

BIBLIOGRAPHIC INPUT SHEET

1. SUBJECT CLASSIFICATION	A. PRIMARY Agriculture	AE10-0000-0000
	B. SECONDARY Agricultural economics	

2. TITLE AND SUBTITLE  
 Agricultural resource transfers and agricultural development, a brief review of experience in Japan, England, and France

3. AUTHOR(S)  
 Lele, U.J.

4. DOCUMENT DATE 1970	5. NUMBER OF PAGES 21p.	6. ARC NUMBER ARC 630.L539
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7. REFERENCE ORGANIZATION NAME AND ADDRESS  
 Cornell

8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publisher, Availability)  
 (In Occasional paper no.33)

9. ABSTRACT

10. CONTROL NUMBER PN-RAA- 281	11. PRICE OF DOCUMENT
12. DESCRIPTORS England France Japan	13. PROJECT NUMBER
	14. CONTRACT NUMBER CSD-i438 Res.
	15. TYPE OF DOCUMENT

June, 1970

**Agricultural Resource Transfers and Agricultural Development;  
A Brief Review of Experience in Japan, England and France**

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Occasional paper No. 33  
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## Preface

This paper summarizes the conclusions from literature on Japan, England, and France regarding the nature of agriculture's contribution in the growth processes of these countries. The examination of the literature was prompted by interest in the relationship between transfers from the agricultural sector and the effect of such transfers on agricultural development.

The paper does not attempt an original analysis of the evidence but only surveys a restricted literature. Richard Shortlidge's comments on the earlier draft have greatly improved the section on England.

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June 2, 1970  
Ithaca, New York

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This note is one of a series of studies being carried out at Cornell University as part of a USAID-financed contract for research on agricultural prices. We are grateful for the assistance provided by the Office of Agriculture & Fisheries of USAID and, in particular, to Douglas Caton of that Division.

Agricultural Resource Transfers and Agricultural Development:  
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Introduction

Increase in agricultural productivity facilitates performance of several useful functions in the growth process. First, it may finance industrial investment. This may be through low prices of wage goods or through increased savings or both. Savings from the agricultural sector may finance investment directly through a capital market or indirectly through fiscal means. Increase in agricultural productivity also releases labour for industrial development. Further it may either release foreign exchange through displacement of imports of food and agricultural raw materials or may supply foreign exchange directly through increased exports. In either case, it will facilitate import of capital goods. Finally, development of the agricultural sector may provide markets for industrial goods. Productivity increases serve any or all of these functions. The extent of which they serve any one of these functions naturally affects the extent to which they can serve the remaining functions.

The nature and magnitude of the intersectoral transfers of physical and financial resources during the process of economic growth have drawn considerable attention in the literature. W. Arthur Lewis, Jorgenson and Ranis and Fei brought agriculture's contribution to the forefront by placing it in systematic growth models, while Johnston and Mellor specifically pointed out the various important functions that agriculture may perform in the process of economic development (21,18,9,24,16).

Considerable empirical work exists on nature of agriculture's contribution to Japanese economic growth. T. H. Lee provides quantitative estimates for Taiwan while Dar's work attempts to estimate the sectoral terms of trade for India (20,26).

Although there is agreement as to the contribution that agriculture can make to economic development, considerable debate has occurred as to the optimum timing and manner of such intersectoral flows. Both of these factors will determine whether agriculture's contribution can be maximized by sustaining increases in productivity. It is argued that heavy demands on a static agriculture may retard or even arrest growth of the agricultural sector itself.

It is therefore of considerable interest to examine how increases in agriculture's productivity came about in the countries that have industrialized in the past. We will examine two successful cases of economic development and a partially successful one. Japan and England are considered as the two successful cases. France is considered as a partially successful case. The purpose is to investigate if there existed a close relationship between capital transfers from the agricultural sector and increases in agricultural productivity. It is hypothesized that high capital transfers may very well have resulted in productivity increases in the successful cases of development. Although there is considerable disagreement as to the precise magnitude of the contribution of agriculture to Japanese economic growth, it is generally agreed that considerable capital was transferred from agriculture through fiscal means. In England resource transfers were brought about mainly through unfavorable terms of trade for the agriculture which accelerated rationalization of the sector. The agricultural

sector was thus a source of cheap food for expanding population as well as of labour for the rapidly expanding industrial sector. In France no considerable redistribution of income took place. We will provide evidence to show the effect of various types of transfers on agricultural productivity in Japan, England and France.

### Agriculture in Japanese Economic Development

The case of Japan is widely cited as an example of the balanced growth development. Terms of trade between agriculture and industry remained remarkably stable during the period of the structural transformation of the Japanese economy (22,8,49). Capital was transferred from agriculture to industry mostly through heavy taxation of the agricultural sector. Agriculture constituted a major source of tax revenue in Japan. Even after the Land Tax Reform, tax burden on agriculture remained relatively severe. Land tax was a fixed proportion of the frozen value of land, to be paid in money.<sup>1/</sup> Agriculture alone contributed as much as 85 percent of the total tax revenue in 1888-1892 (22). Income tax was nonexistent until 1887 when it was introduced only at a low flat rate of 3 percent. Corporate tax came only in 1896 and was almost negligible. Inheritance and real estate taxes were completely absent before 1905.

The heavy burden of taxation resulted in a reorganization of the agricultural sector in two ways. 1) A large number of small landowners

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<sup>1/</sup> Tsuru suggests that at the time of the Land Reform (i.e. in 1873) the formula was worked out in such a way that 34 percent of the gross product would go into government as tax (see 25, p. 145). Johnston states that in the initial year of tax reform, taxes represented 25 percent of the normal crop value (see 15, p. 502).

were forced to sell their uneconomic units of land. Unlike the large landlord, the small farmer was not in a position to choose the time of tax payment and was forced to dump large amounts of produce on a market over which the large farmer had considerable control ... "The only alternative might well be to go into debt and since the only credit available, short term and high rate, was offered by the same landlord in his role of usurer, the end result was clear" (23, p.445). Land sale resulted in increased number of tenants and an increased number of those seeking employment in the newly emerging factories.<sup>2/</sup> Tenancy cultivation increased from 31.1 percent of the total cultivated land in 1873 to 40 percent in 1887 and 45.5 percent in 1915 (15). Since small cultivators were under pressure to sell their land, large landowners reaped the harvest of increases in productivity and rising prices of rice towards the end of the century. Thus the fiscal policy, over the period of structural transformation as a whole, was designed to tax small peasants heavily with a relatively lighter burden on the large landowners. 2) Heavy taxation resulted in increased productivity on the farms of those who remained in agriculture. As land tax was a proportion of the frozen value of land to be paid in money, the tax burden could be reduced by increasing productivity of land or by an increase in the price of the produce or both. The increase in the price of rice did bring about a reduction in the tax burden in 1870's and 1880's. However, a major relief was brought about through increases

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<sup>2/</sup>Elimination of inefficient farmer through heavy taxation in Japan is generally recognized by all the students of Japanese economic development. See (22,25).

in production that were much larger than cost increases.<sup>3/</sup> Productivity increased by 63 percent from 1878 to 1932 (23, p. 441).

Increases in productivity were a result of adoption of a wide variety of techniques such as crop rotation, drainage facilities, improved seeds and fertilizers. The new technique emphasized intensive methods of cultivation. "...the innovations were nearly all land saving ... the nature of the innovations was such that they could be applied effectively even on small farms ... the capital outlay required to bring about these advances was small relative to the increase in the output attained" (15, p. 500).

In Japan, income was redistributed not only from agriculture to industry but even within the agricultural sector from tenant cultivators to landlords. One-third of the produce was paid to the landlord after the tax reform of 1873 (25, p. 145). The practice of rent payments in kind continued for at least a generation after the Tax Reform. Rent payment was linked to the level of current production. The rise in the price of rice during the 1870's and 1880's benefited the tenant much less than it benefited the landlord as the landlord received a rising absolute quantity of production due to increase in yields. It is argued that even the relative share of rents increased from 1878 until the 1890's and hence the marginal gains of the early period went primarily to the landlord (22, p.53).

While the relation between capital transfers and increases in agricultural productivity seems to have been significant, two other

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<sup>3/</sup>See production - Cost index of Tobata & Ohkawa (22, p. 59).

important elements also contributed to the contemporary Japanese agriculture. First, improved techniques of production were readily available when they were also most desired. It is a matter of conjecture as to whether production would have increased so significantly in Japan had there not been the techniques available to exploit the pressure to rationalize agriculture. Second, the Japanese landlord played a crucial role in bringing about increases in agricultural productivity.

The Japanese landlord of the Meiji era, was of a progressive outlook and devoted himself to the improvement of farm practices. "He ... promoted societies for the discussion of agricultural techniques, introduced winter drainage and helped sponsor the growth of superior rice strains" (23, p. 447).

#### Agricultural and Industrial Revolution in England

There is much less consensus either on the nature or the magnitude of agriculture's contribution to economic growth in England. This is mainly due to the paucity of statistical data. But it is also due to the lack of integration of factor and product markets and to some extent due to the fact that the agricultural revolution preceded the industrial revolution. Thus development of the agricultural sector did not take place vis-a-vis the industrial sector in England as in Japan. Nevertheless, available evidence provides some interesting insights into the nature of agriculture's contribution to English economic growth and its effect on agricultural productivity. •

For the study of English agriculture, we will deal with the period between 1700 and 1850, the period of the agricultural revolution and

that immediately preceding it. Most of the major improvements in English agricultural practices took place during this period. After 1850, English agriculture lost its leadership in modernization of agriculture. Both in terms of supply and demand, it was influenced by the rest of European and American agriculture, which began to assert a leadership. The highly urbanized and industrialized English population had become dependent on imported foods and the agricultural sector had adjusted its domestic supply pattern to the production of commodities in which it had a comparative advantage. The first half of the eighteenth century prepared the stage for the agricultural revolution through major improvements in the techniques of production.

During the period 1700 to 1850, redistribution of income came about intermittently through unfavorable terms of trade for agriculture. Prices of agricultural commodities remained depressed in most of the period from 1680 to 1750.<sup>4/</sup> Terms of trade improved in favor of agriculture in the second half of the eighteenth century and continued to favor agriculture until 1815 -- after which they were continuously on the decline till 1845.

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<sup>4/</sup>Statistical evidence on movement of agricultural products as a whole is at best fragmentary. Markets for agricultural commodities, particularly grain, were not well integrated during most of the 17th and 18th century, primarily due to inadequate means of transport, and communications and due to the regional variation in climate. Consequently there were regional divergences in the price movements of individual commodities. However, considerable research done by the British historians enables one to say that prices of agricultural commodities prevailed low during the first half of the 18th century. See tables 1 and 2. For further discussion of price movements see (13, pp. 125-155).

In the first half of the eighteenth century prices of both grain and animal products ruled low mainly because of the lengthy run of good seasons. Agricultural prices were particularly depressed between 1730-1750. Output had also increased because of the gradual increase in the area under cultivation, gradual improvements in land use, fodder supplies and rotations.<sup>5/</sup> The increase in the agricultural production during this period is estimated to have been much greater than the population increase (8). This caused a fall in the prices of agricultural commodities. The effect of sustained low levels of agricultural prices is interpreted in two different ways.

Some English historians see an improvement in the standard of living of the industrial labour as a result of the depressed agricultural prices. "The buoyancy of the domestic market ... provided a favorable environment for the introduction of new kinds of goods ... cheap crockery, japanned wares, lace, Sheffield plate ... cheap mixed fabrics ... (It) encouraged manufacturers to be inventive and to direct production toward cheapness, as fashion ceased to be prerogative of the rich" (14, pp. 24-25).

Quite contrary to this view others argue that the low agricultural prices had a generally depressing effect on the economy. They resulted in low incomes for the cultivators and affected investment and rate of

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<sup>5/</sup>Very little accurate information is available on average yields of crops and the total numbers and weights of livestock sent to the market. The evidence for a substantial increase in output is, therefore, mostly circumstantial. Estimates of increases in production are based on writings of contemporary experts. Deane and Cole estimate a 43 percent increase in production during the 18th century which is based upon complex assumptions regarding rise in average yields and farm acreage and development of animal husbandry. See (8, pp. 62-70, 72-73). There are, however, no reliable estimates of the absolute levels of production for the period under consideration.

expansion in the economy (8). In their view, it was only in the second half of the 18th century that prosperity of farmer and landlords had a stimulating effect on the economy.

Agricultural prices were generally on the increase in the second half of the 18th century. A successive run of poor harvests between 1764 and 1775 and again between 1795 and 1800 coupled with the Napoleonic wars in the later period resulted in high prices. The rise in prices was, however, also caused by such real factors as increase in the growth of population, and increased demand for wheaten bread, meat and dairy products; a carry-over from the improved standard of living that the masses had grown accustomed to in the earlier period. Export surplus of England was frequently replaced by imports in this period. Imports began to play an important role in the domestic food supply.<sup>6/</sup> Prices declined after 1815 mainly as a result of improved seasons but also as a result of end of Napoleonic wars which reduced demand considerably.

The periods of low agricultural prices (1680 to 1750 particularly 1730 to 1750 and 1815 to 1845) were accompanied by considerable improvements in the agricultural practices. John argues that once declining trend in prices was initiated by considerable slowing down of the population growth and relative increase in the production in the early 18th century it had a significant influence on the agricultural techniques "... price movements combined with the 'stickiness' of costs inevitably

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<sup>6/</sup> Imports of wheat increased from 500,000 quarters in 1767 to 1,491,000 qts. in 1810. Imports of meat alone totaled 2.1 million at the end of the 18th century. Imports of corn totaled 2.6 million in that period (5, p. 266)

Table 1: Grain Exports from England (John, p. 152)

	Wheat	Malt and Barley	Rye	Total
	(Million Quarters)			
1700 - 09	1.04	1.28	0.49	2.82
1710 - 19	1.05	2.31	0.32	3.68
1720 - 29	1.12	2.85	0.25	4.22
1730 - 39	2.96	2.21	0.16	5.34
1940 - 49	2.89	3.04	0.67	6.60
1750 - 59	3.26	2.87	0.42	6.55
1760 - 69	1.95	1.59	0.18	3.73

Table 2: Wheat, Decennial Average Prices (Per Quarters)

	1660-9		1670-9		1680-9		1690-9		1700-9		1710-9		1720-9		1730-9		1740-9	
	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d
Eten.	45	1	43	10	34	10	48	8	34	9	43	6	37	2	31	7	31	11
Exeter	40	10	38	5	31	9	40	10	35	0	34	10	35	7	30	1	29	11

A. H. John, "The Course of Agricultural Change 1660 - 1760" in the Studies in the Industrial Revolution, ed. L. S. Preswell, University of London, 1960, p. 137.

forced adjustments in the practice of husbandry and in the organization of land, where these were possible. And it seems likely that the pressure was the more powerful because of the downward trend in prices." (13, pp. 145-146) Multiple crops raised in rotation system had major effect on income in this period. Of Norfolk, it was said in 1753, "as novel methods of doing business seldom become universal in small time, it has been 50 years since this husbandry has been introduced, but in the last 20 years, the effects have increased so greatly, that it is truly wonderful."<sup>7/</sup> In this period subsidiary production of meat and dairy products was introduced to support farming income. Cultivation of a single crop such as wheat was replaced by raising of two crops, turnips and barley. Clay soils were converted to grasslands and grasslands to arables. This resulted in increased land under cultivation and increased yields on new soils.

Similar improvements in techniques of production seems to have taken place in the later period of low agricultural prices (1815-1845). "Farmers who were unwilling to take advantage of improved techniques found themselves in difficulties. This was particularly true of farmers on heavy clay soils. Farmers in these areas were found outclassed and undersold by farmers in areas of mixed farming, light soils... What was accomplished --- was a large scale conversion of clay soils to pasture, a heavy investment in drainage... At the same time, the development of the farm machinery -- a technological revolution, in

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<sup>7/</sup>As quoted from Ellis, The Modern Husbandman, March 1753, pp. 76-77. (13, p. 147).

fact --- the growing impact of the agricultural sciences ... were preparing the way for the final phase of the Agricultural Revolution, ..." (5, p. 207)

Another consequence of the low agricultural prices was the elimination of the weaker small owners. The number of such small farmers had declined considerably in the first half of the 18th century (5, p. 207). With the growing agricultural prosperity in the second half of the 18th century, their decline had been checked. Chambers and Mingay contend that the number of small farmers may well have increased in this period (5, pp. 131-132). With the decline in prices in the first half of the 19th century, however, their debts could not be repaid as profits fell. Many small owners, therefore, were under pressure to sell their holdings. It is estimated that the area occupied by small owners declined from 20 percent to 12 percent from the end of the 18th to the end of the 19th century (5).

In the second half of the 18th century when agricultural prices were increasing, the emphasis was on increase in the land under cultivation rather than on improving efficiency in farming. Enclosure movement, which was mainly responsible for extension of land under cultivation, was concentrated heavily in the periods of 1760's to 1770's and in the Napoleonic war years between 1793 and 1815. The concentration of the enclosure movement in this period is generally explained in terms of low interest rates and the ease with which credit was available for enclosing land. Chambers and Mingay, however, indicate that this relationship breaks down in the Napoleonic wars. Enclosure movement continued at a rapid pace in this period despite high cost of credit. ... "the level of agricultural prices was perhaps a more

significant influence on enclosure than the rate of interest, and there is indeed a fairly close alignment between prices and enclosure throughout the whole period of parliamentary enclosure, upswings in prices being followed after a short interval by upswings in enclosure" (5, p. 84).<sup>8/</sup> Enclosures increased land under cultivation by 1 million acres in the 20 year period between 1793 and 1815, but by only 200,000 acres in the forty year period between 1815 and 1845 (5, p. 207).

"It is often not appreciated how much agricultural development stemmed from the stimulus of low prices, bad seasons and the threat of bankruptcy...the low price years of the first half of the 18th century had much in common with the difficult years after Waterloo: in both periods there were readjustments in land use, stocking and rotations to the best advantage of the markets, and there followed improvements in the farm buildings and other changes designed to achieve more efficient farm units. The difference between improvements in periods of low prices and those in periods of prosperity was really one of emphasis. But low and high prices resulted in a search for greater efficiency; but in the first the emphasis was on greater economy through reduction of costs; in the second it was more concerned with expansion of the cultivated acreage and higher output"(5, pp. 130-131).

#### Stagnant Agriculture in France

French economic growth has traditionally been compared with that of Britain by historians. France is generally considered as only a

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<sup>8/</sup> Also see Figure 1, p. 83 where wheat prices are related to the enclosure bills per annum.

partially successful case of development in relation to the leading economics of the 19th century. Comparing growth rates of the national products, French national product increased at 18.6 per cent per decade between 1840 and 1910 as against a 56 percent rise in the American national product (1869 to 1913), 49 percent in Japanese product (1878 to 1912) and 25 percent rise in the British product (1860 to 1914) (19, p. 13). Due to slower population growth the per capita rate of growth in France was, however, higher than that in the United Kingdom. However, comparing levels of per capita income in France with that in Britain indicates why France is considered as only a partially successful case of development. Per capita income in France was well below that of Britain in 1851 as Britain had been developing faster than France for at least a century and probably longer. Despite a slightly higher growth rate in French per capita income the disparities in absolute levels of income were wider a century later in 1951 due to the earlier lead to Britain (19,11).

Statistics of prices and production are relatively nonexistent for the 19th century France. Marczewski states that terms of trade had moved in favor of agriculture from 1700 to 1905. It was only since the beginning of the 20th century that the tendency had been reversed, probably because of the slowing down of population increase and the relative saturation of demand for agricultural products (12, p. 177). Between 1855 and 1875 an immense stimulus was given to the production of the two major products wheat and wine. The increase in production was, however, mainly brought about by increased land under cultivation. There was considerable increase in the production of potatoes by 1850.

French sugar output increased from 50,000 metric tons in 1852-53 to over 500,000 tons in 1892-1893 and over 1,100,000 tons in 1900-2 (4). The progress of the French agriculture was, however, relatively unsatisfactory given the potential provided by the scientific progress in agriculture in rest of Europe. In 1911-12, the period of cultivation of 19th century progress, Belgium and Dutch wheat yields were twice as high as French yields; German yields were a little over one-and-a-half times French yields. Potatoes yielded more than twice as much per acre in Holland as compared to France. Belgium was a little behind Holland. British yields were over one-and-a-half times French yields (4). On the basis of these comparisons, Clapham concluded that "largely no doubt, owing to the extent and character of her peasant agriculture, she (France) is behind her neighbors in arable farming. And it might be added that excellent as her dairy farming is, it is inferior to that of Denmark"(4, pp. 177-178).

The failure of French agriculture to reorganize is at least partly to be explained in terms of the protection provided to agriculture beginning with late 1870's after a world-wide fall in agricultural prices. The resulting high prices of domestic agriculture had significant effect on the agricultural sector. It failed to transfer resources, both labor and capital from the low productivity (agricultural) sector to the high productivity (industrial) sector. This affected techniques for production within the agricultural sector. There was no incentive for replacing high cost labor intensive methods of cultivation with new techniques. Consequently self-sufficiency in food supply was brought about at the cost of efficiency of production (3, pp. 328-339).

Concluding Remarks

The experience of industrialized countries is of considerable interest due to its implications for policies in presently developing countries. The evidence suggests that transfers from the agricultural sector through fiscal means, through institutional arrangements or through terms of trade has had a favorable impact both on cost reducing and output increasing efficiency in these developed countries. Increased efficiency is particularly desirable in many developing countries in bringing about increases in agricultural production as little scope exists for expanding areas under cultivation. Taxation of agriculture through various means may not necessarily retard development of the agricultural sector. The pressure for increased efficiency when coupled with availability of new technology and inputs may in fact significantly increase production.

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