

Working Paper No. 03/04

**Regional GDP in Britain, 1871-1911:
Some Estimates**

This project is funded by the ESRC under grant 2394/R000239536, “Large-Scale Technological Change”, and is directed by Professor N.F.R. Crafts.

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which their procedure is retained for wage income but the non-wage share of GDP is allocated across regions on the basis of the tax returns. The results are also shown in section III.

These estimates permit a comparison of changes in regional income inequality during two episodes of globalization, in the late nineteenth and late twentieth centuries, in Section IV. Two specific questions are addressed:

- 1) Was regional GDP per person less equally distributed prior to World War I than in the recent past?
- 2) How do recent trends in regional income disparities compare with those of a century ago?

Section V concludes.

II. Implementing The Geary-Stark Method For English Regions

Geary and Stark (2002) base their estimates of country GDP on data on the structure of employment (agriculture, industry, services) and sectoral wages together with data for UK output for each sector. They assume that regional sectoral productivity relative to the UK average is reflected in sectoral regional wages relative to the UK average. There are no adequate data for service sector wages which are taken to be equal to a weighted average of agricultural and industrial wages. Agricultural wages are available directly while industry is based on estimates for construction and shipbuilding & engineering.

UK GDP is defined as

Y

but the income tax data are used to account for the remainder with an equal weight for each, i.e. averaging the two estimates.¹

For the purposes of estimating regional income assessments for income tax under schedules A, B and D which taxed earnings from the ownership of property, farmers' income, and business and professional profits, respectively, can be used. In each year the 50 per cent of GDP accruing to non-wage income is divided into property income and profits according to the ratio of assessments under (A + B) and under D. Regional shares of each category are calculated and from this a regional share of total non-wage income is obtained. The main problem in this is income under Schedule D which was rapidly increasing in relative importance and of which London accounted for a large and rapidly increasing proportion.

It seems clear that this is to some extent a statistical artefact and reflects taxes assessed on the head offices of companies that earned profits in the provinces (Rubinstein, 1987, pp. 103-6). The only way to correct for this appears to be to use the breakdown of receipts under Schedule D divided into those from 'individuals and firms' and those from 'companies and local authorities' published by the Inland Revenue for one year only, 1949-50. These show for the South East (London was not shown separately) a much smaller share in the former category than for any other region. Accordingly, the allocation of Schedule D assessments across regions is based on the raw data adjusted for the proportion of receipts from individuals and firms in 1949/50. Table 2 shows the resulting regional distribution of income tax assessments which are to be used for the regional allocation of non-wage income.²

Table 3 reports best guess estimates of regional incomes on the basis of using the Geary-Stark method for wage income and the tax assessments as allocated in Table 2 for non-wage income. The results are similar to those obtained using the Geary-Stark method in Table 1 for

Table 6 reports the regional rates of growth implied by comparison of the estimates of levels of GDP per person based on the use of the national GDP deflator to convert current price estimates into constant prices for all regions. This offers a reality check through the growth rates derived for 1911 to 1954/5. There is a plausible spread around the national average of 1.13 per cent per year with the West Midlands showing the strongest growth and London, Scotland and Wales the weakest. The results could be described in terms of the conventional wisdom of "a wealthy and prosperous south against a poor and declining north" (Lee, 1986, p. 268).

At the same time, this picture clearly needs to be qualified. Real GDP growth between 1911 and 1954/5 is indeed shown as lower (higher) than for the 1871 to 1911 period in Outer (Inner) Britain. However, apart from Scotland, all regions outside the South East seem to have experienced a stronger rate of growth of real GDP per person in the second period and the region with the next lowest growth in real GDP per person between 1911 and 1954/5 was the South East.⁵

V. Conclusions

The estimates for regional GDP constructed in this paper support the following conclusions.

- 1) The inequality of regional GDP per person was much higher in the early twentieth century than in the long boom after World War II but similar to the late twentieth century.

⁵ Despite the overview in Lee (1986, p.268) quoted above, his own account of regional income differentials implies a much stronger version of this outcome for the South East as a comparison of his Tables 7.3 and 14.1 reveals.

2) Both periods of globalization saw rapidly increasing disparities in regional GDP per person.

Regional divergence in pre World War I UK was driven by globalization which reduced rents from agricultural land and increased incomes from urban commerce. These years include the 'so-called' agricultural depression when arable farming was exposed to increasing imports from the New World as transport costs fell dramatically. Agriculture's share of output and employment contracted rapidly. By contrast, British invisibles flourished and underpinned the share of industrial and commercial profits in national income. Similarly, the globalization of recent decades has promoted de-industrialization in the midlands and north of England while favouring the growth of business and financial services in the south-east. The striking conclusion is that both episodes of globalization have been associated with major changes in regional income differentials in Britain with big losers and big winners.

Table 1. Geary-Stark Regional GDP, 1871-1911, £mn (%)

	1871	1881	1891	1901	1911
UK	1208 (100)	1307 (100)	1495 (100)	2049 (100)	2330 (100)
London	200.5	232.6	264.6	372.9	4

Table 2. Regional Shares of British Income Tax Assessments, 1871-1911

	1871	1881	1891	1901	1911
London ^a	19.15	19.57	24.27	25.00	26.76
Rest South	12.51	12.42	11.39	11.14	11.22
East					
East Anglia	4.52	3.88	3.04	2.27	2.08
South West	9.03	8.14	6.96	5.85	5.93
West Midlands	7.14	6.92	5.89	5.95	5.34
East Midlands	7.47	7.19	6.34	5.98	6.01
North West	11.49	12.16	12.25	12.71	12.44
Yorks & Humb ^b	7.22	7.49	7.21	7.55	7.09
North ^b	5.33	5.24	5.15	5.17	4.96
Wales	4.37	4.51	5.09	4.90	5.34
Scotland	11.76	12.59	12.40	13.49	12.83

Source: derived from Rubinstein (1987) and *British Parliamentary Papers*, 1870 vol XLI, 1882 vol XXXVII, 1896 vol XLIX, 1901 vol XVIII, 1912/13 vol XLIX. Income tax comprises assessments under Schedules A, B, and D. The Schedule D assessments are adjusted according to the proportion of receipts accruing to 'individuals and firms' as opposed to 'companies and local authorities', see text.

Notes:

- a. London is taken to be the sum of Middlesex and Surrey.
- b. North (Yorkshire & Humberside) is underestimated (overestimated) because Yorkshire North Riding is included in the global total for Yorkshire.

Table 3. Best Guess Regional GDP, 1861-1911, £ mn (%)

	1871	1881	1891	1901	1911
UK	1208 (100)	1307 (100)	1495 (100)	2049 (100)	2330 (100)
London	203.7 (16.9)	231.8 (17.7)	298.4 (20.0)	423.9 (20.7)	500.0

Table 4. Regional GDP/Person (Britain = 100)

Table 5. Regional GDP/Person, 1954/5-91 (Britain = 100)

	1954/5	1971	1981	1991	2001
South East	112.7	112.7	115.5	118.9	126.1
London	137.6	123.4	126.0	129.4	133.9
Rest of South East	97.9	104.6	108.4	109.5	119.0
East Anglia	83.5	92.8	94.7	108.9	109.1
South West	86.4	93.9	91.8	92.4	88.4
West Midlands	107.9	101.9	89.1	91.3	89.7
East Midlands	101.6	95.7	95.6	94.4	91.0
North West	97.8	95.3	92.9	90.2	89.3
Yorks & Humberside	98.4	92.5	90.2	89.5	85.5
North	88.0	86.1	92.2	83.1	75.6
Wales	82.0	87.5	82.0	82.8	78.2
Scotland	88.1	92.2	94.8	98.9	93.7
CV	0.106	0.076	0.086	0.113	0.152

Source: for 1954/5, Annual Report of the Commissioners of the Inland Revenue, Cd. 341 (1958), for 1971 and 1981, Regional Trends and for 1991 and 2001, Cope et al. (2003).

Table 6. Rates of Growth (% per year)

	1871- 1911	Real GDP	Real GDP/Head	1911- 1954/5	Real GDP	Real GDP/Head
South East	2.19		0.96	1.42		0.78
London	2.33		1.14	0.56		0.58
Rest of South East	1.94		0.67	2.44		1.32
East Anglia	0.44		0.16	1.57		1.22
South West	1.04		0.68	1.54		1.05
West Midlands	1.53		0.56	2.54		1.77
East Midlands	1.59		0.36	1.92		1.29
North West	1.86		0.54	1.32		1.04
Yorks & Humb	1.89		0.63	1.61		1.25
North	1.75		0.40	1.55		1.27
Wales	2.14		0.80	0.98		0.80
Scotland	1.95		1.06	0.84		0.67

Source: derived from estimates underlying Tables 4 and 5 assuming that price inflation was in each case at the rate of the national GDP deflator.

References

- Board of Trade (1908), *Rates of Wages and Hours of Wages in Various Industries in the United Kingdom for Various Years*, unpublished microfilm in LSE library.
- Bowley, A. L. (1898). The statistics of wages in the United Kingdom during the last hundred years: (part I) agricultural wages. *Journal of the Royal Statistical Society*, **61**, pp. 702-722.
- Bowley, A. L. (1901). The statistics of wages in the United Kingdom during the last hundred years: (Part VIII) wages in the building trades - concluded. *Journal of the Royal Statistical Society*, **64**, pp. 102-112.
- Cope, I, Vincent, D., Marais, J. and Lucas, P. (2003). Regional gross value added. at www.statistics.gov.uk.
- Deane, P. and Cole, W. A. (1962). *British Economic Growth, 1688-1959*. Cambridge: Cambridge University Press.
- Geary, F. and Stark, T. (2002). Examining Ireland's post-famine economic growth performance. *Economic Journal*, **112**, pp. 919-935.
- Hunt, E. H. (1973). *Regional Wage Variations in Britain, 1850-1914*. Oxford: Clarendon Press.
- Lee, C. H. (1979). *British Regional Employment Statistics, 1841-1971*. Cambridge: Cambridge University Press.
- Lee, C. H. (1986). *The British Econom*

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