GROWING, SHRINKING AND LONG RUN ECONOMIC PERFORMANCE: HISTORICAL PERSPECTIVES ON ECONOMIC DEVELOPMENT

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INTRODUCTION

- It has been known for some time that poor economies in the modern world grow at least as fast as rich economies when growing, but are poor because they also shrink more frequently and more rapidly (Easterly, Kremer, Pritchett and Summers, JME 1993)

- There has been little attempt by economic historians to explore the implications of this over the long run:
  - Has improved performance always been due to less shrinking rather than more growing?
  - And if so, what have been the forces making for the dampening and eventual elimination of shrinking?

3 annual data sets analysed

- Economic performance in the contemporary world
  - 1950-2011: Penn World Table, 141 countries

- Economic performance in the 19th and 20th centuries
  - Maddison data base, 14 European and 4 New World countries, 1820-2008

- Economic performance over the very long run
  - 4 European economies, 1270-1870
  - 3 ways of assessing importance of growing and shrinking

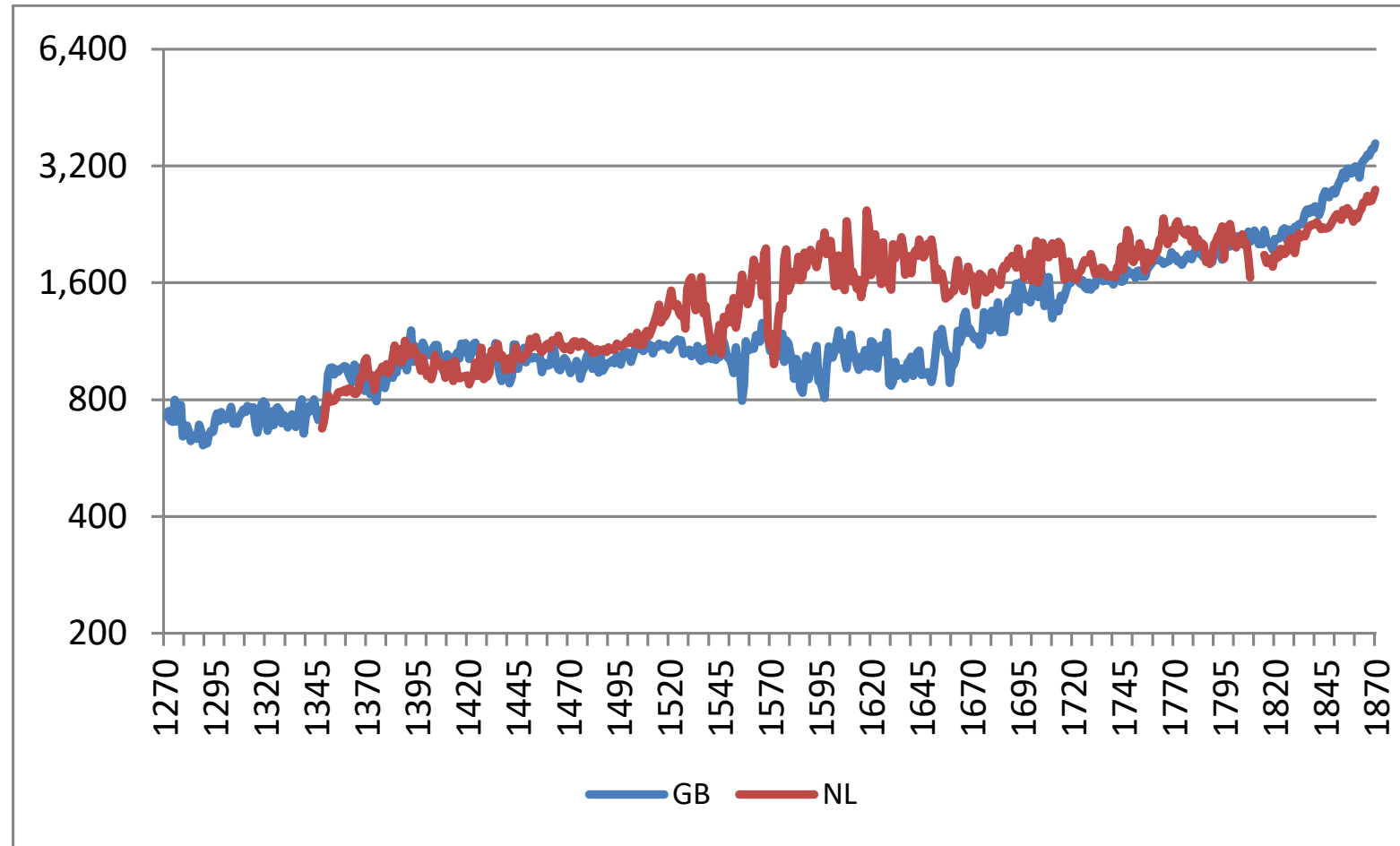# Medium-run trends of growing and shrinking in Europe, 1270-1870

- Annual time series for 4 European countries plotted in Figure 1

- FIGURE 1A: For Italy and Spain, growth booms alternated with growth reversals, leaving no long run growth of p.c. GDP

- FIGURE 1B: For GB and NL, although there are alternating periods of positive and negative growth until C18th, do get positive trend, with pc income gains following **Black Death** being retained, and growth reversals eventually disappearing with transition to MEG

- FIGURE 1C: Europe's Little Divergence occurs as GB and NL overtake Italy and Spain as result of dampening of growth reversals rather than acceleration of growth booms

FIGURE 1: Real GDP per capita in European countries, 1270-1870 (1990 international dollars, log scale)

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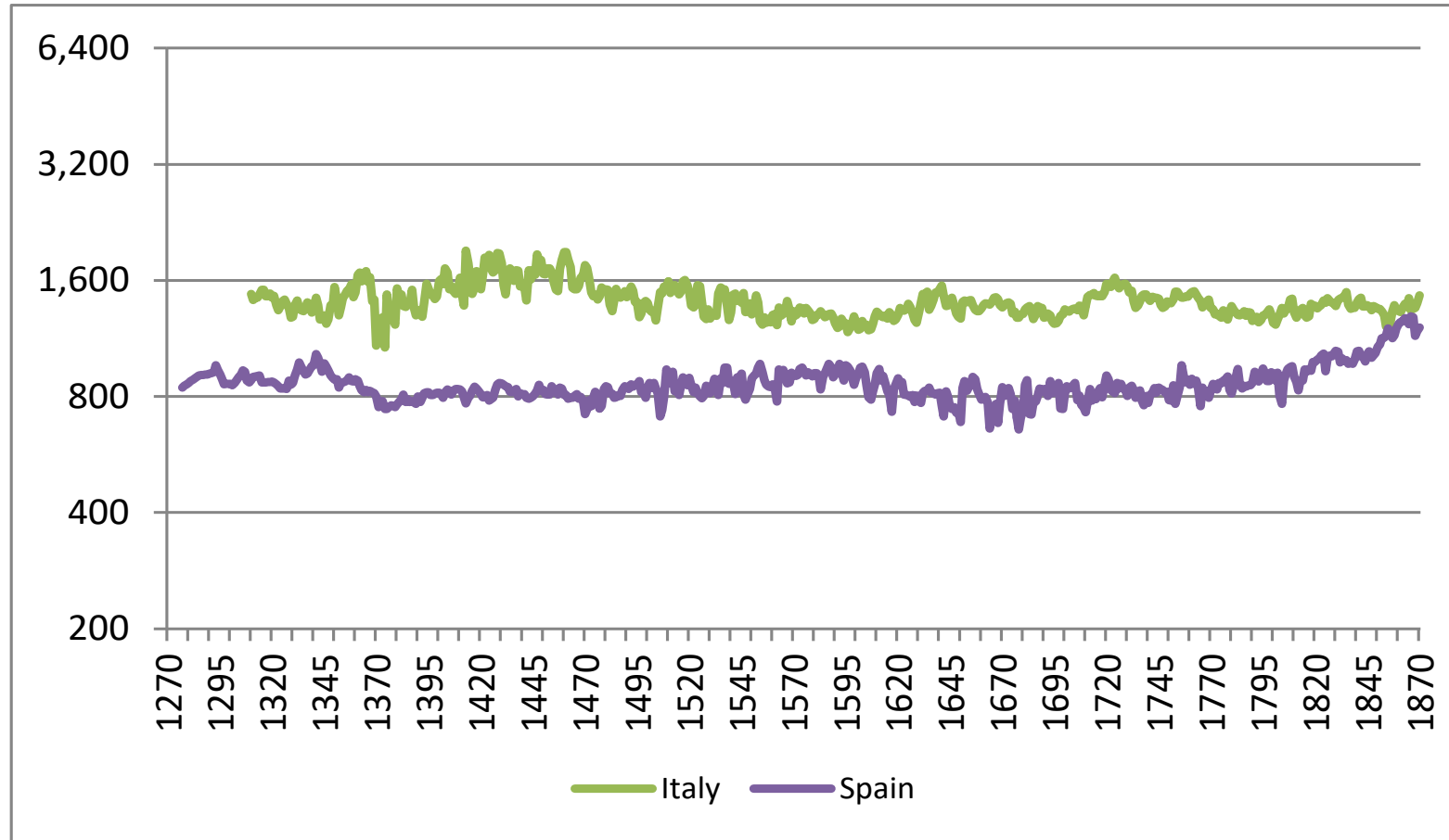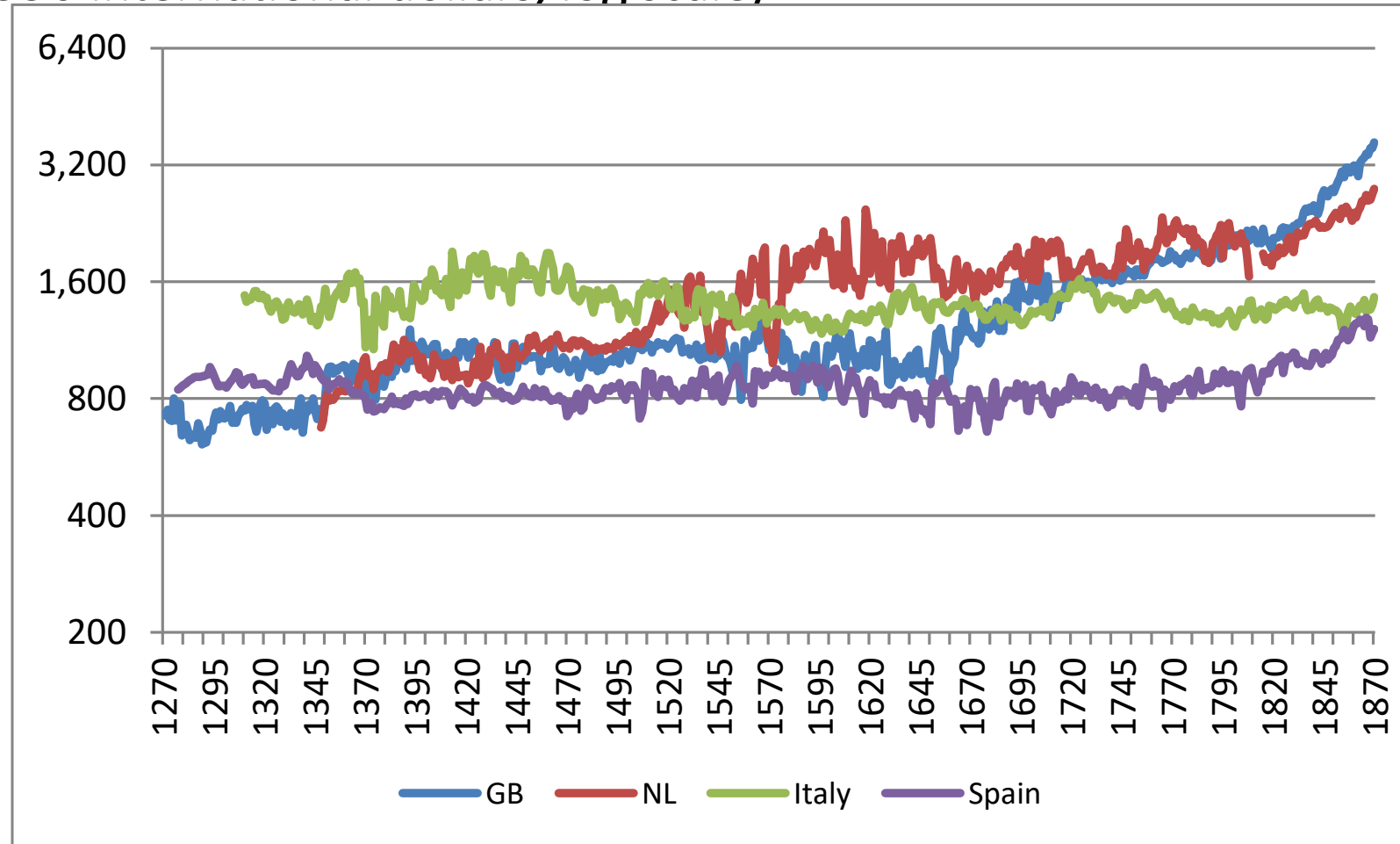

Sources: Broadberry et al. (2015); van Zanden and van Leeuwen (2012); Malanima (2011); Alvarez-Nogal and Prados de la Escosura (2013)

FIGURE 1: Real GDP per capita in European countries, 1270-1870 (1990 international dollars, log scale)

Growing and shrinking episodes (≥ 3 consecutive years)

- Table 6: For whole period 1348-1870, GB and NL overtook Italy and Spain not because of greater incidence of growing episodes (≥ 3 consecutive years of positive per capita GDP growth), but rather because of much fewer shrinking episodes (≥ 3 consecutive years of negative per capita GDP growth)

- Note performance of GB (first country to achieve MEG) during its periods of significantly improved per capita GDP performance:
  - Fewer growing episodes than all other countries after Black Death, 1348-1400
  - Fewer growing episodes than Italy and Spain after the Civil War 1650-1700
  - Even after 1800, no more growing episodes than NL and Spain, and fewer than Italy

TABLE 6: Significant growing episodes (≥ 3 consecutive years of positive per capita GDP growth) and shrinking episodes (≥ 3 consecutive years of negative per capita GDP growth)

A. Number of growing episodes per period

	Great Britain	Netherlands	Italy	Spain
1348-1400	3	5	4	5
1400-1450	6	4	0	3
1450-1500	4	3	3	2
1500-1550	3	5	3	2
1550-1600	1	4	4	4
1600-1650	3	1	5	3
1650-1700	3	1	5	4
1700-1750	2	2	4	2
1750-1800	4	3	4	3
1800-1870	6	6	8	6
1348-1870	35	34	40	34

TABLE 6: Significant growing episodes (≥ 3 consecutive years of positive per capita GDP growth) and shrinking episodes (≥ 3 consecutive years of negative per capita GDP growth)

B. Number of shrinking episodes per period

	Great Britain	Netherlands	Italy	Spain
1348-1400	2	2	1	2
1400-1450	3	0	2	3
1450-1500	2	3	5	4
1500-1550	1	1	2	2
1550-1600	4	1	4	3
1600-1650	2	1	3	5
1650-1700	3	3	4	1
1700-1750	0	3	1	4
1750-1800	2	2	4	0
1800-1870	0	1	3	1
1348-1870	19	17	29	25

Contributions of annual growing and shrinking to long run economic performance

- Over periods of 50 years or longer:

  $$g = \{f(+) \ g(+)\} + \{f(-) \ g(-)\}$$

- Long run economic performance = frequency of growing * average growing rate + frequency of shrinking * average shrinking rate

- But f(+) = [1 – f(-)], so only 3 independent factors:

  $$g = \{[1 - f(-)] \ g(+)\} + \{f(-) \ g(-)\}$$

- Can use this identity to show that better long run economic performance occurred not so much because of an increase in growing rate, but more because of a reduction in rate and frequency of shrinking

Contributions of growing and shrinking to long run economic performance

- Table 7 shows the frequency of growing and shrinking years

- All 4 economies grew and shrank in roughly equal proportions of years before the C19th

- Shrinking was therefore just as important for long run economic performance as growing

Table 7: Very Long Run Data Base: The frequency of growing and shrinking

		1270-1348	1348-1400	1400-1450	1450-1500	1500-1550	1550-1600	1600-1650	1650-1700	1700-1750	1750-1800	1800-1870
GB												
	Growing	0.58	0.50	0.58	0.54	0.56	0.42	0.50	0.56	0.50	0.54	0.61
	Shrinking	0.42	0.50	0.42	0.46	0.44	0.58	0.50	0.44	0.50	0.46	0.39
NL												
	Growing		0.58	0.64	0.50	0.62	0.62	0.46	0.46	0.54	0.56	0.66
	Shrinking		0.42	0.36	0.50	0.38	0.38	0.54	0.54	0.46	0.44	0.34
Italy												
	Growing	0.58	0.56	0.42	0.50	0.50	0.52	0.54	0.60	0.54	0.50	0.59
	Shrinking	0.42	0.44	0.58	0.50	0.50	0.48	0.46	0.40	0.46	0.50	0.41
Spain												
	Growing	0.66	0.56	0.50	0.46	0.48	0.46	0.46	0.56	0.48	0.52	0.66
	Shrinking	0.34	0.44	0.50	0.54	0.52	0.54	0.54	0.44	0.52	0.48	0.34

Sources: Broadberry et al. (2015); van Zanden and van Leeuwen (2012);
Malanima (2011); Alvarez-Nogal and Prados de la Escosura (2013)

Growing and shrinking rates

- Table 8: growing and shrinking rates tended to move together:
  - High rates of growing accompanied by high rates of shrinking
  - Low rates of growing accompanied by low rates of shrinking
- Change in LR econ performance very slow, even in GB, first economy to achieve MEG, reaching only 0.79% p.a. at end of Industrial Revolution
- Note growing rate and shrinking rate both much greater than this
- Note also growing rate was declining as economic performance improved during Industrial Revolution

Table 8: Very Long Run Data Base: Average rate of change of per capita income in all years, growing years and shrinking years

		1270-1348	1348-1400	1400-1450	1450-1500	1500-1550	1550-1600	1600-1650	1650-1700	1700-1750	1750-1800	1800-1870
GB	All years	0.04	0.64	-0.04	0.02	-0.05	0.04	-0.31	1.07	0.23	0.43	0.79
	Growing	4.29	6.45	4.15	3.02	2.48	9.31	5.92	7.23	4.76	2.47	3.00
	Shrinking	-5.76	-5.16	-5.83	-3.51	-3.28	-6.66	-6.54	-6.77	-4.31	-1.98	-2.73
NL	All years		0.60	0.28	0.12	0.42	0.78	0.02	-0.49	0.22	0.21	0.46
	Growing		3.96	3.80	2.09	5.39	8.65	11.93	5.87	5.27	4.77	2.49
	Shrinking		-3.98	-5.99	-1.86	-7.68	-12.05	-10.13	-5.91	-5.70	-5.61	-3.43
Italy	All years	-0.18	0.28	0.08	-0.35	-0.14	-0.10	0.05	0.11	0.08	-0.23	0.23
	Growing	2.44	6.09	7.77	3.39	4.29	3.05	2.68	1.70	1.90	1.76	2.23
	Shrinking	-3.78	-7.05	-5.43	-4.08	-4.56	-3.51	-3.04	-2.28	-2.06	-2.23	-2.60
Spain	All years	0.10	-0.20	0.03	0.03	0.10	0.00	-0.52	0.34	-0.08	0.31	0.39
	Growing	1.35	1.30	1.72	2.80	5.14	3.58	3.55	5.40	3.52	4.18	2.65
	Shrinking	-2.35	-2.09	-1.66	-2.32	-4.54	-3.04	-3.99	-6.11	-3.40	-3.87	-3.93

Sources: Broadberry et al. (2015); van Zanden and van Leeuwen (2012);
Malanima (2011); Alvarez-Nogal and Prados de la Escosura (2013)

Contributions of growing and shrinking

- Table 9 shows the contributions of growing (frequency of growing multiplied by growing rate) and shrinking (frequency of shrinking multiplied by shrinking rate) to the long run economic performance (average rate of change of p.c. income in all years)

- Transition to MEG first occurred in GB during C18th when contributions of growing and shrinking were both low.

- However, growing contribution was significantly greater than shrinking contribution because:
  - growing rate > shrinking rate
  - frequency of growing > frequency of shrinking

Table 9: Very Long Run Data Base: Frequency multiplied by rates of growing and shrinking

		1270-1348	1348-1400	1400-1450	1450-1500	1500-1550	1550-1600	1600-1650	1650-1700	1700-1750	1750-1800	1800-1870
GB	All years	0.04	0.64	-0.04	0.02	-0.05	0.04	-0.31	1.07	0.23	0.43	0.79
	Growing	2.48	3.22	2.41	1.63	1.39	3.91	2.96	4.05	2.38	1.34	1.85
	Shrinking	-2.44	-2.58	-2.45	-1.62	-1.44	-3.87	-3.27	-2.98	-2.15	-0.91	-1.05
NL	All years		0.60	0.28	0.12	0.42	0.78	0.02	-0.49	0.22	0.21	0.46
	Growing		2.28	2.43	1.05	3.34	5.36	5.49	2.70	2.85	2.67	1.64
	Shrinking		-1.69	-2.16	-0.93	-2.92	-4.58	-5.47	-3.19	-2.62	-2.47	-1.18
Italy	All years	-0.18	0.28	0.08	-0.35	-0.14	-0.10	0.05	0.11	0.08	-0.23	0.23
	Growing	1.41	3.40	3.23	1.69	2.14	1.59	1.45	1.02	1.02	0.88	1.31
	Shrinking	-1.59	-3.12	-3.15	-2.04	-2.28	-1.69	-1.40	-0.91	-0.95	-1.12	-1.08
Spain	All years	0.10	-0.20	0.03	0.03	0.10	0.00	-0.52	0.34	-0.08	0.31	0.39
	Growing	0.89	0.72	0.86	1.29	2.47	1.65	1.63	3.03	1.69	2.17	1.74
	Shrinking	-0.79	-0.92	-0.83	-1.25	-2.36	-1.64	-2.15	-2.69	-1.77	-1.86	-1.35

Sources: Broadberry et al. (2015); van Zanden and van Leeuwen (2012);
Malanima (2011); Alvarez-Nogal and Prados de la Escosura (2013)

WHY DO ECONOMIES STOP SHRINKING?

- Explaining improved long run performance requires understanding why economies shrink less frequently and at lower rates

- Neoclassical growth theory is not very helpful here, because it abstracts from periods of shrinking and seeks instead to explain an acceleration in the rate of growing

- We follow Maddison in drawing a distinction between proximate and ultimate elements explaining per capita GDP performance, but focusing on shrinking rather than growing

PROXIMATE CAUSES OF THE DECLINE IN SHRINKING

- STRUCTURAL CHANGE
- Structural shift away from agriculture could have reduced impact of weather shocks and bad harvests on shrinking of aggregate GDP
- But this is only a proximate cause of reduced shrinking: Engel's Law tells us that share of income spent on food falls as income rises
- Furthermore, shift-share analysis shows that in the British case, at least, reduced shrinking within each sector (including agriculture) was more important than structural change in reducing aggregate shrinking

TECHNOLOGICAL CHANGE

- In a world with no (or very little) technological progress, an upturn must lead to positive per capita GDP growth, while a downturn must lead to negative growth i.e. shrinking
- A large acceleration in trend technological progress from a very low level could therefore lead to the elimination of shrinking
- But the scale of trend TFP growth remained low during the Industrial Revolution. Crafts (1995) sees British TFP growth accelerating from 0.05% p.a. 1760-80 to 0.35% 1831-73, and reaching a peak of 0.50% p.a. 1873-99
- This modest acceleration in the rate of technological progress has to be set against a much bigger decline in the average shrinking rate from 6.77% in 1650-1700 to 2.73% by 1800-1850

DEMOGRAPHIC CHANGE

- Malthusians assume feedback from GDP per capita to fertility (preventive check) and mortality (positive check) together with diminishing returns to land
- Reduction in shrinking could thus have occurred in response to mortality increase or decrease in fertility
- But this did not happen during Industrial Revolution. Indeed, there was a population explosion in GB after 1750 as fertility increased substantially and mortality declined
- Explaining the changing relationship between population, output and per capita output has proved difficult in UGT, even abstracting from the issue of shrinking

CHANGING INCIDENCE OF WARFARE

- Outbreak of war can be seen as shock to economic activity, leading to shrinking directly through disruption to business

- Reduction in incidence of warfare could therefore in principle have led to a reduction in shrinking

- Again, this is of limited usefulness in explaining reduced shrinking during Industrial Revolution, which occurred against a backdrop of intense warfare

- Also, demography complicates the picture: less war could lead indirectly to more shrinking of p.c. incomes by increasing population (Malthusian model)

ULTIMATE CAUSES OF THE DECLINE IN SHRINKING

- Smithian growth occurs with an increase in the extent of the market and the greater division of labour, while shrinking occurs with a reduction in the extent of the market
- A reduction in shrinking can occur with institutional change that supports stability of business environment and division of labour
- This is the approach taken in the new institutional economic history since North, Wallis and Weingast
- Broadberry and Wallis (2016) focus on transition from an economy operating with a system of "identity" rules to a system of "impersonal" rules

Institutional change

- Impersonal rule societies treat everyone the same
- In identity rule societies, more powerful individuals enjoy rule enforcement biased in their favour
- The identity of the most powerful elites can change over time
- This does not matter for the enforcement of impersonal rules, but is crucial for the enforcement of identity rules
- 2 key results follow:

Institutional change

- 1. Business relationships which would be viable in an impersonal rule society may not be viable in an identity rule society, simply because there is no mechanism for the most powerful elites to credibly commit to an agreement that could be enforced in the courts

- 2. Changes in elite ordering can bring about shrinking episodes in identity rule societies, but not in impersonal rule societies
  - In identity rule societies, business relations which were viable in the old ordering may cease to be viable in the new ordering, and it takes time for new relationships to develop, since they depend on establishing credible commitment

- Long run development, without growth reversals, therefore requires transition from a world of identity rules to a world of impersonal rules

CONCLUSIONS

- We show with data reaching back to the C13th that improved long run performance has occurred primarily through a decline in the rate and frequency of shrinking, rather than through an increase in the rate of growth during episodes of growing

- Indeed, as economic performance has improved over time, the short-run rate of growing has typically declined rather than increased

- Explanation of improved economic performance thus requires a better understanding of why economies shrink

- We consider the roles of proximate and ultimate causes of the decline in shrinking

Conclusions

- Some of the proximate causes of the decline in shrinking have less traction than might be expected:
  - structural change did not dramatically affect shrinking
  - The acceleration of TFP growth was very modest compared to the dramatic decline in the shrinking rate
  - Population growth accelerated during the Industrial Revolution
  - Warfare was also intense
- Underlying cause of reduction in shrinking was transition from an economy based on identity rules to a system based on impersonal rules