

# *Productivity in Nineteenth Century France and Britain: A Note on the Comparisons*

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The once-common belief that the French economy stagnated during the nineteenth century has been as thoroughly discredited as beliefs ever are in economic history. The studies of Jean Marczewski and his associates established that the rate of growth of physical product per person in France was similar to the rate of growth in Great Britain during the century.<sup>1</sup> Richard Roehl and others suggested that French economic growth may have been more rapid than British.<sup>2</sup>

The most sweeping challenge to the old beliefs, however, came from Patrick O'Brien and Caglar Keyder, who accepted Roehl's basic conclusions and added further revisions to the conventional histories of French and British economic growth.<sup>3</sup> In particular, O'Brien and Keyder challenged the notion that it was the high level of industrial productivity that was primarily responsible for Britain's high level of income, and that industrial stagnation was primarily responsible for France's low level of income. Using their indices of real commodity output per head, O'Brien and Keyder showed that, in Britain, output per head in agriculture was greater than output per head in in-

<sup>1</sup> See, especially, MARCZEWSKI, "Le produit physique de l'économie française de 1789 à 1913 (comparaison avec la Grande-Bretagne)", *Cahiers de l'Institut Statistique Economique Appliquée* AF 4 (July 1965), pp. VII-CLIV. Although his estimates of commodity output revised the standard view of French stagnation, MARCZEWSKI nevertheless pointed out that "la croissance du produit physique à prix constants a été, au cours du XIX<sup>e</sup> siècle, bien plus rapide en Grande-Bretagne qu'en France" (p. CXXXV).

<sup>2</sup> See RICHARD ROEHL, "French Industrialization: A Reconsideration", *Explorations in Economic History* 13 (July 1976), pp. 233-281. For a general survey of the revisionist view of French industrialization, see RONDO CAMERON and CHARLES E. FREEDEMAN, "French Economic Growth: A Radical Revision", *Social Science History* 7 (Winter 1983), pp. 3-30.

<sup>3</sup> PATRICK K. O'BRIEN and CAGLAR KEYDER, *Economic Growth in Britain and France, 1780-1914* (London: GEORGE ALLEN & UNWIN 1978). Some of the material in the book appeared earlier in P. K. O'BRIEN, D. HEATH, and C. KEYDER, "Agricultural Efficiency in Britain and France, 1815-1914", *The Journal of European Economic History* 6 (Fall 1977), pp. 339-391.

dustry for most of the nineteenth century. By contrast, in France output per head was greater in industry than in agriculture. O'Brien and Keyder's most startling findings were that French industry was more productive than British industry and that "between the late eighteenth century and the First World War labour productivity in British agriculture remained appreciably and consistently higher than productivity per worker employed in French agriculture. In a taxonomic sense French retardation might be attributed or imputed entirely to the relative inefficiency of French agriculture, because if French farms had produced an output per worker similar in value to that produced on British farms then, *ceteris paribus*, the gap in total productivity would have disappeared..."<sup>4</sup> These conclusions represented a thorough revision of the conventional economic history of nineteenth-century Britain and France.

Critics pointed out that the more extreme conclusions of the revisionists could not be sustained in light of comparisons of real national income in the two nations. N.F.R. Crafts found a large and persistent gap between French and British real income per person throughout the nineteenth century.<sup>5</sup> According to Crafts, French income per person never exceeded 70 per cent of British income per person between 1830 and 1910. Moreover, the extraordinarily high level of industrial productivity found by O'Brien and Keyder was apparently the result of underestimating the industrial labour force in France.<sup>6</sup> Crafts' revised estimates of French industrial productivity are shown in Table I, along with O'Brien and Keyder's original estimates.

The revisions made by Crafts nevertheless did not remove an important paradox. "Agricultural" France apparently had a much higher labour productivity in industry than in agriculture, while "industrial" Britain had, before 1875, higher labour productivity in agriculture than in industry. The higher income per person in Britain, then, can be interpreted as the combined result of more rapid structural change (from agriculture to industry) and highly productive agricultural labour. Indeed, O'Brien and Keyder claimed that the greater productivity of British agricultural labour was "perhaps the only uncontroversial conclusion" that could be derived from their estimates of commodity output per head.<sup>7</sup> In their book and in an article co-authored with Daniel Heath, they explained the difference in agricultural productivity by the greater quantity and quality of land per British worker.<sup>8</sup> Such an explanation, however, is little more than a further description of the difference.

<sup>4</sup> O'BRIEN and KEYDER, p. 102.

<sup>5</sup> N.F.R. CRAFTS, "Economic Growth in France and Britain, 1830-1910: A Review of the Evidence", *Journal of Economic History* 44 (March 1984), pp. 49-67.

<sup>6</sup> CRAFTS, pp. 59-67.

<sup>7</sup> O'BRIEN and KEYDER, p. 90.

<sup>8</sup> O'BRIEN and KEYDER, pp. 102-145 and O'BRIEN, HEATH, and KEYDER, "Agricultural Efficiency in Britain and France, 1815-1914".

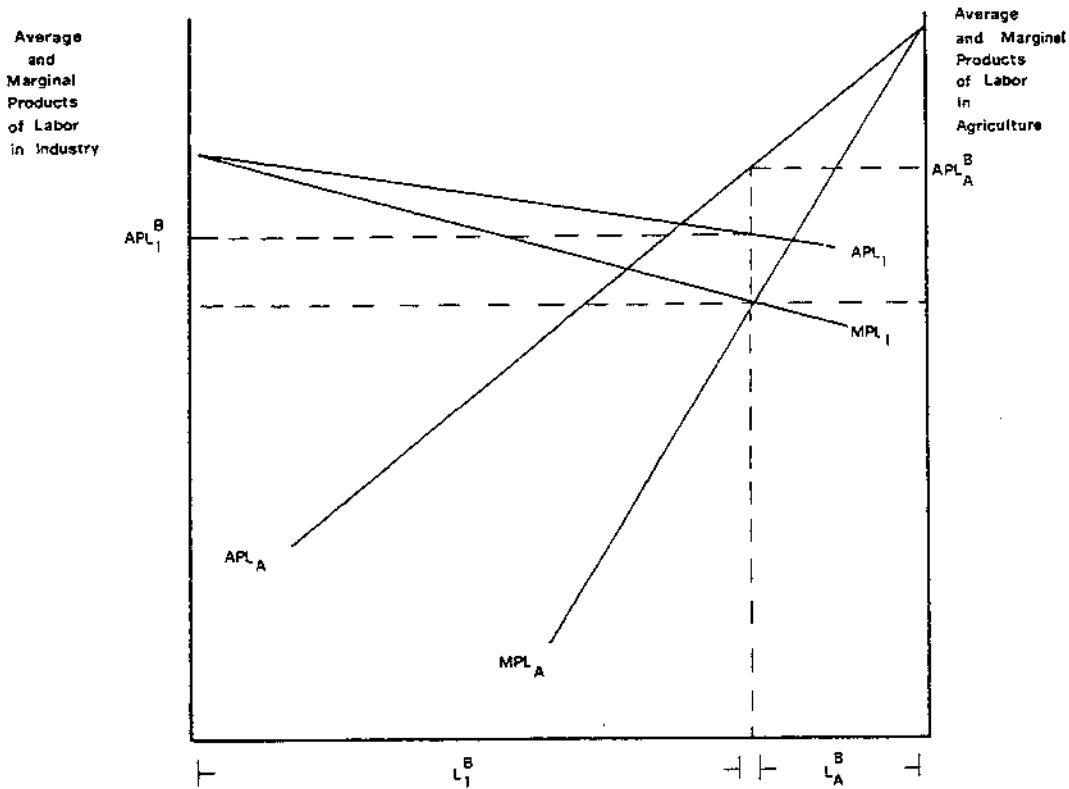
Without necessarily disagreeing with O'Brien and Keyder, I believe that the traditional views of British and French industrialization provide another explanation for the high measured productivity of British agriculture relative to British industry and the high measured productivity of French industry relative to French agriculture. The alternative I propose is that the relative productivities of British and French industry and agriculture can be explained by the different institutional constraints in the two economies and by the law of diminishing returns.

I will begin by demonstrating that diminishing returns can explain the estimates showing that the productivity of labour in Britain was higher in agriculture than in industry. I assume that industry and agriculture are the only two sectors in the British economy and that labour is allocated so as to maximize commodity output. As is illustrated in Figure 1, the equilibrium allocation of labour between industry and agriculture occurs at the point where the marginal productivities in the two sectors are equal. The assumption of equal marginal productivities implies that the British labour market was in long-run equilibrium throughout the century - an unrealistic assumption. What follows, however, depends only upon the assumption that marginal productivities were closer to equality in Britain than in France. I have drawn the figure so that average product of labour in Britain is higher in agriculture than in industry when the marginal products are equal. This result is consistent with the productivity estimates of O'Brien and Keyder. It does not, however, imply that, in any fundamental sense, British agriculture is more productive than British industry. Rather, it follows directly from more rapidly diminishing returns in agriculture than in industry. If (say) the labour force were to be evenly divided between the two sectors, the average product of labour would be higher in industry than in agriculture.

The allocation of labour in the French economy can be illustrated with the same kind of diagram as was used for the British economy. The institutional features of the French economy, however, differed from those of the British economy. The most important institutional difference relevant to the comparison of productivities was the greater incidence of peasant proprietorship in French agriculture.<sup>9</sup> French peasants tended to own their own small farms rather than rent or work for wages on large farms. They also resisted the enclosure of open fields and commons. Now, French agriculture

<sup>9</sup> On the incidence and significance of peasant proprietorship in France, see COLIN HEYWOOD, "The Role of the Peasantry in French Industrialization, 1815-1880", *Economic History Review* 34 (August 1981), pp. 359-376; GEORGE W. GRANTHAM, "Scale and Organization in French Farming, 1840-1880", in WILLIAM N. PARKER and ERIC L. JONES, *European Peasants and Their Markets* (Princeton: Princeton University Press, 1975), pp. 293-326; and MARC BLOCH, *French Rural History* (Berkeley: University of California Press, 1966).

Figure 1  
THE PRODUCTIVITY OF LABOR IN BRITISH  
INDUSTRY AND AGRICULTURE



- $L_A^B$  = quantity of labour in British agriculture
- $L_I^B$  = quantity of labour in British industry
- $APL_A^B$  = average product of labour in British agriculture
- $APL_I^B$  = average product of labour in British industry

has often been criticized for the predominance of small, scattered holdings. It was said that the structure of French agriculture inhibited technological change and prevented the realization of economies of scale. Peasant proprietorship was therefore regarded by many observers as evidence of the general backwardness of the French economy.<sup>10</sup>

Others, however, have argued that French agriculture was, in fact, efficient, especially if efficiency is defined more broadly than simply the maximization of commodity output. According to George Grantham, "until late in the nineteenth century peasants were held to their tiny farms by several types of insecurity. Labouring jobs and incomes in agriculture and industry were insecure".<sup>11</sup>

The lack of provision for aged and retired workers and fluctuations in market prices and employment were the main risks attached to industrial labour. Peasant proprietorship, then, was a form of insurance. Holding land reduced economic risks. The institution of peasant proprietorship may also have been reinforced by the French peasantry's aversion to the enclosure of open fields. The resistance to enclosure, though frequently criticized as irrational, may have been rational, given the political risks involved in the consolidation and redistribution of land that accompanied enclosure. According to Grantham, peasants feared that enclosure would lead to a redistribution of land away from small farmers.<sup>12</sup>

Political and economic risks, and perhaps other factors, kept French peasants on their farms even when pecuniary returns were higher in the cities. This preference for agriculture could have caused the value of labour's marginal product to be lower in agriculture than in industry. The difference can be explained by the non-pecuniary returns to agricultural labour. The equilibrium allocation of labour between French industry and agriculture is illustrated in Figure 2. Because of the non-pecuniary benefits of agriculture, the equilibrium is to the left of the intersection of the two marginal productivity of labour curves. Note that the average product of labour in industry is greater than the average product of labour in agriculture. France, an agricultural nation, apparently has a more productive industrial sector than agricultural sector. The apparent productivity of French industrial labour, however, is merely a reflection of the willingness of French workers to forego pecuniary returns in order to remain on the farm.

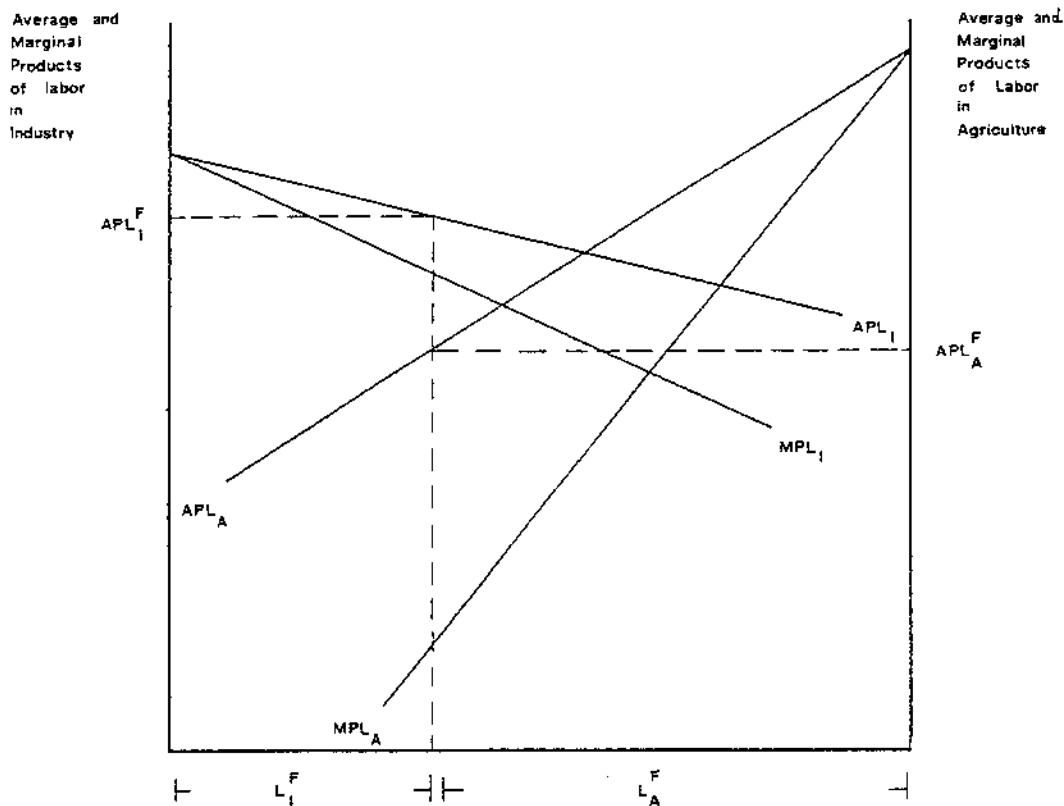
The pattern of labour productivities found by O'Brien and Keyder can therefore be explained by factors familiar to historians. Average productivity

<sup>10</sup> See O'BRIEN and KEYDER, *Economic Growth in Britain and France*, pp. 127-137.

<sup>11</sup> GRANTHAM, "Scale and Organization in French Farming", p. 309.

<sup>12</sup> See, GEORGE W. GRANTHAM, "The Persistence of Open-Field Farming in Nineteenth-Century France", *The Journal of Economic History* 40 (September 1980), pp. 515-531.

Figure 2  
THE PRODUCTIVITY OF LABOR IN FRENCH  
INDUSTRY AND AGRICULTURE



- $L_A^F$  = quantity of labour in French agriculture
- $L_I^F$  = quantity of labour in French industry
- $APL_A^F$  = average product of labour in French agriculture
- $APL_I^F$  = average product of labour in French industry

per worker was high in British agriculture because relatively few workers remained in agriculture; the resultant high quantity and quality of land per worker generated the high productivity. In France, a high proportion of the labour force remained in agriculture; the low quantity and quality of land per worker generated the relatively low productivity. The relatively high productivity of French industrial labour was therefore the result of the reluctance of French workers to enter industrial pursuits. Such results are not contrary to the traditional views of British and French industrialization. Rather, these results would be predicted by the traditional views.

The conclusion to be drawn is that O'Brien and Keyder's (and Crafts') estimates of average productivities are not inconsistent with the traditional interpretation of the industrial revolution. Their results do not necessarily show that French industry was more productive than French agriculture or that British agriculture was more productive than British industry. Indeed, O'Brien and Keyder's strong statements about the high productivity of British agriculture and French industry are consistent with "real" productivity being highest in British industry.<sup>13</sup> This conclusion follows from the assumption that the most relevant comparisons of productivity are between the productivities of given amounts of agriculture and industrial labour. The comparisons of actual labour productivities are distorted by the institutional constraints on the mobility of French labour. It is, of course, possible that O'Brien and Keyder's conclusions about productivities hold even under the definition of productivity I have used here. The problem is that their estimates are consistent with either interpretation. Until further evidence on the subject is forthcoming, then, the traditional interpretation of the industrial revolutions in Britain and France has not been successfully challenged.

<sup>13</sup> CRAFTS argued persuasively that average productivity per industrial worker was, in fact, lower in France than in Britain. Yet, even if average productivity was greater in French industry it would not be necessary to abandon the view that British industry was more productive. The curves in Figures 1 and 2 can be drawn so that, in equilibrium, the average product of labour is higher in French industry than in British industry, even though the marginal and average productivities of given quantities of industrial labour are always higher in Britain. In other words, O'BRIEN and KEYDER's strong results are nevertheless consistent with British superiority over France in industrial labour productivity.

Table I  
 AVERAGE PRODUCTIVITIES OF LABOUR  
 (in 1905-1913 pounds sterling)

Period	British Agriculture	British Industry	French Agriculture	French Industry	French Industry (Crafts)
1825-34	44.3	39.2	33.2	48.7	—
1835-44	50.3	44.5	29.4	55.7	37.0
1845-54	53.0	44.3	29.3	59.2	—
1855-64	58.4	50.7	36.4	65.7	51.1
1865-74	67.0	62.3	42.6	91.6	—
1875-84	67.0	68.5	33.6	80.8	63.7
1885-94	68.8	75.0	31.4	78.5	68.2
1895-1904	64.6	83.7	27.0	71.6	71.8
1905-1913	64.3	90.4	42.9	86.8	83.8

Source: O'Brien and Keyder, *Economic Growth in Britain and France 1780-1914*; Crafts, "Economic Growth in France and Britain, 1830-1910: A Review of the Evidence".

Note: The estimates for France are an average of the two estimates given by O'Brien and Keyder.