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A Brief Bibliographical Sketch on Intersectoral  
Capital Transfers in Japan

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A Brief Bibliographical Sketch on Intersectoral  
Capital Transfers in Japan

By

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I INTRODUCTION

During a period of 60 to 70 years after the Meiji Restoration (1868), the Japanese economy had developed with a high rate of growth, without relying on foreign loans or aid. The growth rate of real national income is determined by the growth rate of population and the rate of growth of per capita income. The latter is expressed by the relative ratio between the capital-output ratio and the rate of saving, if Domar model is relevant. If technological development is neutral in its nature and the capital-output ratio is stable, the rate of saving becomes a deterministic variable to explain the growth rate of real national income.<sup>1/</sup>

It is generally recognized that the high rate of economic growth of Japan, especially at early stages of development, was substantially due to a high rate of domestic savings. It is also generally agreed that since the agricultural sector was a major producing sector of the economy, this sector had to provide the major parts of investment funds.

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<sup>1/</sup> There is little agreement on the magnitude of capital-output ratio. Noda estimated that the capital-output ratio of the agricultural sector fluctuated between 2.0 and 3.5 during a period of 1921-41, (Noda 8, p. 227). Ohkawa suggests that capital-output ratio may be assumed to be smaller in the non-agricultural sector, and that the ratio might have been larger at the initial stages, since the initial investment was made to construct social overhead, (Ohkawa 11, p. 49, 12, p. 37).

Likewise, it is agreed among the students of Japanese economic development that the agricultural sector contributed to financing developmental expenditures by two ways; investment by landlords and taxation.

## II ROLE OF LANDLORDISM

Landlordism as an institution played a very important role in keeping the consumption function of the farmers stable at low levels and in siphoning out the rural savings.

Meiji government introduced the radical land revenue reform in 1873 after the land reform (establishment of right in land) in 1868. This reform is important at least for three reasons. First, by this reform all farmers were compulsorily involved in a cash economy. In Tokugawa period, rent was paid in kind and was a product-base-rent. After revenue reform rent was paid in cash and was based on the rental value of land which was fixed by the legal price. The rent was 3 percent of the rental value of land up to 1884, 2.5 percent between 1884 and 1899, and 3.3 percent after 1899. Second, this reform made the collection of tax much easier and more efficient. Third, this reform served to establish landlordism in Japan. Land under tenant farming increased from 1.2 million cho (36.75 percent of the total) to 2.0 million cho (39.99 percent) during 1883-1892 (Tsuchiya 14, p. 114). It went up to 44.4 percent in 1903. (Ogura 10, p. 15). About 0.37 million owner farmers lost their land during 1882-1890, out of which 77 percent lost land because they could not pay rent. (A study done by Paul Mayet quoted by Tsuchiya, Norman, and others). In fact, the burden of rent was heavy and it was heavier certainly when the price of rice was low. Table 1 suggests three things. First, at the very beginning the burden of the owner farmers in terms of land revenue might have been as heavy as feudal rent which was approximately 40 percent of the produce. Second, the burden of landlords as far as land revenue is concerned became less as price of rice rose (Table 2). Third, since the relative share

Table 1. Share of Agricultural Produce; 1873-1883.

Year	Central Government	Landlord	Tenant
1873	34 %	34 %	32 %
1874-76	13 %	55 %	32 %
1877	18 %	50 %	32 %
1878-83	10 %	58 %	32 %

Source: Tsuchiya, T., *An Economic History of Japan*. (Zoku Nihon Keizaishi Gaiyo), p. 109.

Table 2. Movement of Rice Price, 1873-1888

Year	Price	Year	Price
1873	4.80	1883	6.05
1877	5.55	1884	5.14
1878	6.48	1885	6.53
1879	8.01	1886	5.60
1880	10.84	1887	5.00
1881	11.20	1888	4.93
1882	8.93		

Source: Tsuchiya, T., *ibid.* pp. 109-110.  
(unit: Yen per koku)

of tenants remained indifferent to the price change, landlordism became more and more attractive for owner farmers as long as prices increased (Table 3).

The heavy burden imposed on farmers was well recognized by the Meiji government but it could not be reduced because under the pressure of foreign powers the government had to accumulate wealth and strengthen the military power as quickly as possible which demanded heavy financial outlay. (Tsuchiya 14, pp. 30-31).

Table 2 suggests that the relatively low agricultural prices during the decade after the Restoration was followed by a sharp increase. The deflationary policy adopted in 1881 was effective in lowering the price level and this low price level continued for about a decade. As Table 3 also clearly indicates, landlordism in Japan was established during this period of low price and the foundation of landlordism was guaranteed by the High prices that followed. It is well supported that the government was gradually replaced by the landlords in siphoning out rural savings. The magnitude of the transfer of savings by landlords is the function of 1) the magnitude of price movement, 2) investment within the sector, 3) intersectoral divergence in efficiency of capital, 4) development of monetary institution and stock market, 5) tax policy, and 6) degree of absentee landlordism.

Unfortunately, no study at macro level has been made on the function of landlords as a supplier of savings, but several case studies have been conducted. One of the studies suggests that the general path of the investment behaviour of the landlords is: loans to tenants and small

Table 3. Movement of rice price-general price ratio, 1878-1882 - 1933-1937.  
(1893-97 = 100)

Year	Rice Price (1)	General Price (2)	(1)/(2)
1878-82	92.7	111.0	0.835
1883-87	57.9	81.0	0.715
1888-92	71.8	89.0	0.806
1893-97	100.0	100.0	1.000
1898-1902	129.9	127.3	1.020
1903-07	156.6	152.8	1.025
1908-12	175.1	164.3	1.066
1913-17	183.3	194.7	0.941
1918-22	417.0	360.6	1.156
1923-27	394.2	334.8	1.117
1928-32	274.0	239.8	1.143
1933-37	310.7	257.5	1.207

Source: Tobata, S. and Ohkawa, K., (eds.), Japanese Economy and Agriculture, p. 179.

farmers -- loans to other landlords and merchants -- stock investment in local banks and local industries -- stock investment in big monetary institutions and industries. (Nakamura 8). This investment path seems to be relevant only if the impetus to mobilize rural saving exists and also if the investment outlet is open. As to the former conditions, tax policy of the government and the peasant movement in the 1920's are important. In regard to the latter, the industrial sector, under the heavy protection of the government, offered sound opportunities for investments.

The same study points out that in order to invite the investment from the agricultural sector, the government raised the tax rate on agricultural income (rental income from tenants) and land tax on one hand, and kept the tax rate on non-agricultural income (interests from stocks, bonds, and bank deposits) either at very low rates or exempted (revenue reforms in 1899, 1904, and 1905). To the extent the burden of tax on the agricultural sector increased, more and more savings were drawn from the agricultural sector. This transfer served the double purpose of the landlords, namely distribute risk and uncertainty, and bring higher income. But this process of transfer slowed down when the peasant movement developed which was the outcome of the heavy squeeze by the landlords, and also the tax rate on the non-agricultural income was raised (revenue reform in 1920).

### III ROLE OF TAX POLICY

It is generally believed that the transfer of rural savings by the landlords was most active during the late Meiji and Taisho periods. However, we do not have much convincing data in these regards. Instead, the data concerning the share of the agricultural sector in tax payment are available. Figures in Table 4 are the estimates made by Tsunematsu of Hitotsubashi University. In his study, he interprets these figures in the following ways: 1) the share of the agricultural sector in the total national income became less than that of the non-agricultural sector during a period between 1897-1902; 2) as far as direct tax is concerned, the share of the agricultural sector became less than that of the non-agricultural sector during the period between 1918-22; 3) the burden of state tax (tax for central government) in the agricultural sector decreased from 1903, but the burden of local tax did not decrease proportionately. On the other hand, the non-agricultural sector paid more tax to the local government up to 1907, but the position was reversed since 1908. 4) throughout this period, the agricultural sector paid a much higher portion of its income for tax than did the non-agricultural sector.

Table 5 shows the components of tax revenue to the central government. Land revenue occupied the most important position at the early stages. In 1883-92, land revenue provided 57.6%, but the early figures show that the shares during the period between 1868-72, 1873-77, 1878-82, and 1883-87 were 77.3%, 83.6%, 72.2%, and 68.5% respectively, (computed from figures on p. 421 in Tobata and Ohkawa, eds. *ibid.*). Land revenue is not paid entirely by the agricultural sector, therefore, Table 6 is

Table 4. Sector-wise Share of Direct Tax: 1878-82 - 1933-37.

Year	Agricultural sector (one million yen)*							
	State (1)	%	Local (2)	%	Total (3)	%	Ag. Income (4)	(3)/(4)
1878-82	40.7	58.3	22.9	32.7	63.6	91.0	376	16.9
1883-87	40.1	54.9	33.4	32.0	63.6	86.9	287	22.1
1888-92	37.3	54.7	21.2	31.0	58.5	85.7	377	15.5
1893-97	37.5	47.6	28.1	35.7	65.6	83.3	531	12.4
1898-1902	43.8	32.6	55.2	41.1	99.1	73.7	816	12.1
1903-07	60.9	31.6	52.7	27.3	113.6	58.9	1015	11.2
1908-12	70.3	24.6	83.2	29.1	153.4	53.7	1232	12.5
1913-17	73.8	23.6	93.8	29.9	167.7	53.5	1302	12.9
1918-22	89.0	12.2	206.7	28.5	295.7	40.7	3219	9.2
1923-27	86.7	12.2	217.5	26.8	304.2	37.5	2892	10.5
1928-32	69.6	11.1	135.8	21.7	205.5	32.8	2117	9.7
1933-37	60.0	7.9	137.3	18.2	197.3	26.1	2539	7.8

Year	Non-agricultural sector (one million yen)*							
	State (1)	%	Local (2)	%	Total (3)	%	Non-ag. Income (4)	(3)/(4)
1878-82	2.0	2.9	4.2	6.1	6.3	9.0	283	2.2
1883-87	3.4	4.7	6.1	8.4	9.5	13.1	313	3.0
1888-92	2.8	4.1	7.0	10.2	9.8	14.3	420	2.3
1893-97	3.6	4.5	9.6	12.2	13.2	16.7	560	2.0
1898-1902	14.3	10.6	21.1	15.7	35.4	26.3	1106	3.2
1903-07	46.0	23.8	33.3	17.3	79.3	41.1	1467	5.4
1908-12	71.8	25.2	60.4	21.1	132.2	46.3	2077	6.4
1913-17	81.6	26.1	63.8	20.4	145.4	46.5	3216	4.5
1918-22	239.7	33.0	191.4	26.3	431.1	59.3	7967	5.4
1923-27	274.7	33.9	231.5	28.6	506.2	62.5	9706	5.2
1928-32	244.7	39.0	176.7	28.2	421.3	67.2	9723	4.3
1933-37	351.3	46.4	207.9	27.5	559.2	73.9	13159	4.2

\* Unit used in original table was 1000 yen

Source: Reorganized from Tables 8.8 and 8.9 in Tobata and Ohkawa (eds.)  
ibid. pp. 379-381.

Table 5. Revenue of the Central Government and its Component:  
1888-92 - 1933-37

(one million yen)*											
Year	Income		Land		Business		Tariff	%	Other	%	Total
	Tax	%	Tax	%	Tax	%					
1888-92	1.1	1.6	38.5	57.6	0.7	1.1	4.7	7.0	21.8	32.7	66.7
1893-97	1.6	2.1	38.7	49.9	1.3	1.7	6.5	8.4	29.4	37.9	77.5
1898-02	5.5	4.3	44.6	34.4	6.0	4.7	14.4	11.1	59.0	45.5	129.7
1903-07	19.9	8.4	71.6	30.0	15.7	6.6	33.8	14.2	97.2	40.8	238.3
1908-12	34.1	10.3	79.5	24.1	25.0	7.6	46.7	14.1	145.3	43.9	330.7
1913-17	51.2	14.3	74.0	20.5	25.3	7.0	46.2	12.8	164.2	45.5	361.0
1918-22	187.3	26.2	73.9	10.4	57.2	8.0	85.7	12.0	309.9	43.4	714.0
1923-27	206.7	23.7	71.2	8.2	58.8	6.8	122.3	14.0	411.9	47.3	871.0
1928-32	177.6	21.8	65.1	8.0	48.3	5.9	122.4	15.0	401.8	49.3	815.2
1933-37	267.7	28.1	58.2	1.1	62.1	6.5	153.8	16.1	412.3	43.2	952.0

Source: Tobata and Ohkawa (eds.) *ibid.* P. 375.

\* Unit used in the original table was 1000 yen.

Table 6. Share of Land Tax in Total Direct Tax:  
1888-92 - 1933-37

(one million yen)*					
Year	Direct tax paid	Total	Land tax paid	(3)/(1)	(3)/(2)
	by the agri. sector		direct tax		
	(1)	(2)	(3)		
1878-82	63.6	69.9	57.2	89.9	81.8
1883-87	63.6	73.1	56.3	88.5	77.0
1888-92	58.5	68.3	49.9	85.3	73.1
1893-97	65.6	78.8	53.8	82.0	68.3
1898-02	99.1	134.4	74.2	74.9	55.2
1903-07	133.6	192.9	80.2	70.6	41.6
1908-12	153.4	285.6	94.8	61.8	33.2
1913-17	167.7	313.1	105.2	63.9	33.6
1918-22	295.7	726.8	147.7	49.9	20.3
1923-27	304.2	810.4	164.3	54.0	20.3
1928-32	205.5	626.8	151.9	73.9	24.2
1933-37	197.3	756.6	133.3	67.5	17.6

Source: computed from Tables 8.6, 8.8, and 8.9 in Tobata and Ohkawa (eds.), *ibid.* pp. 376, 379 and 381.

\* Unit used in the original table was 1000 yen.

prepared From Table 6 we can see that land tax occupied the major part of the direct tax paid by the agricultural sector throughout this period, but the relative importance of land tax in the total direct tax decreased continuously. These figures presented in three tables are by no means satisfactory, but the heavy burden on the agricultural sector, especially at the early stages of development, is obvious and also it is obvious that the sector had been discriminated in respect to the tax payment for the entire period between 1868-1937 at least.

It is not true, of course, to say that the entire amount of taxes paid by the agricultural sector was utilized to finance the development of the non-agricultural sector. Rural agricultural education, water works, research and extension service, etc. are financed by tax revenue of both central and local governments. Net contribution of the agricultural sector in terms of tax payment will be estimated if we can approximate the reallocated portion of tax revenue in the agricultural sector. However, such study has not yet been made except for Rosovsky's. His estimates are accommodated in the table prepared by Ishikawa (Table 9 in this paper). Apparently his figures underestimate the direct investment in the agricultural sector and overestimate the investment in water works, but these figures suggest that in 1818-22 the agricultural sector was allocated more revenue funds than it paid.

Table 7 shows the allocation of government subsidies during the period between 1881-1944. There are two limitations in these data. First, subsidy hardly occupied more than ten percent during this period. Second, all expenditures for the "control of nature" including water works are classified as "others". Despite these limitations, the general attitude of the government toward sectoral reallocation of revenue is reflected.

Table 7. Distribution of Subsidy among Sectors: 1881-1944. \*

(one million yen) \*\*

Year	Primary industry	%	Secondary industry	%	Tertiary industry	%	Others	%	Total	%
1881	-	-	0.4	20.4	0.3	12.7	1.3	66.9	2.0	100
1886	-	0.1	0.8	34.0	0.1	5.3	1.4	60.6	2.3	100
1891	-	-	2.3	58.8	0.1	2.3	1.5	37.9	3.9	100
1896	-	-	2.9	46.5	1.4	22.0	2.0	31.5	6.3	100
1901	0.4	-	12.0	51.9	6.6	28.7	4.1	17.8	23.1	100
1906	0.2	1.1	11.6	55.2	5.9	28.3	3.2	15.4	21.0	100
1911	0.3	0.8	15.3	38.0	12.5	30.9	12.2	30.3	40.3	100
1916	2.1	4.7	15.9	35.8	12.3	27.6	14.2	31.9	44.5	100
1921	0.6	0.6	19.4	19.6	32.4	32.8	46.6	47.1	98.9	100
1926	6.9	4.3	71.2	44.4	23.1	14.4	59.0	36.9	160.2	100
1931	21.4	10.8	79.9	40.2	21.6	10.9	75.6	38.1	198.5	100
1934	28.3	11.2	43.6	17.3	27.4	10.9	152.3	60.5	251.6	100
1938	37.6	18.2	23.2	11.2	20.8	10.1	129.5	62.7	211.0	100
1941	78.2	20.0	42.1	10.8	159.7	40.9	110.8	28.4	390.7	100
1944	190.7	22.4	331.6	39.0	133.1	15.6	195.7	23.0	851.2	100

Source: Tobata and Ohkawa eds., ibid., p. 392.

\* Broadly speaking subsidy is classified into two categories. One is for administration and the other is for development. Figures in this table do not include the subsidy for administration.

\*\* Unit used in original table was 1000 yen.

#### IV INTERSECTORAL FLOW OF SAVING AND INVESTMENT

##### 1. Ohkawa Model

It is worthwhile to introduce the Ohkawa model because it is the most widely accepted conceptual framework on this subject.

Rate of growth of an economy is expressed by the following formula in the Domar model:

$$GC = S$$

where,  $G$  = rate of growth ( $\Delta Y/Y$ ),  $c$  = marginal capital-output ratio ( $\Delta K/\Delta Y$ ),  $S$  = rate of saving ( $S/Y$ ).

In this formula,  $G$  is determined by the magnitude of  $C$  and  $S$ , and also  $GC(\Delta K/Y = \Delta Y/Y \cdot \Delta K/\Delta Y)$  implies the amount of investment necessary to maintain the growth rate,  $G$ . If we divide the economy into two sectors, namely the agricultural sector and the non-agricultural sector and denote  $G_2$  = rate of growth of the agricultural sector,  $G_1$  = rate of growth of the non-agricultural sector,  $G_2 C_2$  = required amount of investment to maintain  $G_2$ , and  $G_1 C_1$  = investment needed to maintain  $G_1$ , we have the following relationship :

$$G_1 C_1 = S_1 + a$$

$$G_2 C_2 = S_2 + b$$

If the economy is in equilibrium, we have  $G_2 C_2 = S_2$  and  $G_1 C_1 = S_1$ . But such a case is rare. Therefore, coefficients  $a$  and  $b$  are added to adjust the unbalance between  $GC$  and  $S$ . Now, if saving = investment holds, and  $G_2 C_2 > S_2$ ,  $G_1 C_1$  must be less than  $S_1$  and  $a = b$  (in real value) should hold. We now introduce weight, namely  $Y_2/Y = w$  and  $Y_1/Y = 1-w$ . Then we have  $a(1-w) = bw$ . If we assume here that  $b$  is negative, the following relationship is derived:

$$(G_1 C_1 - S_1) (1-w) = -(G_2 C_2 - S_2) w$$

This equation can be rewritten as:

$(S_2 - G_2 C_2)w = (G_1 C_1 - S_1)(1 - w)$ . Dividing both sides of the equation by  $C_1$  and  $C_2$ , we obtain two equations as follows:

$$S_2/C_2 - G_2 = (G_1 C_1 - S_1)/C_2 \cdot (1-w/w)$$

$$G_1 - S_1/C_1 = (S_2 - G_2 C_2)/C_1 \cdot (w/1-w)$$

$S_1/C_1$  and  $S_2/C_2$  express the possible growth rate if all the saving in each sector is invested within that sector, in other words zero transfer of saving between sectors. Let's denote these as  $G_1^*$  and  $G_2^*$ . Then we have:

$$G_2^* - G_2 = a/C_2 \cdot (1-w/w)$$

$$G_1 - G_1^* = b/C_1 \cdot (w/1-w)$$

Interpretation of these equations is as follows. We assume here that  $a$  is positive. It means saving exceeds investment in the agricultural sector. By transferring saving equivalent to  $a$ , growth rate of the agricultural sector decreases from  $G_2^*$  to  $G_2$ . The degree of divergence between  $G_2^*$  and  $G_2$  is determined by  $C_2$  and  $1-w/w$ . On the other hand, by investing more than its own saving by  $b$ , the non-agricultural sector raises its growth rate from  $G_1^*$  to  $G_1$ .

Based on this conceptual framework, he constructs a model which reflects the growth path of the Japanese economy (Table 8). Case I shows that at the initial stages of development the agricultural sector has to finance the development of the non-agricultural sector. Case II shows that at later stages of development the development of the agricultural sector has to be financed by the non-agricultural sector in order to achieve the so-called concurrent growth. In Case I, out of 9.8% of saving in the agricultural sector, 3.8% was transferred to the non-agricultural sector. By this transfer the non-agricultural sector

achieved a 4% growth rate which was 1.6% more than the growth rate of 2.4% achieved entirely from its own resources ( $G_1 = S_1/C_1 = 9.8/4.0$ ). The agricultural sector achieved 3% growth rate instead of 4.9% by this transfer. In Case II, 0.5% of the saving achieved in the non-agricultural sector had to be sacrificed in order to achieve 2% rate of growth in the agricultural sector.

Table 8. Role of Agriculture in the Process of Economic Growth

	<u>I</u>	<u>II</u>	
G	3.5	3.0	(%)
$G_1$	4.2	3.5	(%)
$G_2$	3.0	2.0	(%)
$G_1 - G_2$	1.2	1.5	(%)
$C_1$	4.0	3.0	
$C_2$	2.0	5.0	
C	2.8	3.5	
w	0.6	0.3	
1-w	0.4	0.7	
S-GC	9.8	10.5	(%)
$G_1 C_1$	16.8	10.5	(%)
$G_2 C_2$	6.0	10.0	(%)

Source: Ohkawa, K., Economic Analysis of Agriculture, p. 251.

## 2. Nakayama's social accounting method

As we observed earlier, the land revenue gradually decreased its share in the total revenue after the middle of the Meiji period. We notice also that landlordism was established during the third quarter of the Meiji period. It is expected that the decline of the land revenue

might in part be compensated by the increase of rent paid to the absentee landlords in the non-agricultural sector. Nakayama's study tries to estimate the amount of outflow in terms of rent and also to show the divergence between sectoral saving and investment. (Nakayama 7) His study covers only two years, namely 1935 and 1952.

In 1935, agricultural income was 3100 million yen. Saving of the sector accounted for 406 million yen which was 13% of the total income of the sector. Out of 406 million yen, 308 million yen was invested within the sector which was roughly 10% of the sector's income. About 3% of the sector's income was saved and transferred to the non-agricultural sector. However, the social accounting method shows that 212 million yen was paid to the non-agricultural sector as rent. If this amount is considered as "forced saving" imposed on the agricultural sector, the sector's saving increased to almost 20% of income. Based on this figure, the agricultural sector transferred about half of its saving to the non-agricultural sector in 1935. This figure should have some qualification. First, this computation does not include the investment by the absentee landlords. Second, this does not take into account the public investment in this sector. Third, 1935 is the period when the industrial sector was already well established and the agricultural sector had already lost its potentiality to be squeezed. For the first point, Nakayama argued that the return on investment in the agricultural sector was very low in 1935, therefore, this aspect is not important. As to the second point, he said that the public investment in the agricultural sector was negligible because the major part of the budget was consumed by the war industry.

Contrary to 1935, in 1952 the rate of saving in the agricultural sector was 15%, but invested 17% of the sector's total income. Inflow of saving had to be made in 1952.

### 3 Ishikawa's terms of trade effect

In his study which appeared in 1966, he presented five different equations for the computation of net resource flow between agriculture and industry.

$$(1) \quad M/P_m - E/P_e = R/P_m + E/P_e (P_e/P_m - 1)$$

$$(2) \quad R = M - E$$

$$(3) \quad R = V + K$$

$$(4) \quad \text{Net transfer of saving} = (\text{Saving in the sector}) - (\text{Physical investment within sector})$$

$$(5) \quad \text{Net transfer of saving} = (\text{Private saving in the sector} - \text{Private investment within sector}) + (\text{Tax paid by the sector} - \text{Public investment to the sector})$$

Where, M = inflow of commodities, E = outflow of commodities, R = net inflow at current price,  $P_m$  = general price index of commodities inflowed,  $P_e$  = general price index of commodities outflowed,  $R/P_m$  = financial account of capital outflow in real terms,  $E/P_e (P_e/P_m - 1)$  = amount of capital outflow due to terms of trade effect, V = balance of current financial transaction, and K = balance of capital account.

By using equation (1) he prepared Table 10. It is shown that the terms of trade effect plays an important role in net capital transfer and each country shows net capital inflow in the agricultural sector at the specified year. But as he points out, these estimates are tentative and more careful attention should be paid in selecting the base year. By using method (2), he estimates the amount of capital flow at current prices in the cases of India (1951-62), China (1952-59), Taiwan (1950-62), and Japan (1955-64). He does not present the estimated figures

in his article, but based on his estimation, he concludes as follows:

- India: large continuous inflow throughout the period.
- China: initial outflow is followed by inflow at later stage.
- Taiwan: initial outflow followed by the later inflow.
- Japan: amount of inflow had increased gradually.

By using method (3), he prepared Table 9 which consists of data estimated by different people. From this information we can say that a considerable amount of capital was outflowed from the agricultural sector at the early stages of development. But if we include the public investment on water works, which is not usually included in this kind of study, the amount of outflow becomes much smaller than usually expected (Ishikawa 5).

Ishikawa's underlying hypothesis on net capital transfer is explicit in his article on China (Ishikawa 4). He disagrees with the opinion that Japan successfully mobilized the rural savings in order to foster the development of the industrial sector and that therefore developing countries should follow a similar path. He argues that Japan could mobilize the rural saving under the special set of political and social institutions, and more importantly she could do so because the productivity of the agricultural sector was already high. A substantial amount of inflow is necessary, therefore, where the productivity of the agricultural sector is low. The leading investment for the development of agriculture in the development countries being the investment in irrigation, drainage, flood control, etc., the inflow of capital seems to be unavoidable. In the case of Japan, such investment was mostly completed during the period ahead of Meiji Restoration. It was, therefore, possible for Japanese agriculture to develop with relatively less expensive inputs such as fertilizer and improved seeds (Ishikawa 3, 4).

Note: In his article, he used farm household sector instead of the agricultural sector as a whole.

Table 9. Flow of Funds of the Agricultural Household Sector: 1878-82 - 1923-27

	1878	1883	1888	1893	1898	1903	1908	1913	1918	1923
<u>A. Outflow of funds</u>	-82	-87	-92	-97	-102	-07	-12	-17	-22	-27
1. <u>Direct tax paid</u>	64	64	58	66	99	114	153	168	296	304
Land tax	57	56	50	54	74	80	95	105	105	148
2. <u>Monetary savings</u>	-	-	-	-	-	-	-	49	-	-
Total savings	-	-	-	17	-	13	-	75	-	-
(-) Loan to the sector	-	-	-	-	-	-	35	26	-	-
3. <u>Total rent paid</u>		(50)	(90)	(140)	(190)	(250)	(310)	(350)	(880)	(690)
<u>B. Inflow of funds</u>										
1. <u>Public investment in construction</u>										
Agriculture	0.3	0.2	0.2	1	7	11	23	30	106	205
Water works	15	19	29	53	62	55	126	116	290	306
2. <u>Monetary borrowing</u>	-	-	-	-	-	-	-	28	-	-
Total amount borrowed	-	-	-	14	-	20	-	54	-	-
(-) Borrowing within the sector	-	-	-	-	-	-	13	26	-	-
(Rural debt balance)	-	-	(205)	-	(333)	-	(560)	746	1020	4585
(Debt to the sector)								(362)		
<u>C. Agricultural income</u>	376	287	377	531	816	1015	1232	1302	3219	2892

Source: Ishikawa, S., "Net Resource Flow Between Agriculture and Industry," The Economic Review, July, 1966 pp 203.

Note: A-1, Tsunematsu's estimation, A-3, estimated from Noda's estimation, B-1, Rosovsky's estimation, C, Ohkawa's estimation, ( ), extended Saito's estimation to the national level.

Table 10. Net Resource Transfer and its Components

	China (1955) Base year:1952 Unit: one bil- lion won	Taiwan (1962) Base year:1952 Unit: one mil- lion Taiwan won	Japan (1964) Base year:1955 Unit: one bil- lion yen
1. Inflow at current price	2.53	2,467	213.1
2. Price index			
$P_e$	125.1	282.3	137.3
$P_m$	101.0	263.0	120.4
$P_e/P_m$	123.9	107.3	114.4
3. Inflow in real terms			
$M/P_m - E/P_e$	1.23(100)	1,317(100)	40.2(100)
4. Terms of trade effect			
$E/P_e (P_e/P_m - 1)$	3.74( 60)	377( 29)	22.5( 56)
5. Financial transfer in real terms			
$R/P_m$	2.29( 40)	940( 71)	17.7( 44)

Source: Ichikawa, S., *ibid.* p. 203.

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All articles and books except for Norman and Rosovsky are written in Japanese.