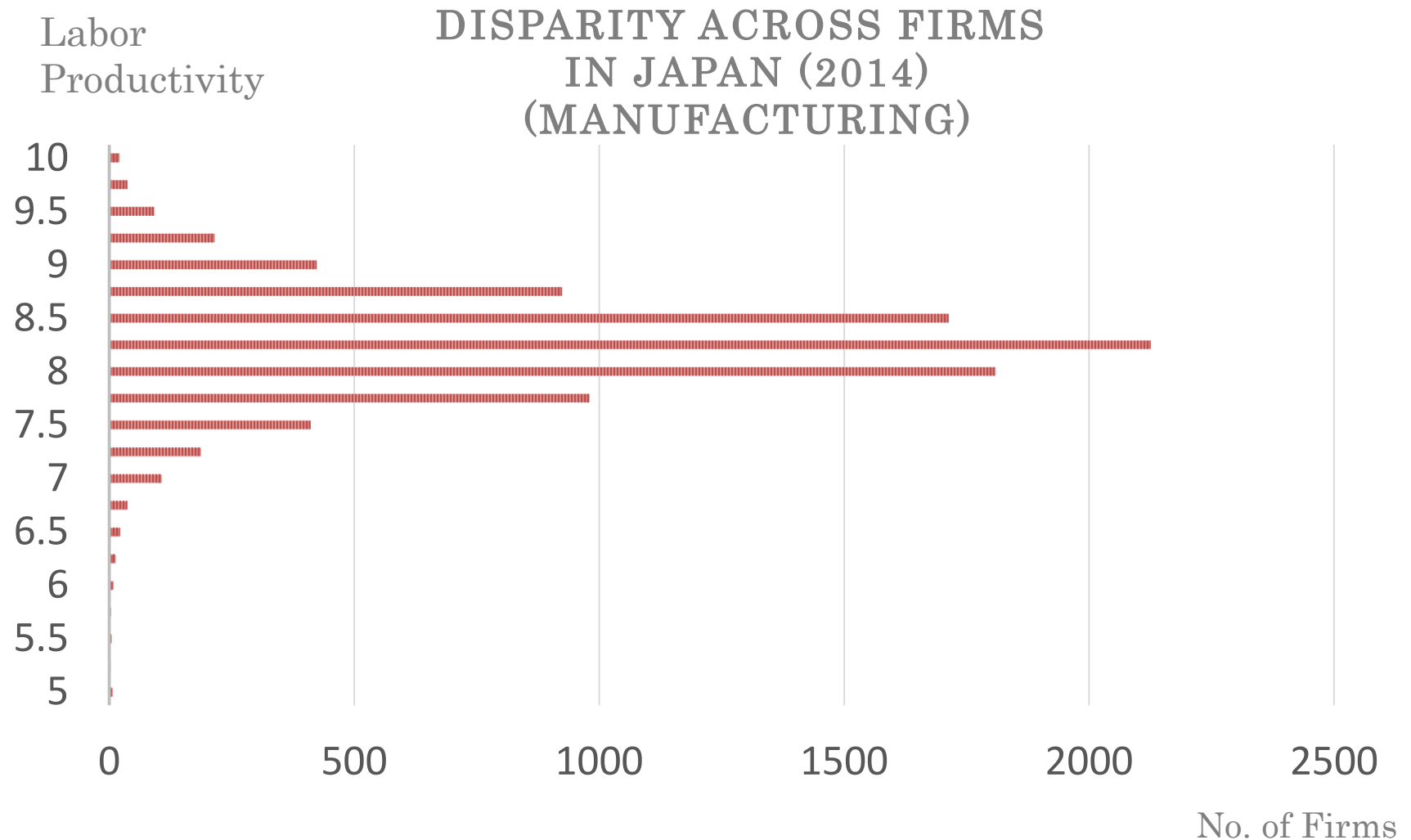
DISPARITY IN PRODUCTIVITY

DISPARITY ACROSS INDUSTRIES IN JAPAN (2014) MANUFACTURING =1

Labor Productivity

Source: RIETI, R-JIP Database 2015

DISPARITY IN PRODUCTIVITY

Labor
Productivity

DISPARITY ACROSS FIRMS
IN JAPAN (2014)
### (MANUFACTURING)

No. of Firms

Source: Ministry of Economy, Trade and Industry,
      the Basic Survey of Japanese Business Structure and Activities 2015

Motivation

- A growing literature has highlighted the huge disparity in productivity.

- Productivity improvement is a big issue for Japanese economy (Especially in the service sectors).

Policy Challenges for Japanese Economy

(Thousands)

TOTAL JAPANESE WORKFORCE
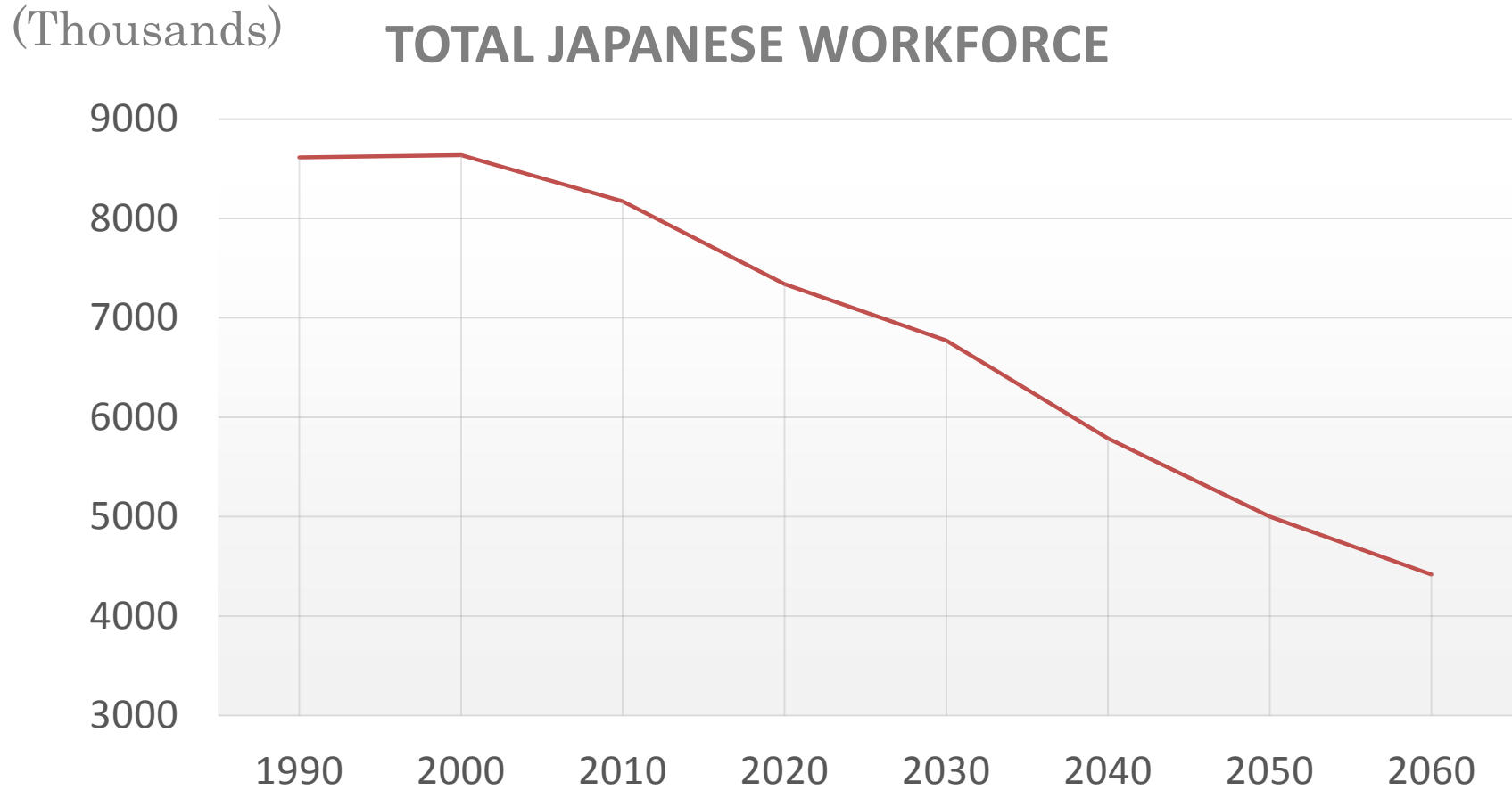
Source：National Institute of Population and Social Security Research

AVERAGE GROWTH RATE OF LABOR PRODUCTIVITY (2004-2014)
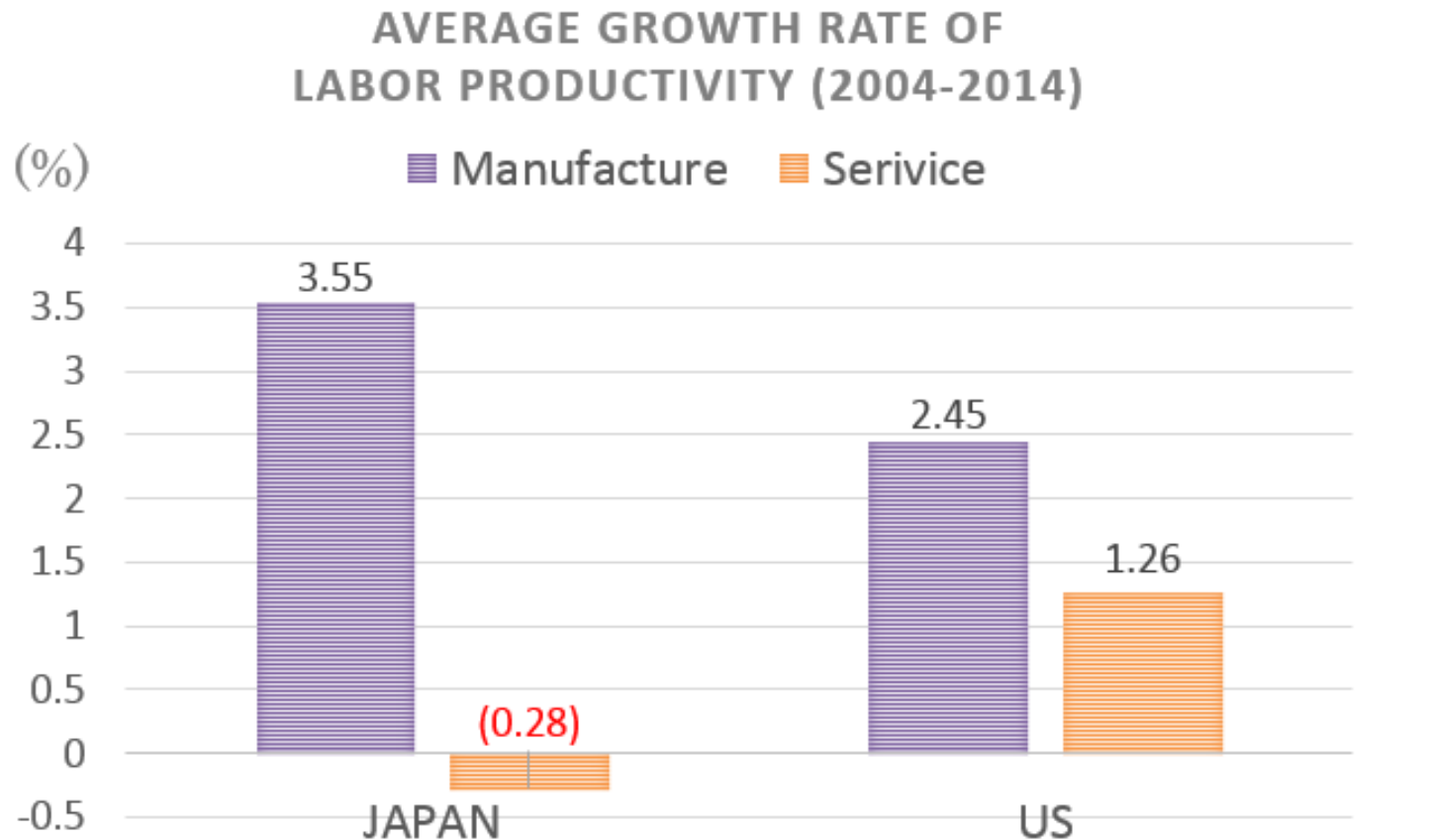

Source : OECD Statistics

Motivation

- A growing literature has highlighted the huge disparity in productivity.

- Productivity improvement is a big issue for Japanese economy (Especially service sectors).

- What factors contribute to the disparity or improvement of productivity ?

  Input like IT, R&D, or employee skills ?

- These factors will not be enough to explain these.

  (Syverson,2011)

Motivation

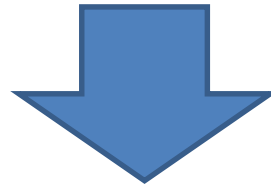**AVERAGE ANNUAL GROWTH OF ICT CAPITAL & LABOR PRODUCTIVITY (1995-2014) US=1.00**

Japan US

1.02

0.61

ICT capital Labor Productivity
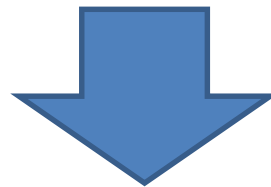
Source：OECD Statistics

Motivation

- Management practices as key factor for the productivity disparity and improvement (Bloom.et.al 2007).

Lack of a large data set on the management practices in Japan

- We are planning to conduct JP-MOPS this autumn.

- We have designed JP-MOPS in cooperation with Pro. Bloom and Dr. Lemos.

Goals

(1) To understand the differences in management practices.

(2) To investigate what the best management practices for productivity improvement are.

(3) To attend the global MOPS community and develop global economic statistics available for policy makings.

Survey Design

- To achieve these goals, JP-MOPS is based mainly on US-MOPS (2015) and it is also designed so that ;

(1) It can be linked to MOPS data of other countries.

(2) It can be linked to several rich Japanese firm-level data.

(3) It can be conducted not only for manufacturing but also some service sectors.

Sample Design

❑ US-MOPS

- Targeted the manufacturing sectors.

- Surveyed about 50,000 enterprises.

- Collected about 30,000 surveys.

❑ JP-MOPS

- Target the manufacturing sectors and 2 service sectors.

- 2 service sectors are;
  — Information & communications
  — Food & Beverage Retail Industries

- Survey about 42,000 enterprises (at least 30 employees) .
  — 35,000 enterprises in the manufacturing.
  — 3,500 enterprises in each service sector.

Questionnaire Design

- Designed based mainly on US-MOPS (2015).

		US-MOPS 2015	JP-MOPS 2016 Manufacturing	JP-MOPS 2016 Service
Section	Management Practices	16	16	16
	Organization	7	7	7
	Data & Decision Making	6	—	2
	Uncertainty	8	—	—
	Background	10	6	6
Total		47 questions	29 questions	37 questions

Questionnaire Design

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Section		US-MOPS 2015	JP-MOPS 2016 Manufacturing	JP-MOPS 2016 Service
Section	Management Practices	16	16	16
	Organization	7	7	7
	Data & Decision Making	6	—	2
	Uncertainty	8	—	—
	Background	10	6	6
	Original Question	—	—	6
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Questionnaire Design

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US-MOPS(2015)

8 In 2010 and 2015, who was aware of the production targets at this establishment?

Mark one box for each year

	2010	2015
Only senior managers	☐	☐
Most managers and some production workers	☐	☐
Most managers and most production workers	☐	☐
All managers and most production workers	☐	☐

JP-MOPS(2016)

問8．貴事業所では、誰が生産目標を認識していましたか。2010 年当時と 2015 年当時について、当てはまる回答をそれぞれ1つだけお選びください。

	2010 年	2015 年
上位管理職（例：部長、所長など）のみ	☐	☐
管理職の多くと一般生産職のある程度	☐	☐
管理職の多くと一般生産職の多く	☐	☐
管理職のすべてと一般生産職の多く	☐	☐

Questionnaire Design

For the service sectors, we introduce the original questions ;

- Frequency of innovation implementing ?
  (Based mainly on "World and Employee Survey in Canada")

- Utilization of specialized human resources ?

- Business environments
  — Competitive environment ?
  — Which is more important at this establishment ?
    Specialization vs *Coordination*?
    Efficiency vs *Creativity*?

Questionnaire Design

- Original Question on Innovation

Q34   Between 2010 and 2015, how frequently were the following innovations implemented at this establishment? Mark one box for each item.

	Never	Once a few years	Once a year	Least twice a year
① New products or services	☐	☐	☐	☐
② Improved products or services	☐	☐	☐	☐
③ New combination of existing products or services	☐	☐	☐	☐
④ New processes of production or sales	☐	☐	☐	☐
⑤ Processes Improvement of production or sales.	☐	☐	☐	☐

Survey Schedule

16.1 ～ 16.2
Pilot Survey

16.4～16.7
Data Analysis
(Pilot Survey)

16.8.3
Today's kickoff
conference

16.10 ～ 16.12
1st Survey

17.2 ～ 17.6
Data
Analysis
(1st Survey)

18.～
2nd Survey

ESRI Pilot Survey (2015)

ESRI Pilot Survey (2015)

The main goal is to grasp a better understanding the key factor and the mechanisms for the productivity improvement of the service sectors.

- 4,000 firms in the 5 service sectors were surveyed.

- 670 surveys were collected.

- 5 sectors are；
  - Information & communications
  - Transportation
  - Wholesale & retail trade
  - Specialized service
  - Accommodations , eating & drinking

- Some questions in the pilot survey were taken from US MOPS, but most questions were original.

Management Score

- The pilot survey took 8 out of the 16 questions on Management Practices used in the US-MOPS.

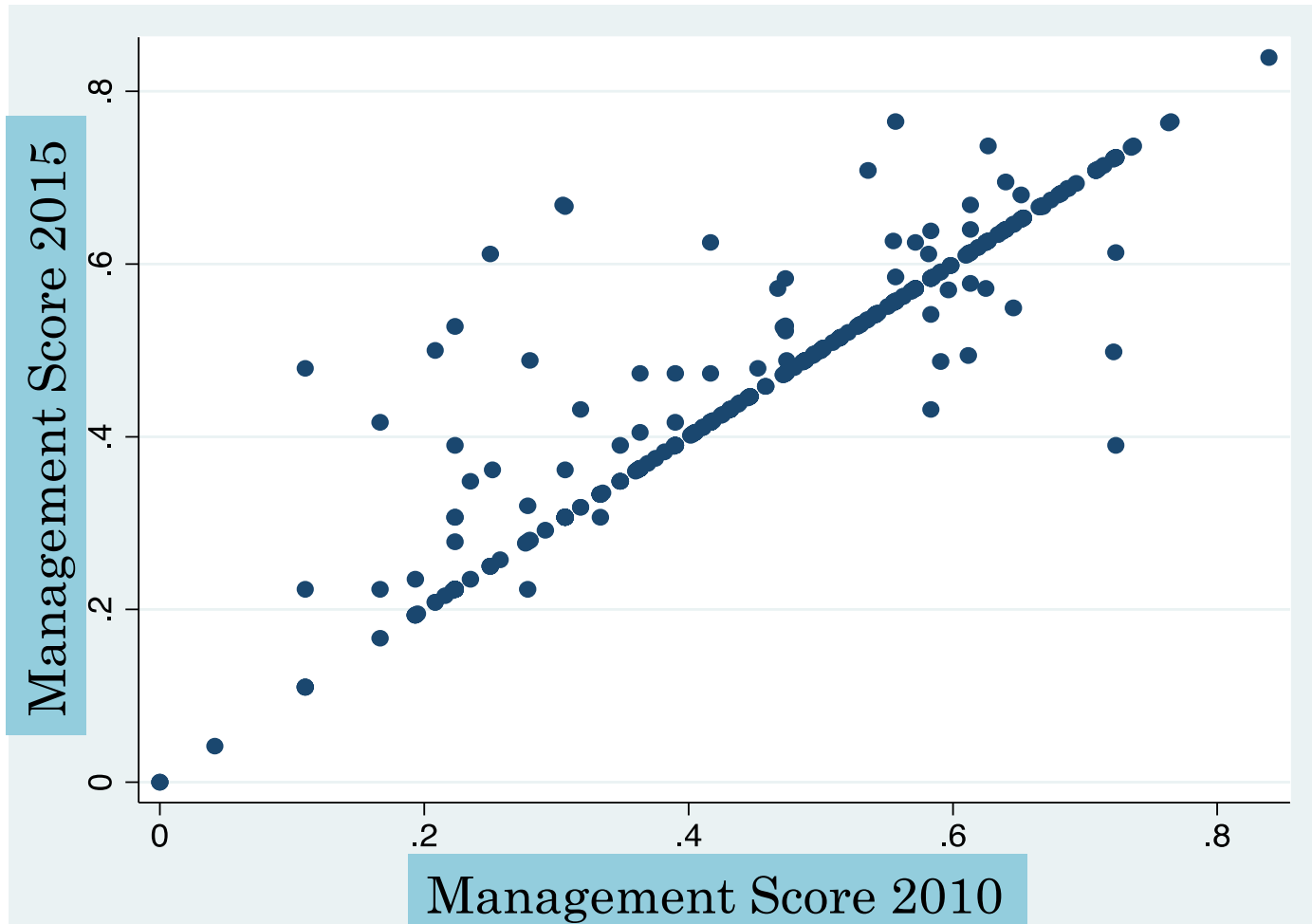- We simply calculated the management scores using those 8 questions following the US-MOPS.
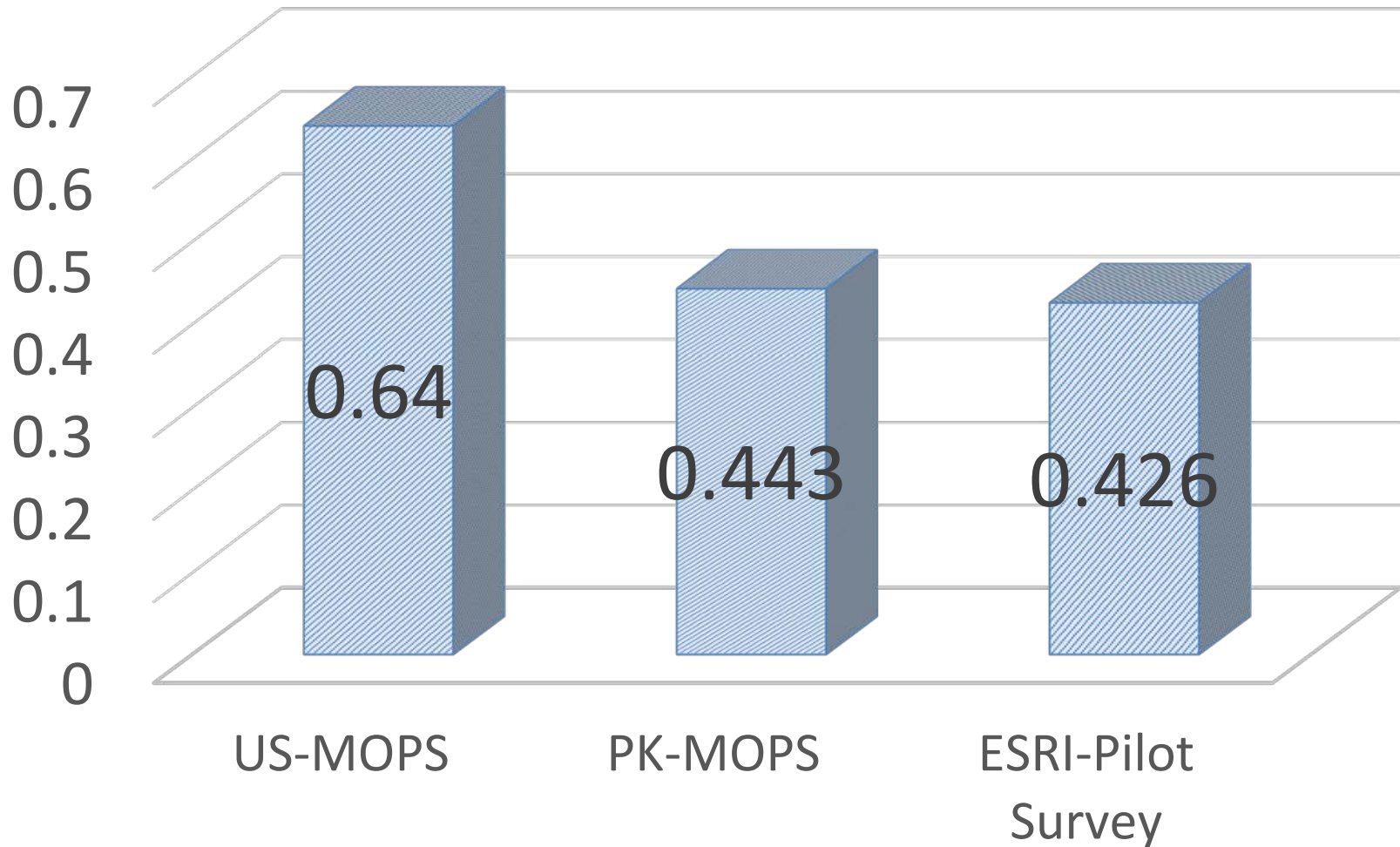
- No significant change between 2010 and 2015, but more improvements.

- The high management score is associated with better performance.

|	(1)	(2)	(3)
Dependent Variable	Ln (Productivity)	Ln (Productivity)	Ln (Productivity)
Specification	OLS	OLS	OLS
Management Score	1.02 ***	1.13 ***	0.80 ***
	(0.296)	(0.269)	(0.269)
Ln (Employees)	-0.26 ***	-0.29 ***	-0.28 ***
	(0.038)	(0.035)	(0.035)
Ln (Capital / Employees)		0.20 ***	0.22 ***
		(0.019)	(0.019)
General Controls	No	No	Yes
Observations	513	510	510

Management & Innovation

- The pilot survey asked the purpose of ICT utilization

Q8 For what purposes are Information and Communication Technologies (ICT) utilized at this establishment? Mark one box for each item.

	No	Yes
① To facilitate communication among employees.	☐	☐
② To facilitate access to information.	☐	☐
③ To facilitate efficient management of information.	☐	☐
④ To facilitate effective information provision outside of the company	☐	☐
⑤ To improve availability of data on products and services to your customers.	☐	☐
⑥ To analyze big data (e.g. Purchase trend)	☐	☐
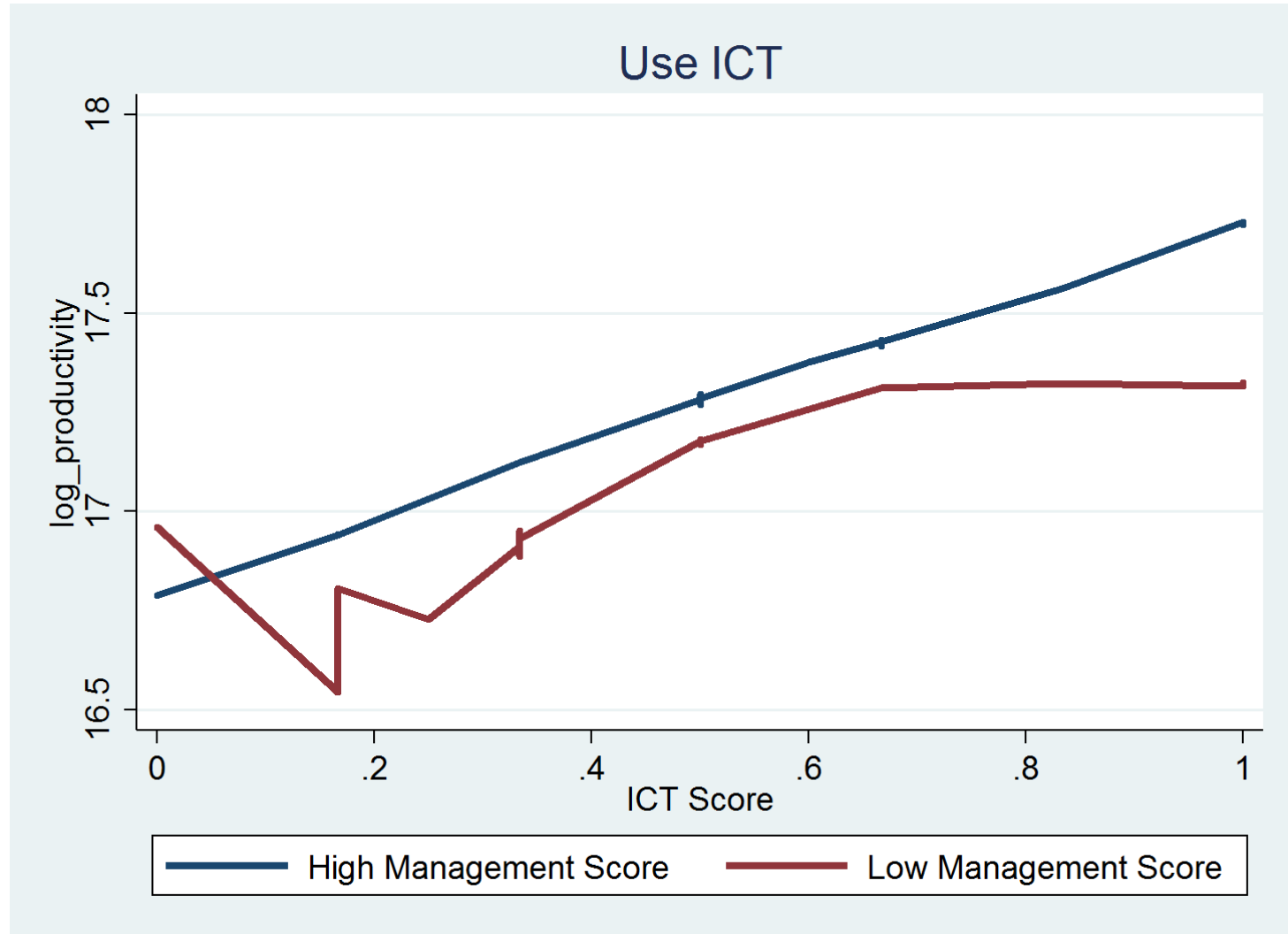
Use ICT

- Significant positive relationship
  between Management score and Innovation

	I	II	III	IV	V
Management Score	0.693 *** (0.149)				
KPI Setting Score		0.362 *** (0.110)			0.248 ** (0.114)
Long-term Target			0.156 ** (0.068)		0.141 * (0.075)
Short & Long-term Target			0.113 ** (0.044)		0.089 * (0.047)
No Target			-0.277 ** (0.108)		-0.001 (0.161)
Information Sharing Score				0.229 *** (0.061)	0.213 *** (0.067)
Industry Dummy	Yes	Yes	Yes	Yes	Yes
Obs	518	561	596	596	527

- Significant positive relationship between Incentive and Innovation

	I : Bonus	II: Promotion	III: Disciplinary	IV: All
Bonus Score	0.270 ***			0.212 ***
	(0.074)			(0.078)
Promotion Score		0.286 ***		0.136
		(0.111)		(0.119)
Disciplinary Action Score			0.234 ***	0.203 ***
			(0.065)	(0.068)
Industry Dummy	Yes	Yes	Yes	Yes
Obs	575	594	586	558

Creativity, Specialization, Competition and Innovation

- Does creativity or efficiency matter for conducting product innovation?

- Does specialization or coordination matter for conducting product innovation?

- Does competition matter for conducting product innovation?

- Independent variable
  - Creativity vs. efficiency index
  - Specialization vs. coordination index
  - Competition index

Result: Creativity, Specialization, and Competition

DV: Innovation

I: Efficiency vs. Creativity		II: Specialization vs. Coordination		III: Competition	
Management Score	0.619 ***	Management Score	0.633 ***	Management Score	0.645 ***
	(0.152)		(0.151)		(0.155)
Efficiency Very Important	-0.167 **	Specialization Very Important	0.140 *	Competition 2	0.343 ***
	(0.078)		(0.079)		(0.063)
Efficiency Somewhat Important	0.003	Specialization Somewhat Important	0.086	Competition 3	0.301 ***
	(0.057		(0.063)		(0.068)
Creativity Somewhat Important	0.203 ***	Coordination Somewhat Important	0.033	Competition 4	0.120
	(0.071)		(0.067)		(0.196)
Creativity Very Important	0.209 *	Coordination Very Important	0.049		
	(0.103)		(0.086)		
Industry Dummy	Yes		Yes		Yes
Obs	507		505		504

Result: Innovation and Productivity

	Dependent Variable		
	Innovation	Labor Productivity	Capital Productivity
Management Score	0.584 * **	1.012 *	1.989 **
Efficiency Very Important	-0.161 *	0.254	0.307
Efficiency Somewhat Important	-0.008	-0.067	-0.092
Creativity Somewhat Important	0.162 **	0.067	0.467
Creativity Very Important	0.133	0.536	0.945
Specialization Very Important	0.177 **	-0.384	0.607
Specialization Somewhat Important	0.062	-0.112	0.278
Coordination Somewhat Important	0.018	0.220	0.016
Coordination Very Important	0.090	-0.143	-0.423
Competition 2	0.322 * **	0.562 **	0.452
Competition 3	0.280 **	0.084	0.024
Competition 4	0.182	1.722 *	4.107 ***

Conclusion

- Management practices appear to be a key factor for productivity improvement and innovation in Japan.

- It is important to better understand the management practices in Japan.

- We will conduct JP-MOPS this autumn at first, and expand it for other sectors from next year or beyond.