

### Accounting expenditures on education: Japan from the Meiji Restoration to the Second World War

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Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

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#### Empfohlene Zitierung / Suggested Citation:

Diebolt, C. (2003). Accounting expenditures on education: Japan from the Meiji Restoration to the Second World War. *Historical Social Research*, 28(1/2), 290-305. <https://doi.org/10.12759/hsr.28.2003.1/2.290-305>

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Accounting Expenditures on Education  
Japan from the Meiji Restoration  
to the Second World War

*Claude Diebolt*\*

**Abstract:** This article presents — in extension to my previous research on Europe — how the Japanese systems of educational expenditures changed and developed from the Meiji Restoration to the Second World War. The discussion is in five parts. The first part outlines the methodological problems. The institutional framework is presented in the second part. The delineation of national and local responsibility for expenditures on education is developed in the third part. The fourth part is devoted to the number of students and expenditures on education classified by schools. The last part outlines the changes in educational expenditures in relation with the national income.

Introduction

This article presents —in extension to my previous research on Europe (see, for example, Diebolt [2000])— how the Japanese systems of educational expenditures changed and developed from the Meiji Restoration to the Second World

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Helpful comments and suggestions have been received from Magali Jaoul and Masako Shibata. The usual disclaimer applies.

War. It extends the works of Edding [1958, 1966], Hanley [1993], Kelley & Williamson [1974], Klein & Ohkawa [1968], Maddison [1995], Ohkawa [1957], Ohkawa, Takamatsu & Yamamoto [1974], Taeuber [1958] and others (for a splendid conspectus on Japanese economic and social history, see especially Tolliday [2001]).

The discussion is in five parts.

- The first part outlines the methodological problems.
- The institutional framework is presented in the second part.
- The delineation of national and local responsibility for expenditures on education is developed in the third part.
- The fourth part is devoted to the number of students and expenditures on education classified by schools.
- The last part outlines the changes in educational expenditures in relation with the national income.

## I. Methodology

Checking theoretical hypotheses on education and economic growth in Japan requires new statistical sets. The method of quantitative history launched in the 1960s by S. Kuznets, J. Marczewski and F. Perroux is essential for reaching this aim (see, for example, Diebolt [1997]). It consists of assembling historical facts in homogenous, comparable time units in order to measure changes in intervals of time (generally annually). The advantage of this method is that the moment of operation of the observer's choice is shifted. Instead of acting while observing the reality to be described, he operates during the construction of the reference system serving in the recording of facts rendered conceptually homogeneous. This methodology should allow for an empirical verification or the rejection of initial hypotheses hinged on the pattern of theoretical interpretation.

However, a map is not the area it plots, and care must be taken not to confuse reality and its description. The approach is not applicable to isolated historical events. It is used to describe the *history of the masses*, but is not sensitive to the *history of the heroes*. It is only an image of reality and does not draw all of reality's contours. Quantitative history does not aim at replacing traditional descriptive history. On the contrary, the two forms of historical investigation are strictly complementary and hence indispensable for a better knowledge of the past. The application of quantitative methods can nevertheless profoundly renew the terms that have progressively become legitimate. The great merit of statistical formalism is that it allows for the examination of the logical and quantitative consequences of historical proposals, which could not be obtained by a discussion based on literary documents and the like.

The proposed study on education has two advantages. Firstly, it is of immediate practical interest as it is an original reconstruction of education in Japan. It is also of theoretical interest as it provides better knowledge of the mechanisms governing the long development of the educational system. We are nevertheless aware that the statistical work provides only the quantitative aspect of changes in structure. Although it is important, it is not sufficient to provide the complete picture of the sequence of facts.

The decisive role of deductive theories in empirical research must therefore be stressed. Starting with a general idea, they attempt at identifying symptoms in reality by means of a chronological series of statistics. Like the *Frankfurter Gesellschaft für Konjunkturforschung* (founded in 1926 by E. Altschul), we recommend an economic semiology that would implement the results of statistical research and deductive reasoning of the theory. There is no conflict or compartmentalisation between empirical research and deductive theory; on the contrary, these disciplines are only truly valuable individually if they draw on each other's results. The validity of the theoretical hypotheses thus depends both on their external coherence, i.e. on their conformity with real facts, and their internal coherence, i.e. their ability to provide one or more solutions to the raised questions. The general equilibrium theory is extremely significant in this respect. It has given rise to much work concerning the validity of its bases and of the teachings drawn from it. In contrast, research on the existence of a solution has been carried out by only a handful of specialists. Here, it is still possible to discuss the coherence of a theoretical hypothesis, but it is more important to submit it to empirical verification.

## 1. The scope of quantitative history

Quantitative history aims at drawing up a general macroscopic synthesis by constructing models integrated at the national level with the prospect of possible links between several national models. This requires a succession of research operations, the most important of which is the creation of chronological data series covering the whole of the period under consideration.

The initial work consists of sorting dozens or even hundreds of volumes of old statistics. The figures are transcribed and reclassified using a pre-established model (e.g. using national budget items). This meticulous research is a question of doing rather than learning and is carried out in the silence of archives and libraries. The classifications used in statistical documents change according to the year and the recording administration. It is necessary at all times to exert some judgement to decide on the matching of the original item and the item under which the figure is to be transcribed.

## 2. The quantitative history method

The quantitative history method applies when a large number of causes and their complexity and intermingling make the use of experimental methods impossible. The moment at which the observer's choice intervenes is shifted. Instead of being set during observation of the reality to be described, it applies during the elaboration of the system of reference used to count facts thus rendered conceptually homogeneous.

The definition just given essentially consists of three main phases:

- collection of documents;
- analysis of the data collected;
- interpretation of the results.

The first phase is mainly descriptive in order to prepare the real work of the researcher by co-ordinating the collected information. It is a preliminary task required for a serious analysis. All the documents related to the field of study are assembled. The data from archived documents must not be merely recorded, but have to be subjected to intelligent, perspicacious criticism. Some are discarded when considered unreliable; others must be corrected when their interpretation reveals sources of error. Finally, estimates may be required to fill gaps. The final results are assembled in a statistical table.

Having arrived at this mass of numerical information, the researcher must then put the figures in a logical order and classify them according to a previously established nomenclature. The data are reduced, substituted by a small number of representative series drawn by calculation from the ordered mass of numerical data.

The third and final interpretation phase consists of drawing conclusions from the analysis. It is a decisive stage as here an attempt is made to explain the observations. There is a vast scope of interpretative possibilities, ranging from merely checking hypotheses to forecasting future developments.

One has to be aware that the conclusions drawn from the analysis of the statistical sets contain a degree of uncertainty. Also the degree of the validity of the general observations has to be considered. Quantitative history is a long, slow process that is never free from difficulties. There are hesitations to overcome and problems to solve at every stage, as each new research operation is a new beginning and there are decisions that can only be taken alone.

## II. The Institutional Framework

One of the most serious problems in quantitative history is that of drawing up pertinent, clearly classified and exhaustive accounts. 'Exhaustive' does not mean that everything in the reference documents should be reported. The

analysis must be selective within the target area. The accounts must be well classified without serious gaps. It would of course be easier to identify extreme positions in each dimension, but this would stress only the clearest situations and hide any nuances in the analysis.

A system for financing education in Japan was inaugurated when the Government Order of Education was promulgated in 1872.

The Government Order of Education of 1872 included provisions on financing education stating that expenses for the establishment and maintenance of schools were to be paid by the people as a principle, and the State would provide subsidies only when required. The Preface to the Government Order of Education also described learning as *assets for success in life*, and therefore expenses should be paid by those who benefit from learning. Each school collected tuition fees, and when tuition did not cover expenditures, the school district was supposed to pay the difference. The use of State subsidies was limited to wages for foreign teachers, construction and maintenance of school buildings, books and other expenses for materials for secondary schools and universities. The subsidy was set up to popularize primary school education through a financial aid system. The system was set up to popularize primary school education and to assist school districts with insufficient financial income.

The Government Order declared that the town or village was responsible for school expenses. It also stated the State subsidies were to be distributed annually by the Minister of Education to each prefecture in order to aid public primary schools. However, this system was abolished by the revised order of the following year. Thus, although primary school education was an important policy in the early Meiji Period, expenses for such education were to be paid by the people, and State subsidies were only supplementary and, consequently, extremely small.

The establishment in 1885 of the cabinet system created the centralized administration system of Japan, and under this administration the education system was consolidated by the school orders of 1886. Compulsory attendance at primary schools was strictly regulated, and tuition fees became the main source of income to finance education with supplementary financing by municipalities, but no national financial system was provided.

Local self-government was legally established by the Government Order of Cities and the Government Order of Towns and Villages in 1888, and Government of Prefectures and Government Order of Counties in 1890, and local finance was consolidated with this system. It was clearly stated that education was the responsibility of each city, town, and village; not as an independent function of the community, but rather as a function entrusted by the State. And when the Primary School Order and the Regulations for Local Education were issued in 1890, cities, towns, and villages were assigned the responsibility for

financing education, that is, covering expenses for the establishment and maintenance of primary schools.

In October of the same year, the Law Concerning Municipal Primary School Teachers' Retirement Allowance and Survivor's Benefits was enacted. The system provided in it was based on a municipal fund, but the State treasury delivered to each prefecture one-fourth of the amount paid every year, and each prefecture was responsible for the payment of the difference. After the Sino-Japanese War, the Japanese economy reached a competitive position with other nations. At that time, local finances were confused, creating problems for teachers' salaries which aggravated the shortage of regular teachers. After the Sino-Japanese War, national education was emphasized from a nationalistic point of view, and the one of the tasks of the government was to improve this situation as part of a financial assistance project.

In 1886, the Municipal Primary School Teachers' Allowance Subsidy Law was enacted in order to supply teachers in municipal primary schools, who had taught for more than five years at on school, a national subsidy. The amount of this allowance was small, but it was significant in that it survived as part of the State Subsidy System for primary school educational expenses. Also in the same period, a part of the Chinese indemnity payments was used for educational funds distributed by State subsidies.

After the legislation of the Municipal Primary School Teachers' Allowance Subsidy Law, State aid for primary school expenses was recognized as necessary besides the State subsidy for specific purposes. Then in 1899, the Primary School Expenses Subsidy Law was enacted. And in the following year, two laws concerning primary school expenses were combined into the Municipal Primary School Expenses Subsidy Law. When the Primary School Order was revised in 1900, the exemption of tuition fees was put into effect for public ordinary primary schools. We may say that the policy of public financing of compulsory education system was established at this time.

The Secondary School Order of 1886 established one secondary school for each prefecture, and expenses were to be covered by local taxes. The revised Secondary School Order of 1891 ordered the establishment of an ordinary secondary school in each prefecture, and the prefecture was responsible for these school expenses. The amount paid by the prefectures began to increase after this period. A new Secondary School Order was issued in 1899 which provided that at least one secondary school was to be established in each prefecture, and that the Minister of Education could order the establishment of more than two secondary schools in one prefecture, if necessary. In the same year, the Girl's High School Order was issued, which consolidated the institutions for girl's secondary education. The expenses for the establishment and maintenance of these schools were paid by the same method employed for secondary schools.

In 1894, the Vocational School Expenses Subsidy Law was enacted. The law provided that State subsidies were for encouragement and promotion of public schools of technology, agriculture, and commerce, apprentice schools, and vocational supplementary schools. As a result of the development of Japanese industry after the Sino-Japanese War, the vocational school order was issued in 1899, creating uniform regulations for general vocational education. The expenses of prefectural vocational schools were to be met by the prefectures as a rule, and as vocational schools developed, prefectural expenditures increased. The Vocational Education Expenses Subsidy Law was revised in 1914 in order to extend vocational education. The revision included expansion of the recipients of State subsidies, extension of the purposes for State subsidies and greater flexibility in the limitation on subsidies.

In the Taisho Period, as the compulsory education expenses increased, the system of local finance assisted by State subsidies became inadequate. Then, based on the report from the Provisional Conference on Education, the Municipal Compulsory Educational Expenses State Liability Law was enacted in 1918. The annual amount of more than ten millions yen to finance part of the wages for teachers and assistant teachers in municipal primary schools was to be paid by the State treasury. A tenth of the local amount was to be offered to some towns and villages with particularly poor financial conditions, a half of the remaining amount was to be offered to cities, towns, and villages in proportion to the number of teachers and assistant teachers; and the other half was to be offered also to cities, towns, and villages in proportion to the number of school children. Because of revisions of the law in 1923, the State liability increased to forty millions yen, and the method of allocation was changed.

Early in the Showa Period, economic panics brought about non-payment of teachers' wages and other problems. To meet these problems, a provisional subsidy for municipal ordinary primary school expenses was made in 1932. Also during the same period, other provisional subsidies including funds to encourage school attendance and to assist school meal programs were put into effect.

In 1940, the central and local taxation system was reformed and the system of compulsory education liability was also changed. The new compulsory Education Expenses Liability Law was enacted. The significant aspect of these reform was that wages of primary school teachers were to be paid by the prefectures, and State liability was limited to one half of the expenses. The effect of this reform was correction of inequalities and contradictions in the old system.

The development of the Japanese industry after World War I stimulated rapid quantitative improvement of secondary and higher education, influencing education financial policies. The Vocational School Expenses Subsidy Law was revised in 1920, expanding the coverage of grants. Also the same year, the Public School Staff Allowance Subsidy Law was enacted, granting allowances to teachers of normal schools, public secondary schools, girl's high schools, and vocational schools who had worked for more than five years. In the later half of



the Taisho Period, more universities and colleges were established and the number of students attending those institutions increased; and along with this increase, the State liability for educational expenses was greatly extended.

### III. The delineation of national and local responsibility

The allocation of the responsibility among the national and the local governments for public education expenses has been one of the central problems of educational financial policy since the Meiji Period. Table 1 shows the changes in the amount and the percentage of public education expenses by the State; by the prefectures and by the cities, towns and villages after Meiji Restoration. It is clear that municipal responsibility was extremely great at first, and then prefectural and State responsibility increased.

Table 1: Liability for Public Educational Expenditures (Thousand Yen)

	State	Local			Total
	1	Prefectures	Cities, Towns, and Villages	Total	1+2+3
		2	3	2+3	
1881	872	1230	6470	7700	8572
1885	1036	1222	8643	9865	10901
1890	931	1188	7487	8675	9606
1895	1598	1874	10772	12646	14244
1900	5834	8845	26347	35192	41026
1905	5666	9012	28143	37155	42821
1910	9010	15835	60472	76307	85317
1915	10566	17158	62437	79595	90161
1920	44066	55783	200558	256341	300407
1925	100388	92582	249458	342040	442428
1930	143320	105612	204010	309622	452942
1935	151100	103102	242878	345980	497080
1940	270673	199697	201540	401237	671910

Sources: Annual Report of the Ministry of Education and author's own calculations.

- Municipal responsibility for educational expenses was, 75.5% in 1881, but it decreased gradually.
- Prefectural responsibility was 14.3% in 1881, after which it gradually increased, particularly in 1900 and 1940. The increase in 1900 can be ascribed to an increase in prefectural subsidies for primary school expenses and to the establishment of more prefectural secondary schools. The increase in 1940 can be ascribed to the prefectural liability for municipal primary school teachers' wages.
- National responsibility was 10.2% in 1881. Ever since the establishment of a financial assistance program founded under the Government Order of Education in 1872, several State subsidy programs have been established by law—such as the Vocational Education Expenses Subsidy Law of 1894, and the Municipal Primary, School Expenses Subsidy Law of 1900—but the amount of these subsidies was small. The Government offered large subsidies for education only after the middle of the Taisho Period.

After the Municipal Compulsory Education Expenses Liability Law was issued in 1918, part of the wages of the teachers at primary schools was covered by the State and the amount of this aid increased year by year. Then the percentage of State aid for education increased from 14.7% in 1920, to 22.7% in 1925, and to 31.6% in 1930. The Compulsory Education Expenses Liability Law was enacted in 1940 to subsidise half of the wages for municipal primary school teachers. Then the percentage of State aid for education arose to 40.3%. One of the reasons for the increase in State aid during the latter part of the Taisho Period was the expansion of institutions for higher education, and the increase in higher education expenses that followed.

In assigning national and local responsibility for education costs, we have so far described general conditions, but the most important aspect is national and local liability for compulsory education. Traditionally, the founder of a school was responsible for the costs. However, as far as compulsory education is concerned, as previously stated, expenses have been shared by the cities, towns, and villages, prefectures, and the national government; and the percentage of the prefectural and the national government has gradually increased.

Table 2 indicates the liabilities for compulsory education of the beneficiaries, the founders, and the national government before the establishment of the local autonomy system.

The Government Order of Education provided that education expenses should be shared by beneficiaries and founders, but State subsidies could be used to assist communities which were unable to cover education costs. Tuition fees were part of the responsibility of the beneficiaries, but this responsibility was a substantial burden, and therefore, was not practised to satisfaction. Consequently, such expenses were to be defrayed by the school districts. The leading official of a town or a village was authorised to collect money from each

house in proportion to its financial status, and expenses were covered by this collection, donations, deposits, and interest from these funds. Thus the percentage of education expenses covered by public liability greatly increased. On the other hand, the financial assistance from the State amounted to only 12.6% in 1874, and 8.2% in 1877. And when the Revised Education Order was issued in 1880, this subsidy was abolished. Primary school expenses were then to be covered by beneficiaries through tuition fees and by municipal liabilities. After 1886, the percentage of tuition fees increased because of reinforcement of tuition fee collection and other measures to lessen the municipal liability for education expenses.

Table 2: Educational Expenditures Liability of the Beneficiaries, the Founders, and the State (%)

	The Beneficiaries	The Founders	The State	Others	Total
1873	6,3	81,1	12,6		100
1874	6,9	73,8	6,2	13,1	100
1875	5,2	64,5	8,4	21,9	100
1876	5,7	71,5	9,7	13,1	100
1877	5,9	70,8	8,2	15,1	100
1878	4,9	69,2	8,2	17,7	100
1880	4,3	71,5	5,4	18,8	100
1882	4,2	83,7		12,1	100
1884	4,5	88,5		7,0	100
1886	7,1	84,4		8,5	100
1888	20,9	69,4		9,7	100

Sources : *Annual Report of the Ministry of Education and author's own calculations.*

From the first half of the Meiji Period, primary school education was emphasised as a national policy, but the responsibility of providing funds was assigned to cities, towns, and villages. Therefore, education became the largest expenditure in local budgets. Between the Sino-Japanese and the Russo-Japanese wars, municipal education expenses increased with an expansion of local finances, but the percentage of education expenses also increased year by year. Table 3 shows the relationship between income and education expenses in local budgets during this period. Education expenses used more than a half of the income from taxes, and educational expenses equalled more than 30% of the total income. Therefore, after 1896, there was a strong need for State assistance, and the Teachers Subsidy Law of 1896, the Primary School Subsidy Law

of 1899, and the Municipal Primary Law of 1990 were enacted. However, the State Subsidies were still small compared to the total cost of education.

Table 3: Proportion of Educational Expenditures in Municipal Finance (Thousand Yen)

Cities	Tax Income	Other Income	Total	Educational Expenditures	Proportion to Tax Income (%)	Proportion to the Total (%)
1889-1893	6909	22518	29427	3341	48,36	11,35
1894-1898	14958	46496	61454	9346	62,48	15,21
1899-1903	51958	88755	140713	23386	45,01	16,62
1904-1906	31887	82817	114704	16632	52,16	14,50

Towns and Villages	Tax Income	Other Income	Total	Educational Expenditures	Proportion to Tax Income (%)	Proportion to the Total (%)
1889-1893	71094	35416	106510	33518	47,15	31,47
1894-1898	108326	66796	175122	55324	51,07	31,59
1899-1903	213292	127656	340948	120294	56,40	35,28
1904-1906	126721	69556	196277	71390	56,34	36,37

Sources : *Annual Report of the Ministry of Education and author's own calculations.*

The Municipal Compulsory Education Expenses Liability Law was enacted in 1918, changing the traditional subsidy system. These expenses were to be covered by joint payments by the national and the local governments. Part of the wages for municipal primary education school teachers was to be paid from the State treasury. Table 4 shows the actual picture of the enforcement of this law. State liability amounted to one million yen at the first and gradually increased, as the table indicates, by revisions of the law in 1923, 1926, 1927, 1930. By 1930, according to the report of the Provisional Conference on Education, the amount equalled half of the wages paid to teachers. The percentage of State liability for municipal primary school expenses also increased from 4% in 1917 to 11% in 1918, 17% in 1923, and 34% in 1930. The wages of teachers had been fixed at a certain amount by the Revised Regulations for the Enforcement of the Primary School Order in 1911, but due to problems of local finances, teachers had been paid less than the fixed amount in spite of these regulations.

Table 4: Proportion of State Liability to Primary School Education Expenses and Teachers' Salaries (Thousand Yen)

	Municipal Expenditures	Municipal Education Expenditures	Teacher's Salaries	State Liability for Compulsory Educ. Expenditures	Proportion to Primary School Expenditures (%)	Proportion to Teacher's Salaries (%)
1918	338808	90542	49635	10000	11,04	20,15
1923	846569	232942	127906	40000	17,17	31,27
1926	1144698	285596	144424	70000	24,51	48,47
1927	1477091	297834	152121	75000	25,18	49,30
1930	1274499	250610	163061	85000	33,92	52,13

Sources : *Annual Report of the Ministry of Education and author's own calculations.*

#### IV. The number of students and expenditures on education

As the economy developed, the number of students enrolled in schools increased and the actual level of school attendance went higher. At first, most children were in primary stage, but gradually this composition changed and the percentage of the number of students in higher grades increased. We will see how education expenses changed according to this change in the composition of students. Tables 5 and 6 show the annual changes in the composition of students in different stages of education in view of educational expenses. The rate of attendance among "schoolable" children in primary schools increased as did the actual number of children attending schools. However, as the number of students of secondary and higher education increased, the percentage of primary school children decreased. The share for primary education has gradually decreased along with a similar decrease in the percentage of children attending primary schools since the Meiji Period. In contrast, the percentage of education expenses for education above primary education has increased.

Table 5: Educational Expenditures by Schools (% , Total = 100)

	Primary Education	Secondary Education	Higher Education	Teacher Training
1885	84,30	2,80	8,30	4,60
1890	76,90	3,10	10,90	9,10
1895	77,10	6,10	10,20	6,60

	Primary Education	Secondary Education	Higher Education	Teacher Training
1900	67,60	16,50	7,00	8,90
1905	64,60	18,20	10,20	7,00
1910	68,00	16,50	9,60	5,90
1915	65,50	17,30	12,00	5,20
1920	67,60	17,90	10,60	3,90
1925	61,10	20,10	14,60	4,20
1930	58,40	20,10	17,80	3,70
1935	61,90	18,70	16,90	2,50
1940	55,70	21,80	20,10	2,40

Sources : Annual Report of the Ministry of Education and author's own calculations.

Table 6. Number of Students by Schools (% , Total = 100)

	Primary Education	Secondary Education	Higher Education	Teacher Training
1885	98,90	0,50	0,40	0,20
1890	98,60	0,60	0,60	0,20
1895	98,30	1,10	0,30	0,30
1900	97,00	2,30	0,30	0,40
1905	95,80	3,10	0,70	0,40
1910	95,60	3,40	0,60	0,40
1915	94,70	4,20	0,70	0,40
1920	93,80	5,10	0,80	0,30
1925	90,20	8,00	1,30	0,50
1930	89,20	8,80	1,50	0,50
1935	89,30	9,00	1,40	0,30
1940	86,70	11,30	1,70	0,30

Sources : Annual Report of the Ministry of Education and author's own calculations.

## V. The changes in educational expenditures in relation with the national income

We have so far outlined the internal changes in educational expenditures in Japan. Now we will examine the relationship between educational expenditures and the national income. Table 7 indicates the changes in the national income,

administrative expenditures, and public education expenditures since the Meiji Period, and also shows the ratio of educational expenditures to national income and administrative expenditures. If we neglect the periods when the country was involved in war, the percentage has gradually increased. It was 1.78% in 1885, then approximately 3% in 1910, and 4% in 1930. The ratio of public educational expenditures to national and local administrative expenditures was 12% in 1885 and remained at about 10% until 1915. It then increased from the latter half of the Taisho Period to the beginning of the Showa Period and reached approximately 15%. Then it decreased again after the Manchurian Incident and toward World War II.

Table 7: Proportion of Public Educational Expenditure to the National Income

	National Income 1 (Million Yen)	Administrative Expenditures 2 (Thousand Yen)	Public Educational Expenditures 3 (Thousand Yen)	Proportion 3/1 (%)	Proportion 3/2 (%)
1885	612	90,99	10,90	1,78	11,98
1890	924	120,73	9,61	1,04	7,96
1895	1203	138,83	14,24	1,18	10,26
1900	1997	417,58	41,03	2,05	9,82
1905	2168	548,57	42,82	1,98	7,81
1910	2888	838,30	85,32	2,95	10,18
1915	3811	876,62	90,16	2,37	10,29
1920	11845	2438,52	300,41	2,54	12,32
1925	13064	2810,55	442,43	3,39	15,74
1930	11311	3139,80	452,94	4,00	14,43
1935	15203	4301,75	497,08	3,27	11,56
1940	32183	13587,96	671,91	2,09	4,94

Sources : *Annual Report of the Ministry of Education and author's own calculations.*

## Concluding Remarks

There is a substantial gap between conceptual progress in the economic theory of education and quantitative measurement of the concepts that it generates. It is true that measurement is difficult and the instruments available are far from matching our needs. However, this cannot be used as an argument for balking at a quantitative approach to reality. A concept is by nature an abstract image

of reality, a mental composition that can only be linked to reality by measurement. Without potential or effective measurement it can only remain sterile, with no possibility of being converted into action in order to progress towards new fields of knowledge. Thus, developments in statistics resulted in progress in measurement; without a doubt, this has made fresh progress in theoretical aspects possible. However, progress in observation has only been made for the present. Analysis of very long periods without corresponding statistical production has had to make do with existing indicators that are frequently very remote from the problems that researchers wish to address. The statistics produced obviously provide a significant perspective but not enough. However, as we are dealing with the past, new statistical developments can only be produced with the material left to us by history. But this material was developed to meet the requirements of knowledge and queries that by definition are completely different to the questions we are asking today.

The aim of quantitative history is to use the material available as a basis to construct the new observations that we need. The method in itself implies limits that are those of the traces left by past generations. However, a considerable volume of material is available and the question is rather that of the means to be used to exploit it. In fact, quantitative history uses the methods of retrospective national accounting (in particular the drawing up of satellite accounts). It aims at representing the economy of a country in a simplified form. The approach is intangible in appearance and focuses first and foremost on the observation and measurement of socio-economic facts. It then makes it possible to separate the complex ensemble of phenomena that make up economic and social activity. Finally it can render socio-economic facts comparable so that they can be classified in a limited number of categories in order to be studied as components of a homogeneous ensemble, that is to say as an aggregate. This being so, quantitative history stems from organised knowledge and engenders its own theoretical field—that of the double matching of measurement to the underlying concept and to the real data that it must report. It must be admitted that when historical reality is addressed in its long-term dimension our skills lag considerably behind the questions we are asking. For example, what is the meaning of the juxtaposition of instantaneous measurements in temporal series when the observed object itself changes. The comparison of levels at two fairly well-separated dates certainly has little meaning. In contrast, we should certainly award more importance to the movement that is described. We therefore measure trends.

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