
*Freight Rates and State Budget: the Role of the National Prussian Railways 1880-1913**

Rainer Fremdling

University of Münster and St. Antony's College Oxford

I

Looking at public enterprises today, one expects them to be agencies that are heavily subsidized at the expense of the common tax-payer. This is particularly true for state-owned railways; for example, it is estimated that in 1978 the German *Bundesbahn* will accrue the impressive deficit of about 13.5 billion Deutsche Mark, i.e. about 7 billion American dollars. Against this background earlier financial history seems almost a fairy tale: once upon a time there were state-owned railways in Germany which contributed considerably to the state budget by their surpluses. It is no exaggeration to state that from the 1880's to the eve of World War I the Prussian state budget¹ depended heavily on

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¹ According to Prochnow the volume of this budget increased from 8 to 20 percent of Prussia's national income between 1871 and 1913. Cf. P.-M. PROCHNOW, *Staat im Wachstum, Versuch einer finanzwirtschaftlichen Analyse der preussischen Haushaltsrechnungen 1871-1913* (doctoral dissertation, Münster, 1977), pp. 7 f. Thanks to Prochnow's efforts it has for the first time been possible to draw on actual figures instead of the

the nationalized railways. At that time only the *size* of the expected surplus generated by the railways was a matter for discussion.²

What influence did this revenue, and its importance in relation to other government revenues, have on the efficiency of the Prussian-German economy as a whole? The more general question underlying this problem concerns the role of government in a market economy. In particular, this means examining the tension between two basically contradictory aims of state, or governmental, action: the establishment of institutional arrangements and property rights designed to maximize its own revenues or the creation of an organizational framework which would maximize the efficiency of the economy as a whole. Of course, in the view of *laissez-faire* economic policy, government revenue needs are minimal. They ought merely to provide the "necessary" financial resources for the organization needed to guarantee private property rights.

Between 1880 and 1913 the users of railway services financed a great deal of the Prussian state budget. The question that arises is whether this form of revenue implied that the actual pace of Prussian-German economic growth was slowed down. In an attempt to provide a preliminary answer to this question 1) the reasons why the Prussian railways were nationalized should be discussed briefly, 2) the development of rates before and after nationalization needs to be outlined, and 3) the scale of the railways' contribution to the Prussian budget should be determined. As no full answer to the main question can be presented here, this paper is restricted to examining certain historical facts in the light of some preliminary speculations.

usually applied projected ones, when assessing the Prussian state budget between 1871 and 1913. His detailed year by year information provides a starting point for any work dealing with Prussia's economic policy in quantitative terms during the period in question.

² It is tautological to state that the considerable surpluses were due to the setting of rates which were high relative to the costs of running, maintaining, and even expanding the Prussian railway system.

II

Before nationalization, private railway companies faced increasing public hostility because the railway users complained about their exploitative and discriminatory rates. In particular, the *Differential-Tarife*, a sort of sliding scale, which often meant higher rates for shorter distances, was contested.³ The monopoly power of railways in certain areas made possible this kind of rate setting. Furthermore, public opinion was hostile to any special tariffs, such as cheaper rates conceded to individual major customers, and of course secret rebates were always complained about.⁴ Public and equal rates for all users of railway service was what was demanded. It was generally assumed that private railway companies exploited their customers by charging too much for their services. High rates were thought to be caused in part by inefficient operation resulting from the limited size of the respective private network. A nationalized network was expected to reduce rates significantly due to economies of scale and, above all, due to a shift towards goals thought of as "public"⁵ instead of "profit maximization". All these arguments of state ownership of railways are summarized in a document which the government submitted to the Prussian parliament in 1879 in order to initiate nationalization. Since this document was considered "the most complete statement of the arguments in favour of a state railroad system," the *Railroad Gazette* published an English translation as soon as 1880.⁶ Some of those arguments concerning the setting of rates are set forth below.

³ M. ALBERTY, *Der Übergang zum Staatsbahnsystem in Preussen* (Jena, 1911), pp. 159 ff.; on the principles for establishing rates in general during the 19th century see W. LOTZ, *Verkehrsentwicklung in Deutschland 1800-1900* (Leipzig, sec. ed. 1906), pp. 46 ff.

⁴ ALBERTY, *Der Übergang*, op. cit., pp. 162 ff.

⁵ *Ibid.*, p. 55.

⁶ *The Argument for State Railroad Ownership, A Translation of the Document submitted to the Prussian Parliament by the Cabinet in 1879, with a Bill Granting the Power and Means Necessary for Acquiring Several Important Railroads then Owned by Private Corporations*

The government criticized the tariff arrangements within the Prussian system, which was dominated by privately-owned railway companies: "We find the number of rates and combination of rates employed in freight traffic, often arbitrary, complicated, confused and varying."⁷ The fact that these rates were higher than they would be in a state-owned system was taken for granted. The following principles for fixing the rates of state-owned and state-run railways, which were considered *public highways*, were announced. First the railway tariffs would be moderated. "In its care for the encouragement of domestic trade, government has the liveliest interest in the reduction of general freight charges." It had to be admitted, though, that from the beginning of railway construction in Prussia in the late 1830's until the 1870's, freight rates had fallen considerably. Nevertheless, it was thought "absolutely necessary that the government be assured of the continuance of the reduction in tariff rates",⁸ which could only be secured through nationalized railways. The government also promised stability and uniformity of the rates as well as consideration of their congruence with the *Reich's* customs policy.⁹ The alleged reason for the proposed uniform treatment of all shippers, however, sounds rather strange in view of the constitutional organization of Prussia at that time: "In the price of transportation, as well as in the other terms of transportation, no difference between individual shippers, no prefer-

(New York, 1880), published by the Railroad Gazette-Pamphlets. The quotation is to be found in the introduction, *ibid.*, p. 4.

The standard work on railway nationalization in Prussia still remains Alberty's, *Der Übergang*, op. cit. For an extensive discussion of the main reasons for the nationalization, *ibid.*, pp. 142 ff.

A somewhat different and more critical view is given in H. MOTTEK, *Die Ursachen der preussischen Eisenbahnverstaatlichung des Jahres 1879 und die Vorbedingungen ihres Erfolges* (doctoral dissertation, Berlin, 1950).

Also see G. STRUTZ, *Die Eisenbahn-Verwaltung, Der Staatshaushalt und die Finanzen Preussens*, vol. I, 3 (Berlin, 1901), pp. 609-628.

⁷ *The Argument*, op. cit., pp. 17 f.

⁸ *Ibid.*, p. 37.

⁹ *Ibid.*, pp. 38-43.

ence of one before another, can be permitted; either would be inconsistent with the fundamental principles of a well-ordered state, which guarantees equal rights to all."¹⁰

In public discussions¹¹ two main reasons seem to have led to the nationalization of almost all privately-owned railways in Prussia, in the period from 1879 to the mid-1880's:

1) Supporters of this plan wanted to counteract the already visible and in future possibly increasing *monopoly power* of the privately-owned railways,¹² and

2) they wanted to pass on the economies of scale of a *centralized system* (i.e. state-owned) to the customers of railway services through cheaper rates.¹³

Of course, both aims cannot be viewed separately from each other.

III

In order to comprehend the impact which nationalization of the railways had on freight rates it is necessary to take a closer

¹⁰ *Ibid.*, p. 43. The principle that the rates should be public had already been embodied in former legislation. This was no defence against the practice of secret debates, and therefore it was up to the state-owned system to eliminate this misuse of monopoly power. Cf. *ibid.*, p. 44.

¹¹ That the initiators of railway nationalization (e.g. Bismarck), were mainly guided by fiscal motives has been particularly emphasized by Marxist scholars. On this see MOTTEK, *Die Ursachen*, op. cit., pp. 95 ff., where he refers to Friedrich Engels. Since railway surpluses meant revenues which did not need the approval of the legislature, they were attractive for a rather authoritarian regime like Bismarck's in Prussia. On the fiscal reasons for this policy see also ALBERTY, *Der Übergang*, op. cit., pp. 175 ff. That railways should prove to be such a profitable state enterprise had not been obvious to all contemporaries at the beginning of their nationalization, *ibid.*, pp. 185 ff.

¹² Cf. ALBERTY, *Der Übergang*, op. cit., pp. 144 ff.; MOTTEK, *Die Ursachen*, op. cit., pp. 29 and pass.; F. VOIGT, *Verkehr*, vol. 2, *Die Entwicklung des Verkehrssystems* (Berlin, 1965), p. 522.

¹³ Cf. ALBERTY, *Der Übergang*, op. cit., pp. 150 ff.; MOTTEK, *Die Ursachen*, op. cit., pp. 30, 110; VOIGT, *Verkehr*, op. cit., p. 522.

look at the overall development of these rates from the late 1830's until the eve of World War I. Table 1 and Chart 1 offer a first impression. Evidently, the average rate per ton-kilometre had declined dramatically by 1880. From then until 1913 comparatively slight decreases can be observed in the mainly nationalized system. Whereas the average rate per ton-kilometre in Germany declined by 74% from 1840 to 1880, it sank by only 18% from 1880 to 1913. In addition, Chart 2 demonstrates how rapidly the output of German railways grew from 1840 to 1913.¹⁴

TABLE 1

RAILWAY FREIGHT TRANSPORTATION
AND FREIGHT RATES IN GERMANY, 1840-1913

Year	Output (millions of ton-kilometres)	Rates (pfennig per ton-kilometre)	Year	Output (millions of ton-kilometres)	Rates (pfennig per ton-kilometre)
1840	3	16.9	1880	13,039	4.4
1845	51	13.6	1885	15,965	4.1
1850	303	10.1	1890	22,237	3.9
1855	1,095	8.2	1895	25,116	3.9
1860	1,675	7.9	1900	34,699	3.7
1865	3,672	6.0	1905	41,936	3.7
1870	5,876	5.6	1910	51,815	3.7
1875	10,625	5.3	1913	61,744	3.6

Source: R. FREMDLING, *Eisenbahnen und deutsches Wirtschaftswachstum* (Dortmund, 1975), pp. 17-19, 57.

¹⁴ For additional data and information see R. FREMDLING, *Eisenbahnen und deutsches Wirtschaftswachstum, Ein Beitrag zur Entwicklungstheorie und zur Theorie der Infrastruktur* (Dortmund, 1975), pp. 13-22, 55-60; for the development of the tariffs up to 1900 see also STRUTZ, *Die Eisenbahn-Verwaltung*, op. cit., pp. 695 ff.; Since Prussian railways overwhelmingly dominated the rate setting in Germany there is no need to pay special attention to the average rate per ton-kilometre in Prussia alone, cf. ALBERTY, *Der Übergang*, op. cit., pp. 243 ff.

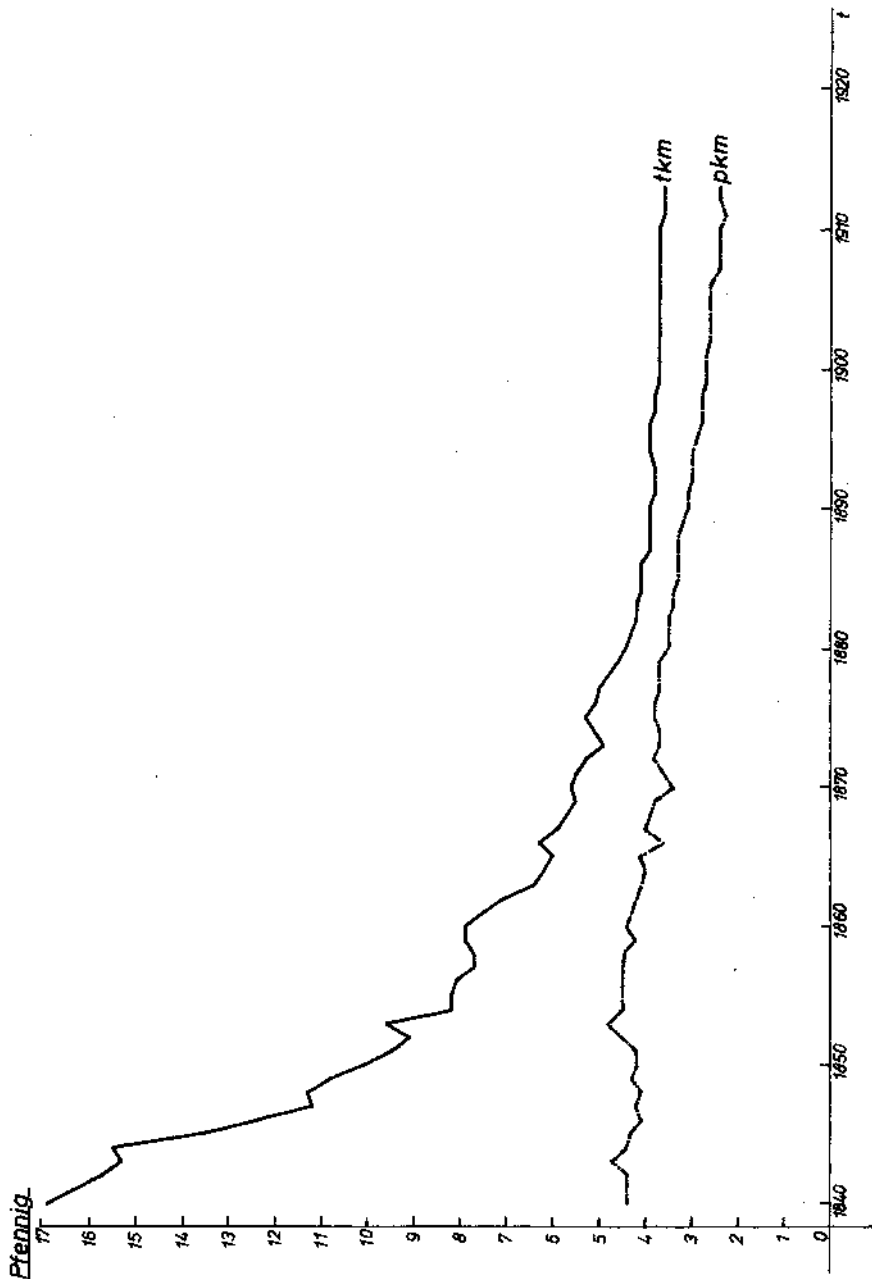


CHART 1. - Railway Output Prices in Germany, 1840-1913 (in Pfennig per ton-kilometre and passenger-kilometres)

Source: FREMDLING, *Eisenbahnen*, op. cit., pp. 18-20.

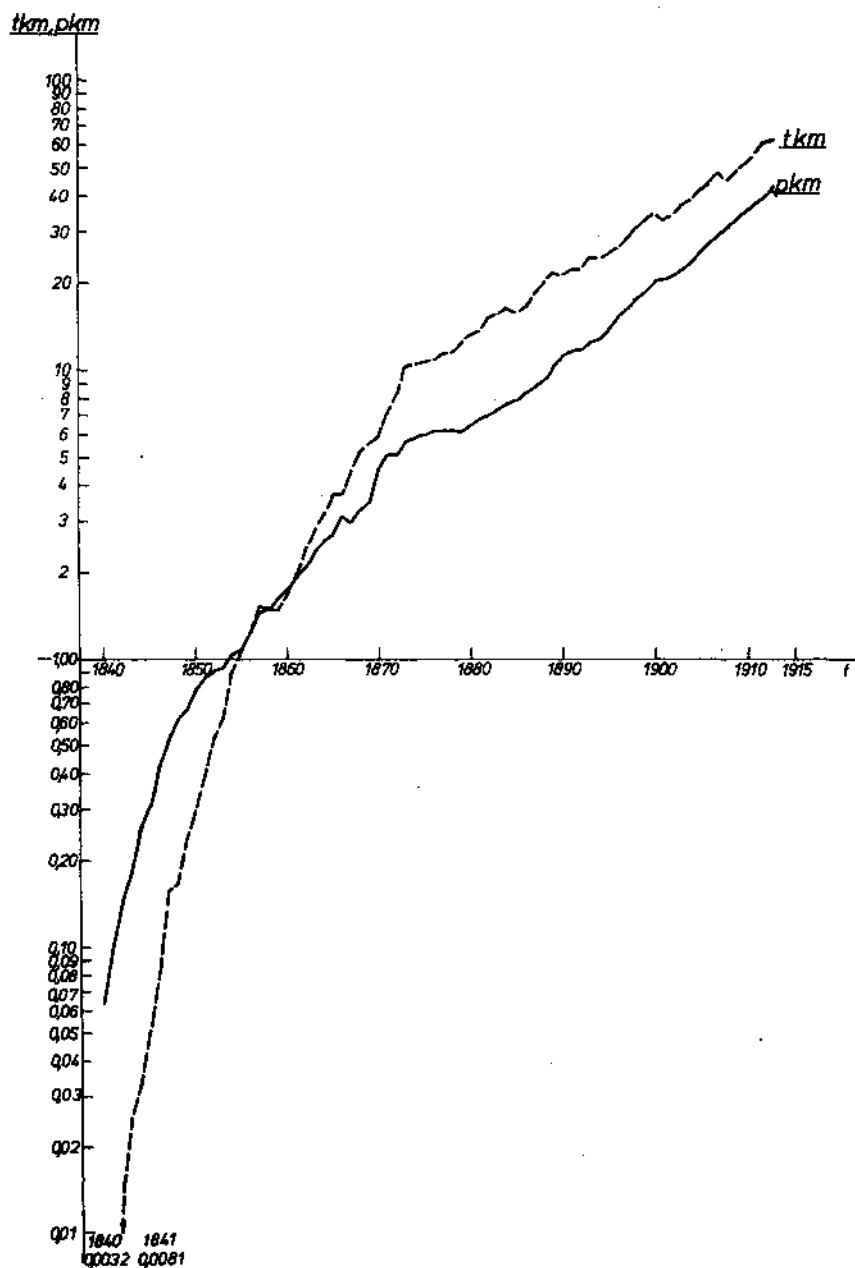


CHART 2. - Railway Output in Germany, 1840-1913 (in millions of ton-kilometres and passenger-kilometres)

Source: FREMDLING, *Eisenbahnen*, op. cit., pp. 17-19.

It was still generally thought, however, that the reductions from the 1880's onwards exceeded the amount that could have been expected with a private railway system.¹⁵ Special rates (*Ausnahmetarife*) on freight services, which accounted for more than 64 percent in 1909, were considered the fulfilment of the railways' first priority — to "public goals." In particular, the agrarian interests East of the Elbe profited from this system of rates.¹⁶ Since railway rates were designed as a complement to protective tariffs and to induce increased exports, they were clearly also part of a neo-mercantilistic approach to foreign trade, as was argued by Lotz.¹⁷ And this, too, was widely accepted by public opinion.

IV

It seems, then, that quite a number of the goals proposed by the advocates of railway nationalization during the late 1870's were fulfilled by the Prussian state-owned railway:¹⁸ rates had been reduced, and not only were they public but they also were equal for all shippers.

There still remains the question: Did the outcome of the nationalized railway system actually provide more advantages for railway customers than could have been expected from the

¹⁵ *Ibid.*, p. 296.

¹⁶ See for example the introduction of special rates for grain transportation to the benefit of the *Junkers* East of the Elbe. Agrarian pressure groups in southern Germany, however, successfully demanded the abolition of this privilege in 1894. Cf. F. ULRICH, *Staffeltarife und Wasserstrassen* (Berlin, 1894), pp. 1 and pass.; STRUTZ, *Die Eisenbahn-Verwaltung*, op. cit., pp. 715 ff.; ALBERTY, *Der Übergang*, op. cit., pp. 291 f.

¹⁷ W. LOTZ, *Verkehrsentwicklung*, op. cit., pp. 64 ff.; this motive also played an important role right from the beginning of the railway nationalization, cf. MOTTEK, *Die Ursachen*, op. cit., pp. 93-95; ALBERTY, *Der Übergang*, op. cit., pp. 170 f., 296 ff.

¹⁸ The best assessment in detail is still to be found in *ibid.*, pp. 238 ff.; especially on the tariffs *ibid.*, pp. 281 ff.; for some commodities there were reductions of the rates even between 25 and 60 percent, *ibid.*, p. 288.

previous mixed system?¹⁹ A simple extrapolation from former developments leads one to doubt the statement.

The history of mergers and cartels before 1880 lends strong support to the counterfactual statement that without nationalization, an oligopolistic and highly competitive system would have emerged. Given the state controls that already existed before 1880 (e.g., rate increases had to be sanctioned by government authorities) I assume that the hypothetical outcome, a lower level of freight rates, would have been more favourable to economic growth than the actual one. I take for granted that lower costs of transportation mean more favourable conditions for economic growth.

It is evident that the Prussian railways did not charge rates that were so low that they could be described as fees appropriate to costs, including a return on capital equal to the long-term rate of interest.²⁰ Yet, this was one of the public goals attributed to nationalized railways, but it is easy to prove that this goal was considerably violated. The nationalized railways did generate surpluses which contributed heavily to the general needs of the state budget between 1880 and 1913. Railway revenues were designed to meet budget needs to such a degree that it is no exaggeration to claim that the budget was crucially dependent on the railways.²¹ The percentages of the various revenues of the

¹⁹ To specify sufficiently the counterfactual of nationalization the statement of particulars of the alternative tax system as well as the alternative volume of the state budget would be necessary.

²⁰ That railways surpluses were well above the rate of interest paid for long-term loan capital is shown in Table 6 of the Appendix. Railway surplus rates, however, may be biased upwards to some extent because surpluses were not adjusted adequately for depreciation. On this see STRUTZ, *Die Eisenbahn-Verwaltung*, op. cit., p. 1022. Nevertheless even Strutz who is intent on narrowing the actual amount of the surpluses, admits that they were considerably higher than the usual interest rate in Prussia, *ibid.*, pp. 1022, 1052.

²¹ Andic and Veverka discussing Wagner's "Law of the Increasing Extent of State Activity" merely touch upon this problem. Their assessment is not based on revenues, but on expenditures alone. Furthermore trading services, like current expenditures on

Prussian state budgets are given in Table 2. Note that these figures represent *realised* ("Ist") instead of the usual *planned* ("Soll") figures. Railway receipts accounted for 36 to 49 percent of the budget revenues between 1880 and 1913 (Line 4a of Table 2). These figures, however, may be misleading, since railway expenditure has to be subtracted to get surplus data. Table 3 shows the expenditures of the Prussian state budget: in particular, the amount of railway expenditure and investment are shown (Line 2a and 3a of Table 3). As Table 4 clearly indicates, railway surpluses in general exceeded railway investment, thereby contributing considerably to needs other than for railways in the Prussian state budget (Lines 3-5 of Table 4.)

The significant role of railways may be demonstrated by comparison with tax revenues: the ratio of railway surpluses (Line 3 of Table 4) to net tax revenues (Line 6 of Table 4) was between 0.82 and 2.45, and the ratio of the railways net contribution — surpluses minus investment — (Line 5 of Table 4) still remained between 0.58 and 1.90 (when the period from 1880 to 1884 is neglected.) The data show that there can be no doubt that the railway revenues enabled Prussia to meet its other public aims without levying increased taxes.

On the other hand, it seems fairly clear that the freight rate level was considerably higher than could have been expected had only "public goals" (i.e. freight rates based only on costs) determined the rate setting.²²

railways, are excluded. A. ANDIC and J. VEVERKA, *The Growth of Government Expenditure in Germany since the Unification*, in "Finanzarchiv" N.F. 23, 1963-64, pp. 173 f., 256.

²² Published in 1901 Strutz' assessment of the railway's role in financing general budget needs seems to be a good proof of fiscal motives finally dominating all other proposed aims in running a state-owned railway system. As a high-ranked civil servant of the Prussian ministry of finance (he was *Gehheimer Ober-Finanzrath*) Strutz praised the Minister of Finance for not having been tempted to grant major tariff reductions, which had been demanded by numerous groups, including the parliament and the *Eisenbahnräthe*, during those prosperous years in the 1890's. Strutz justified this policy as follows: Since rate reductions could possibly not be reversed during future bad years,

PRUSSIAN STATE BUDGET MAIN REVENUE ITEMS, 1880-1913* (annual averages)

Year	1880/84	1885/89	1890/94	1895/99	1900/04	1905/09	1910/13
1) Administrative Charges and Fees ^b	13.9	15.3	17.2	17.3	16.6	11.2	9.3
2) Direct Taxes	12.6	9.7	9.0	7.1	7.3	7.6	8.4
3) Indirect Taxes	3.9	3.9	3.4	3.3	3.0	2.9	2.5
4) State Enterprises	51.5	58.0	57.8	61.7	61.2	62.1	61.3
4a) (of which railways)	(35.8)	(45.1)	(44.2)	(48.0)	(47.4)	(48.6)	(47.7)
5) Loans	11.4	7.7	7.3	5.1	5.4	9.9	16.9
6) Stock in t _e	6.8	5.4	5.2	5.5	6.5	6.4	1.6
Total) 7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
8) Total Revenues (in Mill. of Marks)	1,232	1,653	2,098	2,482	3,084	3,927	5,098

* lines 1)-6) represent percentages of line 8); all data are *realised* instead of *planned* figures.

^b includes the Prussian State share of tariff and the tobacco excise tax revenues of the Reich.

Source: Calculated from P.-M. PROCHNOW, *Staat im Wachstum, Versuch einer finanzwirtschaftlichen Analyse der preussischen Haushaltsrechnungen 1871-1913* (doctoral dissertation, Münster 1977), statistical appendix, pp. 5-6 a.

TABLE 3

PRUSSIAN STATE BUDGET MAIN EXPENDITURE ITEMS, 1880-1913 * (annual averages)

Year	1880/84	1885/89	1890/94	1895/99	1900/04	1905/09	1910/13
1) Administrative Costs	33.6	31.9	34.3	33.3	32.5	26.6	23.3
2) State Enterprises	35.2	37.8	38.8	38.7	40.1	44.3	45.5
2a) (of which railways)	(24.8)	(29.2)	(27.7)	(27.4)	(29.0)	(32.6)	(34.4)
3) Investments	13.6	9.1	8.8	7.6	10.5	15.1	14.7
3a) (of which railways)	(10.8)	(6.9)	(6.0)	(4.6)	(5.8)	(10.0)	(9.4)
4) Debt Servicing	11.0	15.0	13.0	14.4	10.2	8.6	14.1
5) Stock in r_1	6.6	6.1	5.1	6.0	6.7	5.4	2.4
6) Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
7) Total Expenditure (in Mill. of Marks)	1,232	1,653	2,098	2,482	3,084	3,927	5,098

* lines 1)-5) represent percentages of line 7); all data are *realised* instead of *planned* figures.

Source: Calculated from Prochnow, *Staat im Wachstum*, op. cit., statistical appendix, pp. 39-42 a.

NET CONTRIBUTION OF RAILWAYS TO GENERAL BUDGET NEEDS OTHER THAN FOR RAILWAYS, PRUSSIA
1880-1913, in Million of Marks (annual averages)

Year	1880/84	1885/89	1890/94	1895/99	1900/04	1905/09	1910/13
1) Railway Receipts *	441	746	929	1,192	1,459	1,880	2,406
2) Railway Expenditures *	305	483	581	680	876	1,270	1,652
3) Railway Surpluses (line 1 - line 2)	136	263	348	512	583	610	754
4) Railway Investment	133	114	126	115	180	394	478
5) Railways' Net Contrib. (line 4 - line 5)	3	149	222	397	403	216	276
6) Net Tax Revenues	166	185	213	209	264	344	476
7) line 3 as percent of line 6	81.9	142.2	163.4	245.0	220.8	177.3	158.4
8) line 5 as percent of line 6	1.8	80.5	104.2	190.0	152.7	62.8	58.0

* Railway surpluses became increasingly sensitive to economic fluctuations. In order to counteract the business cycle influences on the state budget, a special fund ("Ausgleichsfond") was established in Prussia from 1903 on. This was a device to transfer railway surpluses for general budget needs from good to bad years. In contrast to Prochnow's approach (*ibid.*, pp. 111-113) railway receipts and expenditures were related to the year they actually appeared.

Source: Calculated from PROCHNOW, *Staat im Wachstum*, op. cit., statistical appendix, pp. 5-6 a, 39-42 a, 77-78 a.

Looking at the railway sector alone, it seems appropriate to conclude that the level of rates on the nationalized Prussian railways was not optimal for inducing maximum economic growth.

The level of rates was possibly not the only way by which the nationalized system created a suboptimal resource allocation. In the last two decades before the First World War, numerous unprofitable branch lines were built, which meant a burden for the private as well as for the social rate of return on the railways. Whereas trunk lines increased by just 17.4 percent, branch lines nearly doubled between 1895 and 1911.²³ Although this was due to strategic policy, it also coincided with an economic policy which favoured the more backward regions of eastern Prussia.²⁴ In consequence, the most backward regions, (i.e. East and West Prussia, Pomerania, and Posen) considerably increased their share of total railway mileage between 1881/82 and 1912, whereas all the other Prussian provinces, including the most advanced (i.e. the Rhineland, Westphalia, and Saxony) lost relatively. Furthermore, Table 5 indicates a nearly reverse develop-

it was only prudent not to grant them "now" in good years. (STRUTZ, *Die Eisenbahn-Verwaltung*, op. cit., pp. 1052 ff.) His argument reveals the inflexibility of a tariff policy based on equal rights and equal treatment for every user. This lack of flexibility in setting rates is exemplified by ALBERTY, *Der Übergang*, op. cit., p. 298.

²³ Cf. OFFENBERG, *Konjunktur und Eisenbahnen* (Stuttgart, 1914), p. 14; H. BONUS, *Konjunktur und Haushalt, Die preussischen Staatsfinanzen der Vorkriegszeit*, in "Finanzarchiv" N.F. 3, 1935, p. 511.

²⁴ In this context it is understandable why deputies from the western provinces were rather reluctant to approve of the railways being nationalized, see ALBERTY, *Der Übergang*, op. cit., pp. 67 f., 304; on east-west differentials in economic development see K. BORCHARDT, *Regionale Wachstumsdifferenzierung in Deutschland im 19. Jahrhundert unter besonderer Berücksichtigung des West-Ost-Gefälles*, in: *Festschrift for F. Lütge* (Stuttgart, 1966), pp. 325-339; TH. ORSAGH, *The Probable Geographical Distribution of German Income, 1882-1963*, in "Zeitschrift für die gesamte Staatswissenschaft" 124, 1968, pp. 280-311; H. HESSE, *Die Entwicklung der regionalen Einkommensdifferenzen im Wachstumsprozess der deutschen Wirtschaft vor 1913*, in: *Beiträge zu Wirtschaftswachstum und Wirtschaftsstruktur im 16. und 19. Jahrhundert*, ed. W. FISCHER (Berlin, 1971), pp. 261-279; F.B. TIPTON, *Regional Variations in the Economic Development of Germany during the Nineteenth Century* (Middletown, 1976); G. HOHORST, *Wirtschaftswachstum und Bevölkerungsentwicklung in Preussen 1816-1910* (New York, 1977), pp. 311-352.

ment in population growth, which is a useful approximation for the growth of regional G.N.P. in absolute terms.²⁵ By stressing the disproportionate increase of railway mileage in the more backward regions it is, of course, assumed that the social benefits of this policy were less than they could have been had these resources been used for other purposes (e.g. railway construction elsewhere or for a general reduction of freight rates.)

TABLE 5
PROVINCIAL DISTRIBUTION OF RAILWAY MILEAGE,
POPULATION, AND LAND AREA IN PRUSSIA

Province	Railway in kilometres		Mileage in percent		Population in percent		Land Area in percent
	1881/82	1912	1881/82	1912	1880	1910	
East Prussia	989	2,899	4.9	7.8	7.1	5.4	10.6
West Prussia	868	2,273	4.3	6.1	5.2	4.4	7.3
Brandenburg (incl. Berlin)	2,434	4,160	12.2	11.2	12.4	14.9	11.4
Pomerania	1,099	2,346	5.5	6.3	5.6	4.5	8.6
Posen	1,136	2,765	5.7	7.4	6.2	5.3	8.3
Silesia	2,704	4,690	13.5	12.6	14.7	13.3	11.6
Saxony	1,941	2,953	9.7	7.9	8.5	8.0	7.2
Schleswick- Holstein	899	1,568	4.5	4.2	4.1	4.0	5.5
Hanover	1,971	3,252	9.8	8.7	7.8	7.4	11.0
Westphalia	1,962	3,345	9.8	9.0	7.5	9.7	5.8
Hesse-Nassau	1,206	2,133	6.0	5.7	5.7	5.6	4.5
Rhineland	2,731	4,704	13.6	12.7	14.9	17.3	7.7
Hohenzollern	81	91	0.4	0.2	0.2	0.2	0.3
Prussia (absolute totals)	20,020	37,178		27,279,000	37,293,000		348,780 km ²

Sources:

KÖNIGLICH STATISTISCHES BUREAU, *Statistisches Handbuch für den Preussischen Staat*, vol. 3 (Berlin, 1898), pp. 1, 107, 316-318.

KAISERLICHES STATISTISCHES AMT, *Statistisches Jahrbuch für das Deutsche Reich*, Jg. 35 (Berlin, 1914), pp. 1, 127.

²⁵ Analyzing regional economic growth in Germany Paul B. Huber for example used this indicator as a relevant variable in his econometric model, P.B. HUBER, *Regionale Expansion und Entleerung im Deutschland des neunzehnten Jahrhunderts: Eine Folge der Eisenbahntwicklung?* in: R. FREMDLING and R.H. TILLY, eds., *Industrialisierung und Raum, Studien zur regionalen Differenzierung im 19. Jahrhundert*, (Stuttgart, 1979.)

Any consideration of the consequences of the state-owned railway system in Prussia should also touch on some further points. There were often complaints that the Prussian state bank, the *Seehandlung*, counteracted the policy of the central bank, the *Reichsbank*, by throwing huge amounts of cash surpluses (due to unexpected railway surpluses) on the money market, while at the same time the *Reichsbank* was attempting to reduce the money supply.²⁶ According to Alberty, railway nationalization also resulted in an increase in capital exports. Since there seemed to be a lack of domestic speculative investment opportunities, a lot of foreign, and often rather exotic, securities appeared on the German capital market, especially between 1886 and 1889.²⁷ From a Keynesian view, however, it could be considered an advantage that railway surpluses and thus state revenues became increasingly sensitive to economic fluctuations. During slump years, as in 1901 and 1908 for example, when actual railway surpluses were substantially below the expected amounts, the Prussian government was forced to run its budget to a large extent by means of deficit spending.²⁸

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Railway surpluses in Prussia between the 1880's and World War I clearly served as a substitute for an adequate tax system. In this respect Miquel's tax reform in the early 1890's — income tax was introduced — did not alter the revenue structure of the

²⁶ In his *Festschrift* Hellwig rather unconvincingly tried to refute these charges, cf. H. HELLWIG, *Festschrift: Die Preussische Staatsbank, Seehandlung* (Berlin, 1922), pp. 158 ff. and pass.

²⁷ ALBERTY, *Der Übergang*, op. cit., pp. 274-279.

²⁸ On the influence of the business cycle on the state budget see OFFENBERG, *Konjunktur*, op. cit., p. 43 and pass.; PROCHNOW, *Staat im Wachstum*, op. cit., pp. 39, 113 ff.

Prussian state budget significantly,²⁹ and railway surpluses, a form of *turnover tax*, continued to play a major role.³⁰

It is not possible here to calculate the costs of a potentially more elaborated tax system, *versus* the benefits of the returns provided by state-owned enterprises, the railways, in Prussia.³¹ Protagonists of a market economy would have preferred an elaborate tax system to Prussia's entrepreneurial activities, at a time when the Prussian state was probably the biggest entrepreneur in the world.³² But the question still remains open whether it was more efficient for the Prussian government and the economy as a whole to collect the "necessary" revenues through running that profitable enterprise, the railways, rather than introducing an elaborate tax system.

In this brief paper the impact of the nationalized railways in Prussia on the pace of German economic growth has been no more than sketched, and further research is obviously needed. But the same effort that has been devoted to studying the role of import duties could with profit be devoted to an analysis of the freight rates in Imperial Germany.

²⁹ During the last two decades before the war, however, direct taxes increased faster than railway surpluses, see Table 4, Line 7 and 8.

³⁰ PROCHNOW, *Staat im Wachstum*, op. cit., pp. 142-147; ALBERTY, *Der Übergang*, op. cit., p. 299.

³¹ This alternative was briefly discussed by Strutz too. He refused increased direct taxes as a substitute for the use of railway surpluses because of the potential negative effects on the distribution of the income, STRUTZ, *Die Eisenbahn-Verwaltung*, op. cit., pp. 1053 ff.

³² B. MOLL, *Die finanzielle Bedeutung der öffentlichen Unternehmungen*, in: H. TESCHMACHER, ed., *Beiträge zur Finanzwissenschaft*, vol. 1 (Tübingen, 1928), p. 236.

APPENDIX

TABLE 6

RAILWAY SURPLUS RATE AND THE EFFECTIVE RATE OF INTEREST
ON THE 3.5% GOVERNMENT BONDS IN PRUSSIA, 1880-1913
(annual averages)

Years	Railways	Government Bonds
1880-1884	5.0	3.6
1885-1889	5.5	3.4
1890-1894	5.3	3.5
1895-1899	6.9	3.4
1900-1904	6.7 (6.8) ^a	3.5
1905-1909	6.5 ^b (6.4) ^a	3.6
1910-1913	— (6.8) ^a	3.9

^a State-owned railways alone

^b 1905-1908

Notes and Sources:

The surplus rate of railways is defined as surplus as percent of capital stock, where surplus is revenues minus expenditures, and capital stock (*verwendetes Anlagekapital*) is accumulated total expenditure on capital account to end of respective year. The unweighted annual averages were calculated from the data to be found in: KÖNIGLICH STATISTISCHES BUREAU, *Statistisches Handbuch für den Preussischen Staat*, vol. 4 (Berlin, 1903), pp. 286 f.; *Statistisches Jahrbuch für den Preussischen Staat*, Jg. 1-13 (Berlin, 1904-1916); ARTHUR SPIETHOFF, *Die wirtschaftlichen Wechsellagen*, vol. 2 (Tübingen, 1955), Table 11.

