

GGDC 25th Anniversary Conference

Session E-1

**Economic growth and structural change  
in eighteenth- and nineteenth-century Japan**

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## The Hitotsubashi project

- The late 19th- and early 20th-century estimates to replace old LTES (Long-term Economic Statistics) series (Settsu, Bassino and Fukao 2016).
- The early modern estimates: back projection on the basis of prefectural data in the 1874-1909 period (Saito and Takashima 2016). Alternative estimates to Maddison's (2001, 2004).
- Sector-specific
- By-employment adjusted for sectoral estimates of employment
- In liaison with: INCHOS (International Network for the Comparative History of Occupational Structure led by O. Saito and L. Shaw-Taylor), and with S. Broadberry's Accounting for the Great Divergence project

## Data for today's talk

- Saito, O. and T. Settsu (2010). Unveiling historical occupational structures and its implications for sectoral labour productivity analysis in Japan's economic growth, Hitotsubashi Univ G-COE Hi-Stat DPs, no. 143.
- Saito, O. and M. Takashima (2016). Estimating the shares of secondary- and tertiary-sector outputs in the age of early modern growth: the case of Japan, 1600-1874, *European Review of Economic History*, vol. 20, issue 3.
- Settsu, T., J.-P. Bassino and K. Fukao (2016). Meiji Keizai seichō no saikentō, *Keizai kenkyū*, vol. 67, no. 2.
- Settsu, T. (2016). Estimates of sectoral shares of the labour force: Japan, 1600-1874 (work in progress).
- Bassino, J.-P., S. Broadberry, K. Fukao, B. Gupta, and M. Takashima (2017). Japan and the great divergence, Univ of Oxford DPs in Economic and Social History, no. 156.

## This paper

- Is to place the new growth estimates in comparative perspective. How early modern Japan's performance was compared with European countries', and how that comparison changed in the modern period.
- Catch-up. Japan has long been considered the first non-western country catching up with European industrialisers, and the Meiji government's effort is thought to have been indispensable for this achievement.
- However, was Meiji Japan catching up with the West? Was the growth performance in the 1874-1913 period discontinuously better than in the pre-1874 period?
- And which country/group of countries was to be compared with?

# Five country groups

- 12 West European countries (Maddison's)  
Austria, Belgium, Denmark, *Finland*, France, Germany, *Italy*, Netherlands, Norway, Sweden, Switzerland, UK
- 4 Western offshoots (Maddison's)  
Australia, New Zealand, Canada, USA
- 8 European Rim countries  
Portugal, Spain, *Italy*, Greece, Hungary, Czecho-Slovakia, *Finland*, Ireland
- 3 East European countries  
Bulgaria, Poland, Russia (former USSR countries)
- 3 Asian empires  
China, India, Ottoman/Turkey

# Structural change

- The third issue of the paper is to re-examine Petty's law in the Japanese mirror.
- Colin Clark argued that the primary sector declined in its relative importance, with manufacturing showing first a rise and then a decline in favour of the tertiary sector, which he called 'Petty's law' (Clark 1940).
- However, there is no guarantee that the sectoral shares in both output and employment changed in unison. One of the major findings from the INCHOS project is that during the English industrial revolution, the secondary sector's share in employment changed little.

- Moreover, this two-measure approach allows us to calculate sectoral labour productivity differentials and their change over time. For this, Japan has been regarded as a typical case of dualistic growth –with a rise of the capital-using ‘modern’ sector in contrast to the stagnant, labour-intensive ‘traditional’ sector, from the very beginning of the Meiji period (Ohkawa 1979).
- Was pre-WWI Japan ‘dualistic’?
- When the ‘modern’ sector had input-output relations with labour-intensive branches like traditional agriculture and building trades or labour-intensive non-domestic services in the tertiary sector, did the process follow what Petty’s law predicted? Even when the manufacturing sector itself was considerably labour-saving, it is likely that strong manufacturing growth created a good deal of employments outside the manufacturing sector.

Figure 1. Estimates of GDP per capita: Maddison and Hitotsubashi series compared, 1600-1940 (1990 intl dollars)

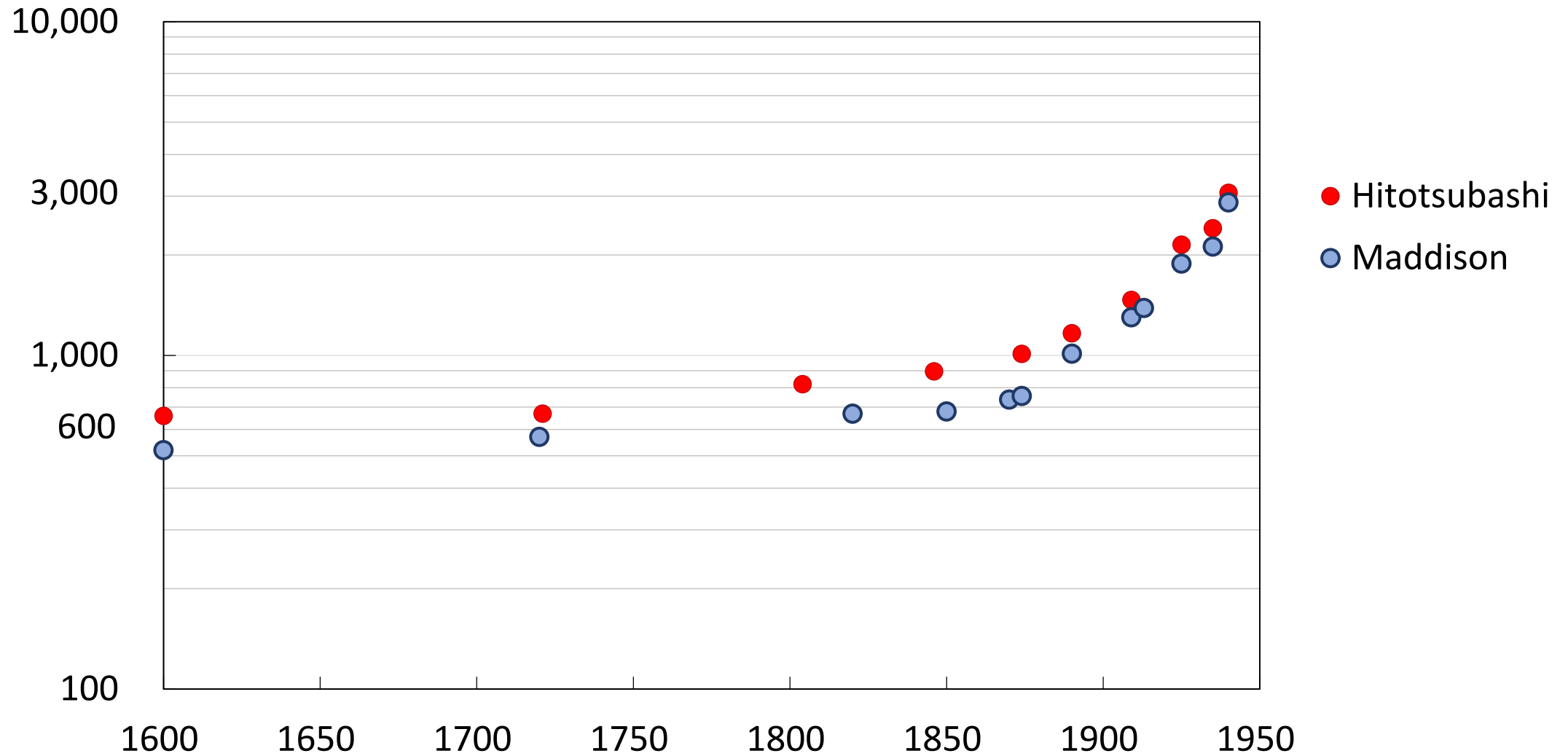




Figure 2. Economic growth and the changing share of the primary sector, 1600-1940

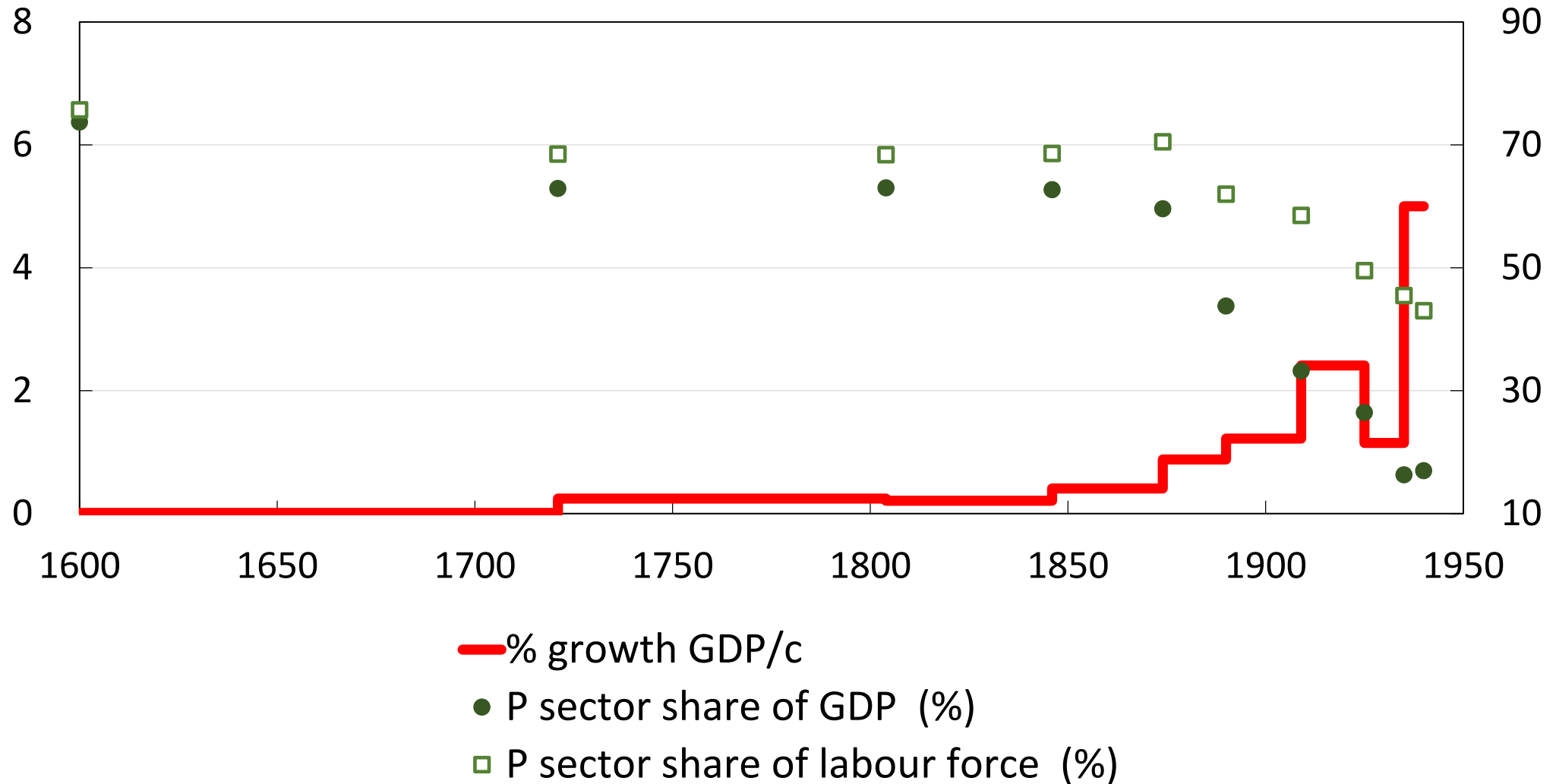


Figure 3. Changing share of the secondary share in output, 1600-1940

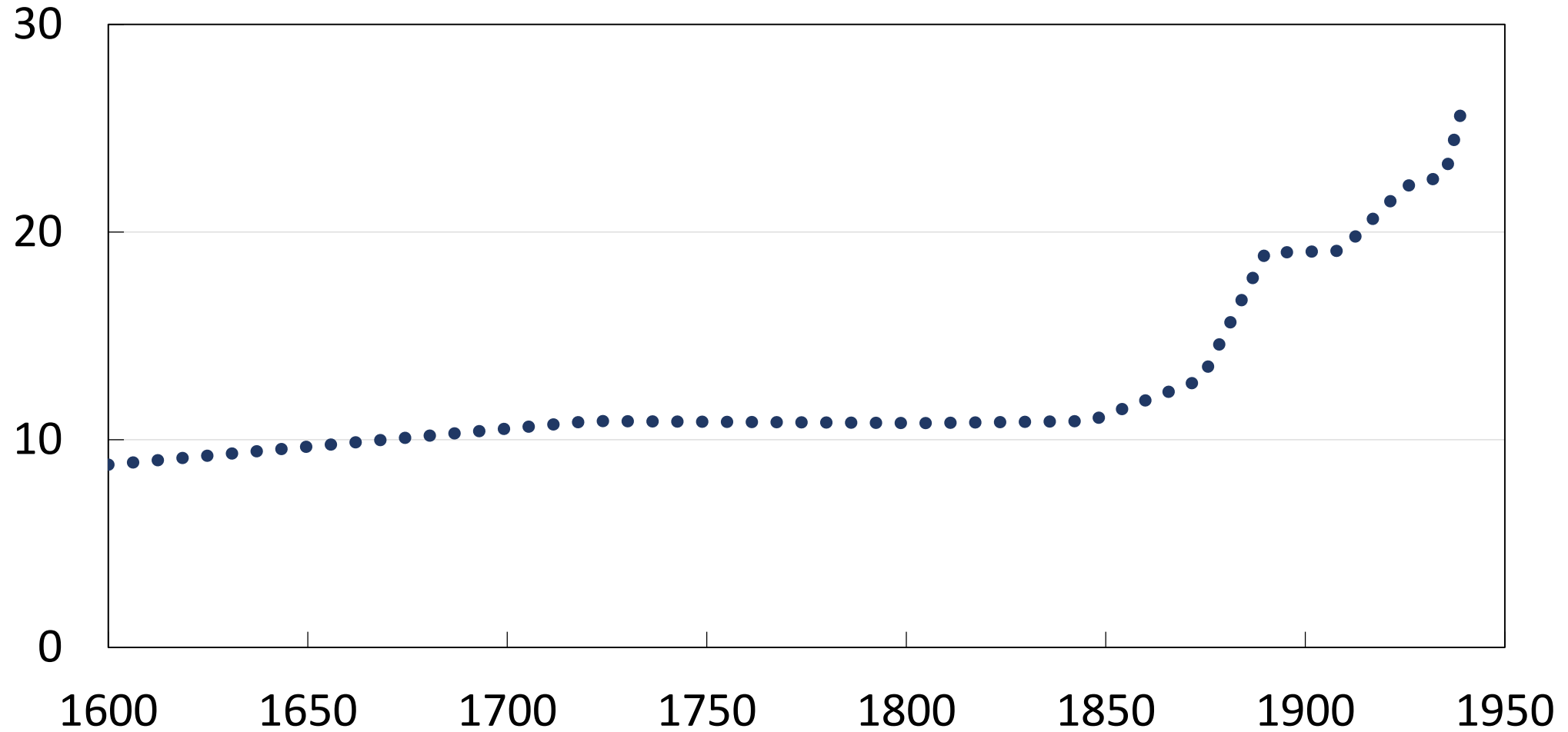


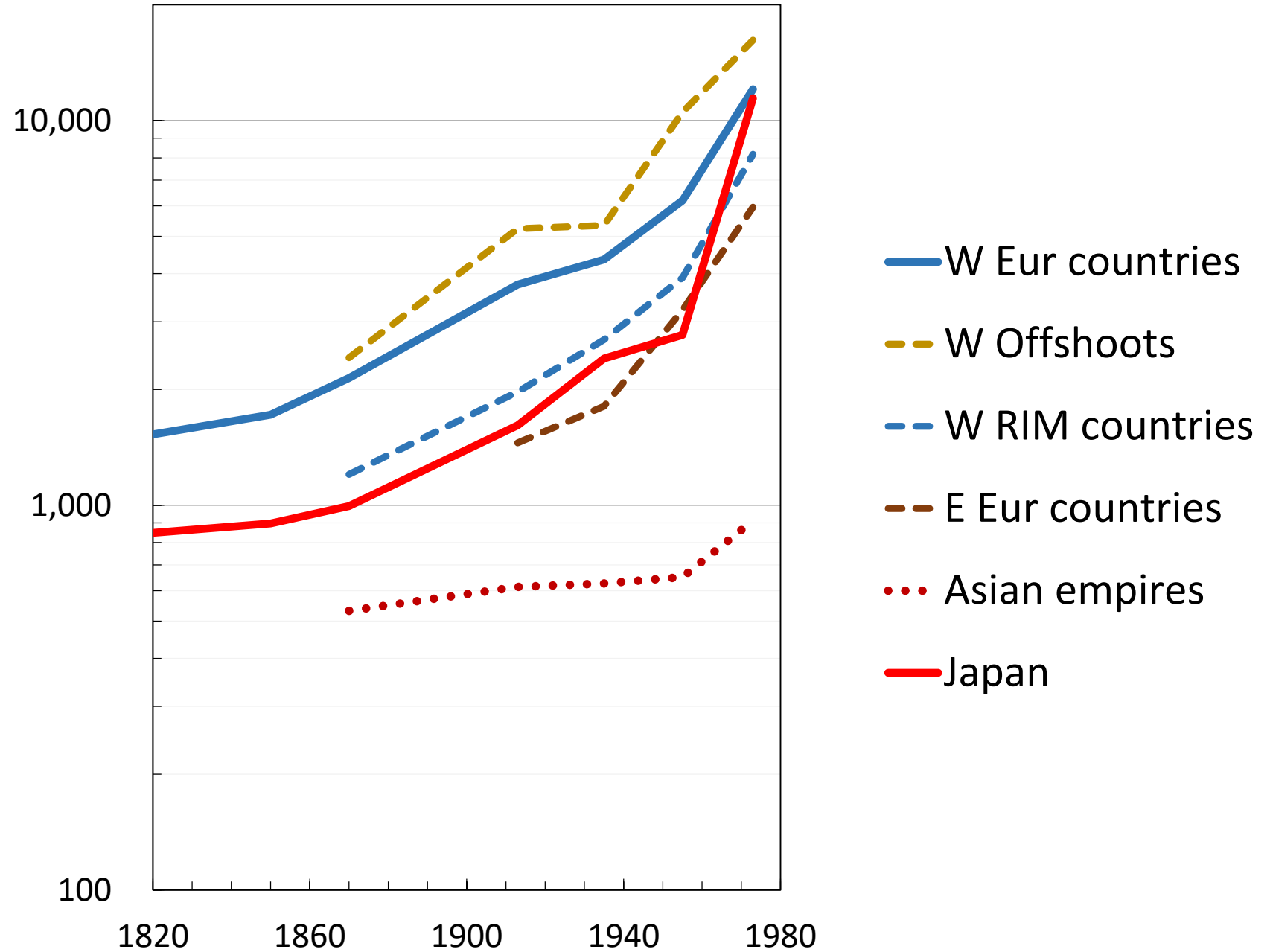
Table 1. Levels of GDP per capita (in 1990 intl dollars)

	Japan	Japan as % of		
	(\$)	12 W Eur	Eur RIM	Ottoman/ TUR
1600	667	59		
1700	668	51		95
1820	848	55		115
1870	995	46	83	121
1913	1,614	43	82	133
1935	2,406	55	89	177

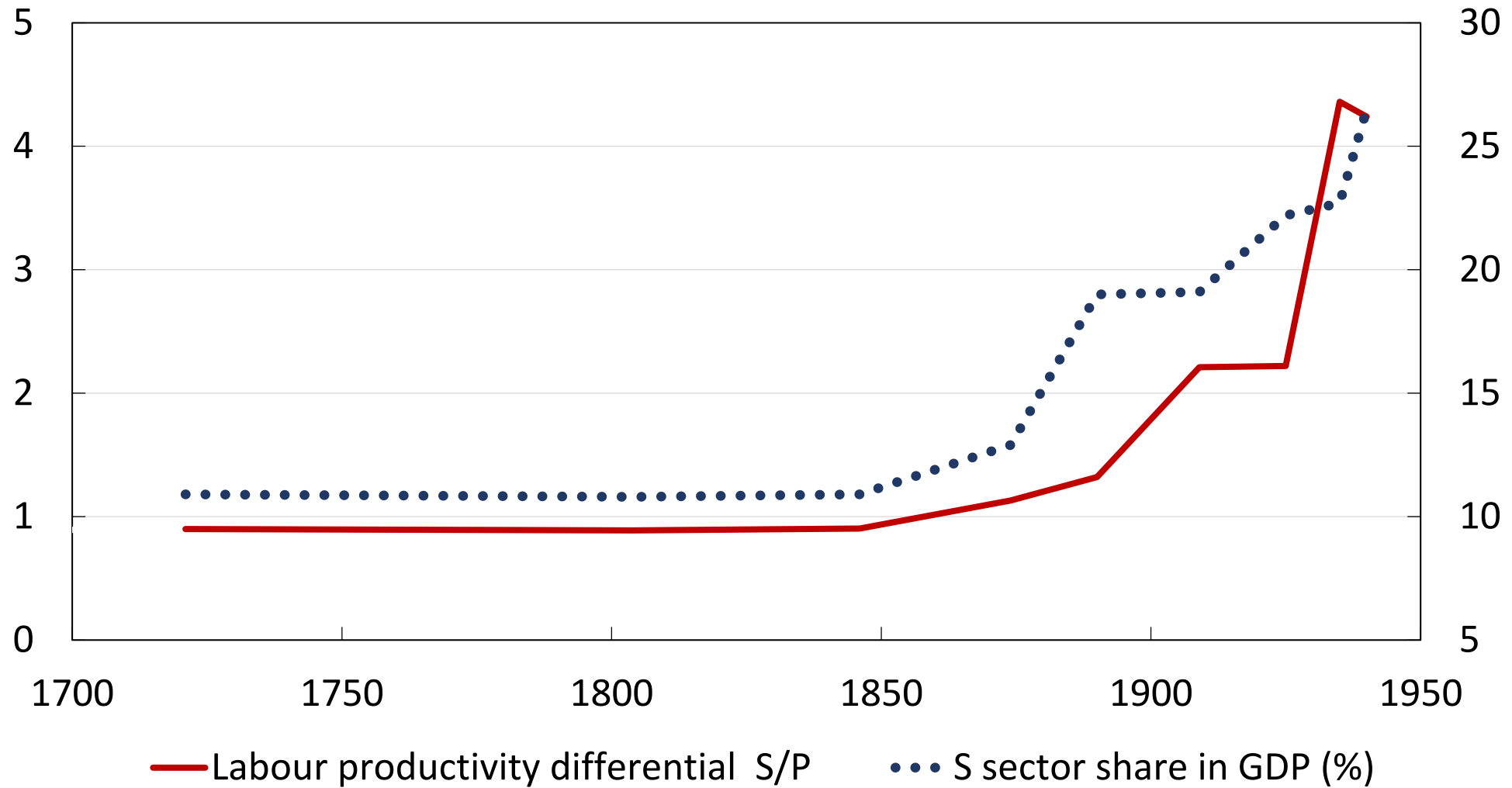
Table 2. GDP per capita: rates of growth (% p.a.)

	Japan	12 W Eur	Eur RIM	Ottoman/ TUR
1600-1700	0.01	0.14		
1700-1820	0.20	0.13		0.05
1820-1870	0.32	0.68		0.22
1870-1913	1.13	1.24	0.99	0.90
1913-1935	1.83	0.68	1.28	0.51

**Figure 4.  
Changing  
GDP per  
capita for  
six groups  
of  
countries  
in the  
world,  
1820-1973**



# Figure 5. Two measures of industrialisation, 1846-1940



## Table 3. Sectoral shares in the labour force

	Benchmark year	% of total labour force		
		Primary	Secondary	Tertiary
Japan	1874	70	13	17
	1925	50	22	28
Bulgaria	1888	84	8	8
	1926	81	10	9
Spain	1877	71	13	16
	1925	55	25	19
Italy	1871	65	18	17
	1925	57	24	19
E & W	c.1710	47	39	15
	1817	34	42	24
	1871	21	44	35

# Table 4. Sectoral shares in GDP

	Benchmark year	% of GDP		
		Primary	Secondary	Tertiary
Japan	1874	60	12	28
	1925	26	26	47
Bulgaria	1892	59	19	22
	1924	55	17	29
Spain	1877	42	22	36
	1925	26	31	42
Italy	1871	54	17	29
	1925	33	24	43
E & W	1817	27	31	42
	1871	14	38	48



## Table 5. Sectoral labour productivity differentials

	Benchmark year	Differential (Sector P=1)	
		Secondary	Tertiary
Japan	1874	1.1	2.0
	1925	2.2	3.1
Bulgaria	1892	3.4	3.9
	1924	2.5	4.7
Spain	1877	2.8	3.8
	1925	2.6	4.6
Italy	1871	1.2	2.1
	1925	1.7	3.9
E & W	1817	0.9	2.2
	1871	1.3	2.1

## Observations and implications

1. During the 18th and the long 19th century, Japan's growth was never spectacular but steady, leading gradually to trend acceleration. The level of growth rate in GDP per capita increased without much disruption from a very modest level of 0.2 % in the 1700-1820 period to 1.8 % in the inter-war period of 1913-35, and reached 5 % in the 1935-40 period.
2. Compared with other countries in Eurasia, Japan's performance in the early modern period of 1700-1820 was not bad at all, despite the lack of foreign trade under Tokugawa shogunate's seclusion policy.

3. On the other hand, the level of growth rate in the Meiji era (1870-1913) was internationally not particularly high. As a result, the gap with the core countries of the West did not shrink. Japan's per capita GDP level remained at about 50 % of the west European level. From 1820 to 1913, actually, the gap with the west European countries widened.
4. From 1870 on, Japan's level of GDP per capita was between the European Rim countries' and East European countries. By 1935, Japan almost caught up with the Rim countries. On the other hand, compared with other Asian countries, Japan had taken over Asia's three empires well before 1870.

5. As for structural change, there were two periods of structural change, from 1600 to 1700, and from 1874. Between 1700 to 1874, sectoral shares hardly changed despite steady growth performance.
6. The Japanese pattern does not follow Petty's law in the sense that the size of the tertiary sector was already fairly large, larger than the secondary before the transition to modern economic growth. This is true in terms of both output and employment. From 1874 onwards, there was concurrent growth of the secondary and tertiary sectors – again in terms of both output and employment.
7. Also, the decline in the primary sector's share in employment was not as fast as one would think – in fact, the absolute number of farm households remained unchanged throughout the period between 1874 and 1940.

8. However, the industrialisation drive was not powerful as far as the period before 1913 is concerned. Many industries, including silk reeling, had strong linkages with the primary sector, on the one hand, and with transport and commerce in the service sector, on the other. Manufacturing growth tended to increase demands for output and, hence create employment, in those relatively labour-intensive sectors.
9. It was in the inter-war years that this structural characteristic began to change. It was a period of fully fledged industrialisation, and also an age of dualism with widening income inequality. Not surprisingly, this period of stronger growth and structural change was very short-lived.