Taxes on Production and on Imports in Germany, 1901-13

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I. The Problem

The industrialization process of the late 18th and 19th centuries is still the prominent topic for economic historians. Inspite of many different views on its course and especially its causes, there is one common complaint: the need for reliable macroeconomic data. As the costs of computing capacity have fallen dramatically since two decades, economists and economic historians have reconstructed historical national accounts for several countries in recent years.[1] What about German historical national accounts?

The impressive database published by Walther G. Hoffmann and his collaborators in 1965 has served as the main statistical source for a generation of economic historians. The most often used economic aggregates for describing growth in 19th century Germany are the real net domestic product at factor cost (NDP fc) series and the real net national product at market prices (NNP mp) series of Hoffmann.[2] However, his estimation methods have been criticized by, e.g., W. Arthur Lewis, Carl-Ludwig Holtfrerich and Eckart Schremmer.[3] The most thorough analysis of Hoffmann's national accounting figures has been undertaken by Rainer Fremdling, who presumes that Hoffmann's figures for the mid-19th century, and maybe even for 1913, are too low.[4] If only one of Fremdling's presumptions should prove to be quantitatively important, then the whole pattern of the industrialization process in Germany had to be rewritten. Especially a revision of the figures for the 1913 benchmark year, on which Hoffmann's five NDP/NNP series spanning from 1850 to 1959 are based, would possibly lead to a complete reassessment of the pattern of economic growth in the 19th century (until 1913). Thus Fremdling has called for an independent reconstruction of 1913 economic aggregates using either the output or the incomes received method.[5] Thanks to the volumes already published by the *Historische Statistik* project there is plenty of new

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1 See for an overview *B. van Ark*, Towards European Historical National Accounts, in: Scandinavian Economic History Review 43, 1995, S. 3-16; *ders./R. Fremdling*, New Research in Historical National Accounting, in: Jahrbuch für Wirtschaftsgeschichte 1997/II, S. 21-25.

2 *W.G. Hoffmann u.a.*, Das Wachstum der deutschen Wirtschaft seit der Mitte des 19. Jahrhunderts, Berlin 1965, S. 454 f., 827 f. The terms 'factor cost' and 'market prices' are no longer recommended by the System of National Accounts 1993, which has been developed by an expert group for Eurostat, the IMF, the OECD, the UN and the World Bank. However, in order to remain compatible to earlier contributions, I will stick to the old terminology.

3 *W.A. Lewis*, Growth and fluctuations 1870-1913, London 1978; *C.-L. Holtfrerich*, The Growth of Net Domestic Product in Germany 1850-1913, in: *R. Fremdling/P. O'Brien (Hg.)*, Productivity in the Economies of Europe (Historisch-Sozialwissenschaftliche Forschungen, Bd. 15), Stuttgart 1983, S. 124-132; *E. Schremmer*, Die badische Gewerbesteuer und die Kapitalbildung in gewerblichen Anlagen und Vorräten in Baden und Deutschland, 1815 bis 1913, in: Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte 74, 1987, S. 18-61.

4 *R. Fremdling*, German National Accounts for the 19th and Early 20th Century. A Critical Assessment, in: Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte 75, 1988, S. 33-57; *ders.*, Productivity Comparison between Great Britain and Germany, 1855-1913, in: Scandinavian Economic History Review 39, 1991, S. 28-42; *ders.*, German National Income, Product and Expenditure, 1816-1939: A Review of the Evidence, in: Economies et Sociétés 21, 1995, Nr. 12, S. 25-55.

5 *Fremdling*, German National Income, S. 44.

statistical evidence now to which Hoffmann did not have access in the early 1960s. Insofar a reconstruction of German 19th century national accounts may indeed yield new results. In this respect, it is interesting that even for the interwar years, during which much more relevant data were collected, Albrecht Ritschl has compiled alternative figures which deviate strongly from Hoffmann's.[6]

A reconstruction of German pre-WWI economic aggregates by the incomes received approach, and possibly by the output approach as well, would lead to a problem with that already Hoffmann had to cope with.[7] Depending on the measurement concept, the resulting aggregate series are either expressed in factor cost or in market prices. If measured accurately, the difference is 'taxes on production and on imports' - what used to be called 'indirect taxes' before the 1993 revision of the System of National Accounts (SNA)[8] - minus subsidies. For neither series do we have reliable data before 1925. An estimate of production and import taxes minus subsidies would allow to compare aggregates derived from either the factor cost or the market prices concept. Aggregates in terms of factor cost should anyway be transformed to market prices which is regarded as the more meaningful concept nowadays.

Thus the focus of this article is to estimate German taxes on production and on imports minus subsidies before WWI. As will be illustrated below, this is an extremely laborious task which will lead us in the depths of early 20th century fiscal statistics which were recorded independently on all three levels of the German *Gebietskörperschaften* (governmental units) - *Reich*, 26 *Länder* (states) and some 65,000 *Kommunen* (municipalities). For reasons having to do with the data available, the period under consideration is confined to 1901-13.

The next section gives a brief overview of the national accounting framework with a focus on the theoretical definition and the historical identification of production and import taxes. In the third section, the production and import tax revenues of the *Reich*, the *Länder* and the *Kommunen* are gathered from contemporary statistical sources. For the *Kommunen*, for which aggregate figures do not exist, we will look at those of the largest six *Länder* in detail (Prussia, Bavaria, Saxony, Württemberg, Baden and Alsace-Lorraine). The last section summarizes the results and puts them in a larger context.

II. The National Accounting Framework

For most purposes net domestic product at market prices is the most adequate measure to describe the performance of an economy: it indicates how much the residents of a given territory produced in a given period after deductions for the replacement of used capital (depreciation). Yet, the estimation of depreciation is methodologically one of the most tricky problems in national accounting. Hence most studies focus on gross domestic product.[9] But

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6 See *A. Ritschl/M. Spoerer*, Das Bruttosozialprodukt in Deutschland nach den amtlichen Volkseinkommens- und Sozialproduktsstatistiken 1901-1995, in: Jahrbuch für Wirtschaftsgeschichte 1997/II, S. 27-54.

7 *Hoffmann u.a.*, Das Wachstum der deutschen Wirtschaft, S. 167 f.

8 The old term 'indirect taxes' led to misunderstandings because it had differing meanings in the national accounting framework on the one hand and the public finance framework on the other. Moreover, even within the public finance framework, the concept of 'indirect taxes' is ambigous and hence its use is no longer recommended; see *R.A. Musgrave/P.B. Musgrave*, Public Finance in Theory and Practice, New York [5]1989, S. 215 f.; *D. Brümmerhoff*, Finanzwissenschaft, München [4]1989, S. 226 f.

9 System of National Accounts 1993, Brüssel 1993, S. 154; *van Ark*, Towards European Historical National Accounts; *A. Maddison*, Monitoring the World Economy, 1820-1992, Paris 1995.

this is difficult for the 19th century as net factor income from the rest of the world usually is not known, and difficult to estimate. Hence many studies measure gross or net national product, ideally in market prices (see Figure 1).

Figure 1: The Role of Production and Import Taxes minus Subsidies within the National Accounting Framework

nfi row	Gross Output

nfi row		Purchased Material and Services
	Gross Domestic Product at Market Prices (GDP mp)	
	Gross National Product at Market Prices (GNP mp)	

nfi row		Depre-ciation
	Net Domestic Product at Market Prices (NDP mp)	
	Net National Product at Market Prices (NNP mp)	

nfi row		**Production and Import Taxes Minus Subsidies**
	Net Domestic Product at Factor Cost (NDP fc)	
	Net National Product at Factor Cost (NNP fc) = Net National Income (NNI fc)	

Note: nfi row - net factor income from rest of the world (here assumed to be positive).

However, most German historical NNP and NDP series are expressed in factor cost, especially those following the incomes received method which is based on the analysis of income tax statistics. This concept was already used by authors in the late 19th century, by the *Statistisches Reichsamt* in 1932, and Hoffmann and Müller in 1959.[10] They calculated national income by aggregating 'income from employment' and 'income from property and entrepreneurship', that is the sum of factor incomes (hence 'factor cost'). However, by this procedure deductible taxes paid by firms *before* the income (or corporate) tax assessment are not recorded, and subsidies are included. The national income of two otherwise identical economies (same NNP mp) look very different if the tax system of one economy concentrates on income taxes (large NNP fc), and the other on consumption taxes (low NNP fc). For this reason the factor cost concept is no longer regarded as a meaningful measure for a nation's economic performance.[11]

As we will see below, this holds all the more for historical purposes because the tax burden, although still very low compared with today's standards, increased considerably in the pre-WWI period. Not without reason had Adolph Wagner formulated his 'Law of Increasing Extent of State Activity' in that time.[12] Moreover, there is a secular trend from indirect taxes, which are part of production taxes, to income taxes, which are not. Hence

10 *Statistisches Reichsamt*, Das deutsche Volkseinkommen vor und nach dem Kriege (Einzelschriften zur Statistik des Deutschen Reichs, Bd. 24), Berlin 1932; *W.G. Hoffmann/J.H. Müller*, Das deutsche Volkseinkommen 1851-1957, Tübingen 1959.

11 See SNA, 1993, S. 40 f.; *D. Brümmerhoff*, Volkswirtschaftliche Gesamtrechnungen, München ^{5}1995, S. 77 f.

12 *A. Wagner*, Grundlegung der politischen Ökonomie (Lehr- und Handbuch der politischen Ökonomie, Bd. 1), Leipzig ^{3}1892, S. 895.

measuring economic aggregates by including one sort of taxes while ignoring others must lead to distorted results.

A conceptual problem is the identification of production and import taxes. The SNA's definition is:

> Taxes on production and imports consist of:
> taxes on products payable on goods and services when they are produced, delivered, sold, transferred or otherwise disposed of by their producers; they include taxes and duties on imports [...];
> plus other taxes on production, consisting mainly of taxes on the ownership or use of land, buildings or other assets used in production or on the labour employed, or compensations of employees paid.
> Taxes on the personal use of vehicles, etc., by households are recorded under current taxes on income, wealth, etc. [13]

Hence our first task is to examine what 19th century taxes fall into this definition. Table 1 reports the relevant categories of taxes. The left-hand column reports the taxes as they were by and large classified in most early 20th century fiscal statistics. A plus- or minus-sign in the right-hand column indicates whether I classified the tax as a production and import tax, or not.

Table 1: German Production and Import Taxes in the Late 19th and Early 20th Centuries

German	English	
Direkte Steuern = Besitzsteuern	direct taxes	
Personensteuern = Subjektsteuern	personal taxes	
- Einkommen-, Körperschaftsteuer	- income, corporate tax	-
- Vermögensteuer = Ergänzungsteuer (Prussia)	- capital tax	-
- Kapitalrentensteuer	- capital gains tax	-
- Erbschaftsteuer	- inheritance tax	-
Realsteuern = Objektsteuern	impersonal taxes	
- Grundsteuer	- real property tax	+
- Gebäudesteuer	- buildings tax	+
- Wohnsteuer, Mietsteuer	- rental tax	+[a]
- Gewerbesteuer	- trade tax	+
- Betriebsteuer	- operating tax	+
Indirekte Steuern	indirect taxes	
Aufwandsteuern	expenditure taxes	
- Hundesteuer	- dog tax	+[b]
- Vergnügungs-, Luxussteuer	- luxury tax	+
Verkehrsteuern	transactions taxes	
- Grundbesitzwechselsteuer	- land transfer tax	+
- Straßen-, Brückenzölle	- toll fees for roads and bridges	+
Verbrauchsteuern	consumption taxes	
- Malz- und Biersteuer	- malt and beer tax	+
- Schlacht- und Fleischsteuer	- butchery tax	+
Zölle	customs duties	+

Notes: [a] not if levied as a poll tax, [b] see footnote 14.

13 SNA, 1993, S. 169; see for Germany: *D. Brümmerhoff/H. Lützel (Hg.)*, Lexikon der Volkswirtschaftlichen Gesamtrechnungen, München ²1997, S. 352 f.

Thus revenues from production and import taxes may be calculated in two ways: either directly by adding up revenues from impersonal taxes, indirect taxes and customs duties, or indirectly by subtracting personal tax revenues from total tax revenues. This looks trivial, but we will see below that often the data are not available, and that especially the common practice of levying municipal surtaxes (*Umlagen*) on direct state taxes will cause problems.[14]

In how far did subsidies play a role in the late Empire? The only estimate we have is from Hoffmann, who, according to his references, checked the budgets of the *Reich* and the largest *Länder*.[15] From his figures it seems that subsidies were negligible before WWI. Between 1901 and 1913, they average a mere 6 mio. M. In contrast, from a survey of the *Statistisches Reichsamt* it appears that subsidies in 1913 may have amounted to some 30 mio. M (all governmental units).[16] However, even this figure still is very low compared with our final result for production and import tax revenues in 1913 (2.9 bn M, see Table 10 below). Moreover, if there is a bias in this latter figure, it is a downward one because of possible omission of taxes collected from small municipalities which escaped the attention of contemporary statistical surveys. Hence subsidies are omitted altogether from this study.

III. Sources, Methods and Results

The fiscal system of Wilhelmine Germany suffered from political controversies about her constitutional balance of power.[17] This is reflected by the fact that neither the *Reichsschatzamt* (treasury) nor the *Kaiserliches Statistisches Amt* (statistical office) were able to build up a central fiscal statistic. After all, the *Kaiserliches Statistisches Amt* managed to compile the states' budgets and tax revenues from 1901 onwards. But the municipal revenues were not recorded centrally before 1925. Several states disclosed quite satisfactory information on municipal finances, such as Saxony, Baden and Hesse. But Prussia, which accounted for nearly two thirds of total German population, did not succeed in assembling the data from its municipalities, especially the smaller ones (except 1911). And Bavaria's municipal fiscal statistics were in a similar state.

A central fiscal statistic was finally built up by the *Statistisches Reichsamt* in the second half of the 1920s. In order to have a benchmark for comparisons of Weimar's fiscal results to the Empire's, the treasury had ordered by decree that the public finances of the fiscal

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14 A special case is the dog tax which was regarded as an indirect tax. However, in contrast to most luxury taxes it was collected directly from the dog's owner, i.e. the final 'consumer'. Like today's use of vehicles it is not clear whether the use of dogs in the early 20th century should be regarded as use of an investment good (e.g. shepherds) or pets. As total dog tax revenues were insignificant, and for practical reasons, I decided to interprete it as a production tax. Total dog taxes in 1913 amounted to 20 mio. M only; see *Statistisches Reichsamt*, Finanzen und Steuern im In- und Ausland. Ein statistisches Handbuch, Berlin 1930, S. 226 f.

15 *Hoffmann u.a.*, Das Wachstum der deutschen Wirtschaft, S. 803.

16 *Statistisches Reichsamt*, Die Ausgaben und Einnahmen der öffentlichen Verwaltung im Deutschen Reich für die Rechnungsjahre 1913/14, 1925/26 und 1926/27 (Einzelschriften zur Statistik des Deutschen Reichs, Bd. 10), Berlin 1930, S. 4 f., Sp. 3, 27*.

17 See *J. v. Kruedener*, The Franckenstein Paradox in the Intergovernmental Fiscal Relations of Imperial Germany, in: *P.-C. Witt (Hg.)*, Wealth and Taxation in Central Europe. The History and Sociology of Public Finance (German Historical Perspectives, Bd. 2), Leamington Spa 1989, S. 111-123; *E. Schremmer*, Taxation and Public Finance: Britain, France, and Germany, in: Cambridge Economic History of Europe, Bd. 8, Cambridge 1989, S. 315-494; *ders.*, Steuern und Staatsfinanzen während der Industrialisierung Europas. England, Frankreich, Preußen und das Deutsche Reich, Berlin 1994.

year 1913/14[18] be reconstructed. The methods and final results were published in detail in a supplement of the series *Statistik des Deutschen Reichs* and summarized in a handbook.[19]

The *Reichsamt*'s recalculation for 1913 was very thorough. In contrast to the practice of some states' statistical offices it did not discriminate between ordinary and extraordinary expenditures and revenues (which is economically irrelevant), and it preferred the more meaningful gross concept to the net concept.[20] However, three issues which made sense from the perspective of the 1920s cause problems for our analysis. One is that the *Reichsamt* created a common scheme for all tax revenues and published the figures accordingly. As the *Reichsamt*'s denomination of certain taxes was different from that of the state authorities in 1913, it is sometimes difficult to link the *Reichsamt*'s values for 1913 backward by use of the states' statistical publications. Another problem is that the *Reichsamt* converted the values for 1913 to 1925 territory using the results of the population census of 1910. Although the *Reichsamt* disclosed the transformation ratios there is still scope for slight mistakes because some of the tiny states were merged in larger ones after WWI. Finally, and for obvious reasons, the *Reichsamt* did not reconstruct the tax revenues of Alsace-Lorraine.

To overcome these problems it is useful to consult a study published by Wilhelm Gerloff (1880-1954) in 1916, then professor of economics and statistics in Innsbruck. By order of the treasury Gerloff compiled a central tax revenue survey for the fiscal year 1913 which was broken down to all three governmental units. Although his data do not allow to identify production taxes[21] his aggregated tax revenue figures are a useful benchmark for our *Reichsamt* figures re-transformed to the territory of 1913. Moreover, his analysis included Alsace-Lorraine. Unfortunately, Gerloff did not reveal his sources. For this purpose we have to consult yet another study. Otto Most (1881-1971), then director of the statistical office of the city of Düsseldorf, compiled a special study on municipal finances for the *Verein für Socialpolitik* in 1910. Due to the confinement to larger municipalities for Prussia, the coverage for that state was only 36 per cent of the population, and thus the data of Most are of little use either. But in contrast to the studies of Gerloff and the *Reichsamt*, Most described his sources in detail. Finally, his study gives important (though not comprehensive) information on what municipal taxes were levied in what state under what name. Hence, whereas the *Reichsamt*'s study provides us with a quantitative benchmark for 1913 which can be checked by Gerloff's figures, Gerloff in turn has the latest data for Alsace-Lorraine, and Most describes the taxation structure and the data sources.

Table 2 shows the results of re-transforming the *Reichsamt*'s figures for 1913 to the territory of 1913 and comparing them with Gerloff's:[22]

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18 The fiscal year ran from 1 April to 31 March. For the sake of simplicity I will use full years, i.e. 1913 for 1913/14, etc.

19 *Statistisches Reichsamt*, Ausgaben und Einnahmen; *dass.*, Finanzen und Steuern.

20 The gross concept requires the disclosure of total revenues, whereas the net concept allows subtraction of expenditures which are directly related to the revenues; see *O. Most*, Die Gemeindefinanzstatistik in Deutschland. Ziele, Wege, Ergebnisse (Gemeindefinanzen in Deutschland, Bd. 2.2) (Schriften des Vereins für Socialpolitik, Bd. 127,2), Leipzig 1910, S. 140-142.

21 For Prussia, Bavaria and Alsace-Lorraine Gerloff did not break up municipal direct taxes in personal and impersonal taxes; see *W. Gerloff*, Die steuerliche Belastung in Deutschland während der letzten Friedensjahre. Gutachten dem Staatssekretär des Reichsschatzamts erstattet, Berlin 1916, S. 58.

22 Using the transformation ratios published by *Statistisches Reichsamt*, Ausgaben und Einnahmen, S. 14*, the figures for 1913 are re-transformed to 1913 territory as follows: the figures for the *Reich* are multi-

Table 2: Tax Revenues, Germany 1913 (mio. M.)

	Germany i	*Reich* ii	*Länder*[a] iii	*Kommunen*[b] iv
Gerloff				
total taxes[c]	4,837.6	2,128.3	1,122.3	1,543.4
income taxes	n.a.	0.0	683.0	n.a.
production and import taxes	n.a.	1,766.4	335.9	n.a.
Statistisches Reichsamt[d]				
total taxes	4,536.3	1,779.7	1,067.5	1,689.1
income taxes	1,522.7	0.0	656.7	866.0
production and import taxes	2,867.1	1,732.5	300.9	833.6

Notes: [a] including Hansestädte, [b] including *Gemeindeverbände* (associations of municipalities), [c] It is unclear why Gerloff's subtotals on his pp. 55, 57 and 59 do not add up correctly, [d] re-transformed to 1913 territory.

Sources: *Gerloff*, Die steuerliche Belastung, S. 50-55; *Statistisches Reichsamt*, Ausgaben und Einnahmen, S. 14*; *dass.*, Finanzen und Steuern, S. 226 f., 234 f.; Table 9 below.

Prima facie the differences for the *Reich*'s total tax revenues and thus Germany's as a whole look disturbing. But a closer examination of Gerloff's figures for the *Reich* reveals that in contrast to official practice, he split 1914's *Wehrbeitrag*[23] of 637 Mio. M and allocated 315 Mio. M to 1913, which explains the whole differences except negligible residuals of 14 mio. M in col. i and 34 mio. M in col. ii. The differences between the subtotals for the *Länder* and the *Kommunen* also nearly cancel out if one compares the aggregates (2.67 bn M vs 2.76 bn M). Thus we can infer that our re-transformation of the *Reichsamt*'s figures to the territory of 1913 is reliable.

Incidentally, the data of the *Statistisches Reichsamt* in Table 2 illustrate the structure of Germany's pre-WWI tax system quite distinctly: except for the inheritance tax introduced in 1906, the *Reich*'s tax revenues came exclusively from indirect taxes and (total German) costums duties, whereas the *Länder* made extensive use of the then modern income tax. In contrast, a relatively large fraction of the tax revenues collected by the *Kommunen* came from classical impersonal taxes like the real property tax the buildings tax, and the trade tax.

1. Production and Import Taxes of the *Reich* and the *Länder*, 1901-13

The next step is to find contemporary statistical sources which can be linked to the 1913 benchmark figures derived from the 1930 survey of the *Statistisches Reichsamt* in Table 2. Surprisingly, there are two different series for the tax revenues of the *Reich*. According to the *Statistisches Jahrbuch für das Deutsche Reich* total tax revenues of the *Reich* in 1913 amounted to 1.66 bn M, whereas the figures in the *Vierteljahreshefte zur Statistik des Deut-*

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plied by 1/(1-0.1098). The figures for the Prussian and Bavarian states and municipalities are multiplied by 1/(1-0.1288) and 1/(1-0.0116), respectively. In addition, figures for Alsace-Lorraine are added from Table 9 below.

23 The *Wehrbeitrag* was a hybrid of a capital tax and an income tax (and thus a personal tax) levied for armaments purposes; see *F.W. Zimmermann*, Die Finanzwirtschaft des Deutschen Reichs und der deutschen Bundesstaaten zu Kriegsausbruch 1914, Berlin 1916, S. 41, 68.

schen Reichs add up to 1.96 bn M.[24] Our figure derived from the survey of the *Statistisches Reichsamt* is well between, 1.78 bn M (see Table 2, col. ii). The *Reichsamt* did not mention these differences in its publications. In a survey article, Most argued that for a couple of reasons the concept underlying the publication in the *Vierteljahreshefte* was superior to that of the *Jahrbuch*. Hence I used the figures of the former source and concatenated them to the *Reichsamt*'s re-transformed figures for 1913.[25] Col. i in Table 3 shows the results for total tax revenues of the *Reich* and col. ii for the revenues from production and import taxes. The only difference between both series is the inheritance tax mentioned above.

To find reliable tax revenue data for the states is not problematic. Here we again have re-transformed benchmark values for 1913, but fortunately only one series which was published together with the *Reich*'s finances in the *Vierteljahrshefte* for the years from 1901 onwards. That source's figure for total tax revenues in 1913 amounts to 1.14 bn M whereas the *Reichsamt*'s re-transformed figure is 1.07 bn M (both including the *Hansestädte*). I have chosen the same concatenation procedure as for the *Reich*. Cols iii to v of Table 3 display the results.

Table 3: Production and Import Tax Revenues, *Reich* and *Länder* 1901-13 (mio. M)

	Reich		*Länder*		
	total taxes and customs duties i	production and import taxes ii	total taxes iii	income taxes iv	production taxes v
1901	961.6	961.6	537.8	256.6	215.2
1902	958.5	958.5	561.3	270.4	218.9
1903	954.1	954.1	601.9	286.8	231.6
1904	957.1	957.1	623.6	293.1	238.7
1905	1,075.8	1,075.8	662.4	322.4	242.7
1906	1,167.8	1,163.6	684.1	346.4	249.5
1907	1,283.3	1,257.1	719.2	390.2	248.3
1908	1,246.7	1,216.7	763.8	418.2	241.9
1909	1,459.5	1,421.1	853.0	476.3	263.2
1910	1,616.8	1,574.2	934.8	503.5	310.8
1911	1,754.4	1,709.5	988.2	533.2	333.4
1912	1,758.6	1,717.3	1,028.3	615.8	304.0
1913	1,779.7	1,732.5	1,067.5	656.7	300.9
Δ 1901-13	5.26 %	5.03 %	5.88 %	8.14 %	2.83 %

Note: last line average annual growth rate 1901 to 1913.

Sources: Vierteljahrshefte (1906-19). All figures concatenated to the 1913 figures of Table 2.

A comparison of cols iv and v underlines the dominant and increasing role of income tax revenues for the public finances of the states. The growth rates of impersonal and indirect (= production) tax revenues were much lower.

24 Statistisches Jahrbuch für das Deutsche Reich, 1918, S. 65; *Kaiserliches Statistisches Amt (Hg.)*, Vierteljahreshefte zur Statistik des Deutschen Reichs, Berlin 1919, S. II.114.

25 *O. Most*, Finanzstatistik, in: *F. Zahn (Hg.)*, Die Statistik in Deutschland nach ihrem heutigen Stand. Festschrift Georg v. Mayr, Bd. 1, München 1911, S. 759-824, hier S. 764 f.

The remaining - and most difficult - task of this study is to reconstruct municipal production taxrevenues.

2. Production Taxes of the *Kommunen*, 1901-13

The largest states in Wilhelmine Germany were Prussia (62 per cent of total German population in 1910), Bavaria (11 per cent), Saxony (7 per cent), Württemberg (4 per cent), Baden (3 per cent) and Alsace-Lorraine (3 per cent).[26] Given Prussia's weight, the quality of the estimates for municipal tax revenues presented below stand and fall with those for Prussia, which will therefore receive more attention than the other states. As will become clear below, the most difficult problem of identifying production tax revenues in the 19th and early 20th centuries is to discriminate between revenues from personal taxes and from impersonal taxes. Gerloff's survey for 1913 did this for Saxony, Württemberg and Baden, but not for Prussia, Bavaria and Alsace-Lorraine, for which he only gave aggregate figures. Thus we have to find other data sources from which this split can be achieved.[27]

The case of Prussia is further complicated by the fact that in addition to *Kommunen*, Prussia also had *Provinzialverbände* (provincial associations) and *Landkreise* (municipal associations) which levied surtaxes on direct state taxes. Except for the fiscal year 1911, Prussia was not able to gather comprehensive data of its municipal tax revenues.[28] For the larger municipalities (population 10,000 and above) exist data for 1895, 1899, 1907, 1910 and 1912. As the fiscal data published by the *Statistisches Reichsamt* in 1930 were also broken down by *Länder*, we have again a benchmark figure for 1913 (transformed to 1913 territory by the procedure described above). However, the *Reichsamt*'s figure cannot be broken down further in *Provinzialverbände*, *Landkreise* and *Kommunen* for which other sources have to be consulted. In Table 4, the data which are directly available from contemporary statistical sources are emphasized in bold.

All other figures are estimated as follows. The first task is to decompose the 1913 total in subtotals for the three different municipal bodies. The missing value in the last line of col. xiv is estimated by assuming the same growth rate for impersonal taxes 1911 to 1913 as for the sum of direct taxes in col. xv. This done, we have all values for large and small *Kommunen* in 1913 (added up in cols vii and viii). The next question is how the direct taxes of the *Provinzialverbände* and the *Landkreise* (cols iii and vi) can be broken down in personal and

26 Statistisches Jahrbuch für das Deutsche Reich, 1913, S. 3.

27 Note that the tax revenue data in the Statistisches Jahrbuch deutscher Städte are not sufficient for our purposes. One reason is that this periodical did not publish relevant data except the last years preceding WWI. The other is that urban taxpayers of course were much more prosperous than rural taxpayers; see *F. Zahn*, Finanzstatistik, in: Handwörterbuch der Staatswissenschaften, Bd. 4, Jena [4]1927, S. 107-151, hier S. 128. As this source does not produce an estimate of the split of total (or ideally production) tax burden between the two groups, it is impossible to derive meaningful estimates for total German municipal (production) tax revenues from it.

28 See for the manifold practical problems of the *Preußisches Statistisches Landesamt*: *Most*, Gemeindefinanzstatistik, S. 26-35.

Table 4: Municipal Tax Revenues, Prussia 1895-1913 (mio. M)

	Prussia	*Provinzialverb.*		*Landkreise*			all *Kommunen*		large *Kommunen*				small *Kommunen*		
	product. taxes i	impers. taxes ii	total taxes iii	indirect taxes iv	impers. taxes v	direct taxes vi	indirect taxes vii	impers. taxes viii	indirect taxes ix	impers. taxes x	personal taxes xi	direct taxes xii	indirect taxes xiii	impers. taxes xiv	direct taxes xv
1895	*164,6*	3,9	15,4	0,4	19,9	44,9	*23,1*	*117,3*	**19,8**	**85,3**	**105,9**	**191,2**	*3,3*	*32,0*	*53,6*
1896	*177,0*	4,7	16,7	0,5	20,8	47,0	*25,7*	*125,3*	22,0	91,2	116,3	*207,4*	3,7	34,2	58,8
1897	*190,4*	5,5	18,2	0,6	21,8	49,2	*28,5*	*134,0*	24,4	97,4	127,7	*225,1*	4,1	36,5	64,6
1898	*204,9*	6,6	19,8	0,7	22,8	51,5	*31,7*	*143,2*	27,1	104,1	140,2	*244,3*	4,6	39,0	70,9
1899	*220,7*	7,8	21,6	0,8	23,9	53,9	*35,2*	*153,0*	**30,2**	**111,3**	**153,9**	**265,2**	*5,1*	*41,7*	*77,8*
1900	*236,0*	9,2	23,5	0,9	25,0	56,4	*37,9*	*163,0*	32,4	118,8	164,6	*283,5*	5,4	44,2	82,5
1901	*252,6*	10,9	25,6	1,0	26,2	59,1	*40,7*	*173,7*	34,8	126,9	176,1	*303,0*	5,9	46,8	87,6
1902	*270,4*	13,0	27,9	1,2	27,4	61,8	*43,7*	*185,0*	37,4	135,5	188,4	*323,9*	6,3	49,6	92,9
1903	*289,6*	*15,4*	**30,4**	**1,4**	*28,7*	**64,7**	*47,0*	*197,1*	40,2	144,6	201,6	*346,2*	6,8	52,5	98,6
1904	*310,5*	18,3	33,1	1,6	30,1	67,8	*50,5*	*210,0*	43,2	154,4	215,6	*370,0*	7,3	55,6	104,6
1905	*333,0*	21,7	36,1	1,9	31,5	71,0	*54,3*	*223,8*	46,4	*164,8*	*230,7*	**395,5**	7,8	58,9	110,9
1906	*352,1*	25,7	39,3	2,2	33,0	74,3	*58,3*	*232,9*	49,9	170,5	238,7	*409,2*	8,4	62,4	117,7
1907	*382,5*	30,5	42,8	12,4	34,5	77,8	*62,7*	*242,5*	**53,6**	**176,4**	**246,9**	**423,3**	*9,0*	*66,1*	*124,9*
1908	*414,1*	*36,1*	**46,6**	**14,5**	*36,1*	**81,4**	*68,4*	*271,4*	58,6	197,4	278,1	*475,5*	9,8	74,0	140,6
1909	*466,3*	33,5	49,8	17,1	37,4	84,2	*74,7*	*303,6*	64,0	220,9	313,3	*534,1*	10,7	82,8	158,4
1910	*511,2*	31,1	53,3	**20,1**	*38,6*	**87,1**	*81,6*	*339,7*	**69,8**	**247,1**	**352,9**	**600,0**	*11,7*	*92,6*	*178,5*
1911	*530,2*	*28,8*	**56,9**	**22,2**	*40,0*	**90,2**	**77,6**	**361,6**	**66,4**	**263,0**	**367,2**	**630,2**	**11,2**	**98,6**	**185,7**
1912	*551,6*	31,1	61,4	22,6	41,9	94,5	*80,0*	*375,9*	**68,5**	**273,4**	**398,1**	**671,5**	*11,5*	*102,5*	*201,3*
1913	**581,4**	*33,5*	**66,2**	**23,0**	*44,0*	**99,1**	**79,1**	*401,9*	**68,6**	**285,3**	**424,5**	**709,7**	**10,5**	*116,6*	**219,7**

Notes: Bold values from sources listed below, values in italics summations or calculated by assumptions explained in text, all other estimated by assumption of constant growth rates between previous and next bold or italic value in the column.

- Col. i: sum of all indirect and impersonal taxes, i.e. cols ii, iv, v, vii and viii.
- Cols ii, v: surtaxes on *Grundsteuer*, *Gebäudesteuer*, *Gewerbesteuer* and *Betriebsteuer*.
- Cols iii, vi: as cols ii and v, in addition surtaxes on *Einkommensteuer*.
- Col. iv: until 1906 *Hundesteuer* only, then in addition *Umsatz-*, *Wertzuwachs-* and *Schankkonzessionsteuer*. Values for the *Hundesteuer* 1895-1902 and 1904-06 calculated using 1903-08 growth rates.
- Col. vii, ix, xiii: *Umsatz-*, *Wertzuwachs- Schankkonzessionsteuer*, *Bier-, Brau- und Malzsteuern*, *Lustbarkeitsteuern*, *Hundesteuer* and *sonstige indirekte Steuern*.
- Col. viii, x, xiv: *Grundsteuer*, *Gebäudesteuer*, *Gewerbesteuer* and *Betriebsteuer*.
- Cols x, xi: split between impersonal and personal taxes (= *Einkommensteuer* here) 1905 assumed to be the same as in 1907.
- Col. xii: sum of cols x and xi.

Sources: 1913 *Statistisches Reichsamt*, Ausgaben und Einnahmen, S. 106. *Provinzialverbände*: *Königliches Statistisches Landesamt (Hg.)*, Statistisches Jahrbuch für den Preußischen Staat, Berlin 1912, S. 589; *Königliches Statistisches Landesamt (Hg.)*, Zeitschrift des Königlich Preußischen Statistischen Landesamts, Berlin 1917, S. 7*. *Landkreise*: Finanzstatistik, 1912, S. 26; Zeitschrift 1913, S. XXVIII. *Kommunen*: 1895, 1899 *R. v. Kaufmann*, Die Kommunalfinanzen (Grossbritannien, Frankreich, Preussen), Bd. 2: Die Deckungsmittel des Bedarfs, Leipzig 1906, S. 362; 1905, 1910 Zeitschrift 1912, S. 54 f., 86, 1914, S. 222; 1907 *Most*, Gemeindefinanzstatistik, S. 203 f.; 1911, 1913 *Gerloff*, Die steuerliche Belastung, S. 62; Zeitschrift 1918, S. 8*, 1920, S. 12 f., 117 f.; 1912 Statistisches Jahrbuch 1914, S. 196, 1915, S. 376.

Table 5: Municipal Tax Revenues, Bavaria 1900-13 (mio. M)

	Bavaria				*Kreise*		*Distr.*	*Kommunen*					
	prod. tax i	imp. tax ii	ind. tax iii	total tax iv	*Umlagen* v	pers. tax vi	*Umlagen* vii	*Umlagen* viii	pers. tax ix	cons. tax x	trans. tax xi	lux. tax xii	dog tax xiii
1900	*42,2*	*27,9*	*14,3*	*71,1*	**11,7**	*9,0*	**6,4**	**38,7**	*20,0*	**11,6**	0,4	*1,3*	**1,0**
1901	*44,5*	*30,6*	*14,0*	*76,2*	**11,8**	*9,1*	**6,7**	**43,8**	*22,6*	**11,1**	0,5	*1,3*	1,0
1902	*46,5*	*32,3*	*14,1*	*80,2*	**12,7**	*9,8*	**6,9**	**46,4**	*23,9*	**11,2**	0,6	*1,3*	1,0
1903	*47,6*	*33,5*	*14,1*	*82,8*	**14,0**	*10,8*	**7,3**	**47,4**	*24,4*	**11,0**	0,7	*1,3*	1,0
1904	*48,6*	*34,1*	*14,5*	*84,4*	**14,3**	*11,0*	7,5	**48,1**	*24,8*	**11,3**	0,9	*1,3*	1,1
1905	*50,0*	*35,1*	*14,9*	*87,1*	**15,2**	*11,7*	**7,7**	**49,3**	*25,4*	**11,5**	1,0	*1,3*	**1,1**
1906	*52,8*	*37,5*	*15,4*	*93,1*	**16,8**	*13,0*	**8,0**	**52,9**	*27,3*	**11,7**	1,2	*1,3*	**1,1**
1907	*55,9*	*40,4*	*15,5*	*99,1*	**17,4**	*13,4*	**8,5**	**57,8**	*29,8*	**11,6**	1,5	*1,3*	**1,1**
1908	*59,2*	*43,5*	*15,6*	*106,8*	**20,0**	*15,4*	**8,6**	62,6	*32,3*	**11,5**	**1,8**	*1,3*	**1,1**
1909	*62,8*	*46,9*	*15,9*	*114,1*	**21,3**	*16,4*	**9,2**	**67,8**	*34,9*	**11,6**	**1,9**	*1,3*	**1,1**
1910	*64,5*	*51,4*	*13,2*	*120,8*	**22,2**	*17,1*	**9,5**	**75,9**	*39,2*	**8,3**	**2,4**	*1,3*	**1,1**
1911	*67,7*	*53,6*	*14,1*	*126,5*	**23,6**	*18,1*	**9,9**	**78,9**	*40,7*	**8,0**	**3,7**	*1,3*	**1,2**
1912	*80,3*	*65,1*	*15,3*	*151,1*	**24,5**	*18,8*	**10,6**	**100,7**	*51,9*	**8,1**	**3,3**	**1,4**	**2,6**
1913	**84,1**	**66,8**	**17,3**	**156,8**	**28,0**	**21,6**	**12,3**	**99,2**	**51,1**	**9,3**	**4,2**	**1,3**	**2,6**

Notes: Bold values from sources listed below, values in italics summations or calculated by assumptions explained in text, all other estimated by assumption of constant growth rates between previous and next bold or italic value in the column.

- Col. i: production taxes, sum of cols ii and iii.
- Col. ii: impersonal taxes (= v + vii + viii - vi - ix).
- Col. iii: indirect taxes, sum of cols x to xiii.
- Col. iv: total municipal tax revenues, i.e. sum of direct taxes (here: *Umlagen*) of *Kreise*, *Distriktgemeinden* and *Kommunen* plus indirect taxes.
- Cols vi and ix: income tax, values for 1900-12 assumed to be constant (= 1913) fraction of cols v and viii, respectively.
- Col. x: consumption taxes, primarily on beer.
- Col. xi: transactions taxes, values 1900-07 calculated under assumption of constant 1908-13 growth rates.
- Col. xii: luxury tax, values 1900-11 assumed to be 1.3 mio. M.

Sources: *Königliches Statistisches Bureau (Hg.)*, Statistisches Jahrbuch für das Königreich Bayern, München 1903-1919; *Königliches Statistisches Landesamt (Hg.)*, Zeitschrift des Königlich Bayerischen Statistischen Landesamts, München 1909, S. 80-86, 1915, S. 131-179; *Königliches Statistisches Landesamt (Hg.)*, Die bayerischen Kreisfinanzen (Beiträge zur Statistik des Königreichs Bayern, Bd. 75), München 1909, S. 26 f., 50 f.; *Königliches Statistisches Landesamt(Hg.)*, Die bayerischen Distriktsfinanzen (Beiträge zur Statistik des Königreichs Bayern, Bd. 74), München 1910, S. 78*, 43; *Königliches Statistisches Landesamt (Hg.)*, Die bayerischen Gemeindefinanzen (Beiträge zur Statistik des Königreichs Bayern, Bd. 76), 2 Bde., München 1911, S. 397; 1913 *Bayerisches Statistisches Landesamt (Hg.)*, Bayerns Finanzen und Steuerkraft 1913 bis 1938. Finanzen und Steueraufkommen der bayerischen Gebietskörperschaften 1913 bis 1938 mit besonderer Berücksichtigung der staatlichen und gemeindlichen Steuerkraft (Beiträge zur Statistik Bayerns, Bd. 135), München 1942, S. 135.

impersonal taxes. For the *Landkreise* respective data are available for 1908.[29] On the assumption that this fraction was constant, the respective values for 1903, 1910, 1911 and 1913 can be calculated likewise. The corresponding value for the *Provinzialverbände* is simply the difference between total production taxes in 1913 (col. i) and the subtotals in cols iv, v, vii and viii. We then have a complete breakdown of the 1913 total benchmark value in subtotals for the three different public bodies.

The remaining values of Table 4 are calculated by assuming that the ratio of tax revenues in small municipalities to large municipalities in 1899, 1907, 1910 and 1912 was the same as in 1911. The missing values for 1900-04, 1906, 1908 and 1909 for the *Kommunen* are then estimated using constant growth rates between the preceding and next given value of the column. For the impersonal taxes of the *Provinzialverbände* in col. ii it is assumed that the ratio to col. iii is the same as in 1913. The remaining gaps for the *Provinzialverbände* and the *Landkreise* are then filled on the assumption of constant growth rates.

Bavaria's municipal taxes also went to three different municipal bodies, the *Kreise*, *Distrikte* and *Kommunen*. The most important municipal revenues came from surtaxes as well. In the contemporary publications of the *Bayerisches Statistisches Landesamt* these surtaxes were not broken down in the underlying direct taxes, i.e. income tax and capital gains tax on the one hand, and real property tax, buildings tax and trade tax on the other. Thus we have again the problem of splitting direct taxes in personal and impersonal taxes. This is achieved by means of a survey published in 1942, in which the *Landesamt* allocated the 1913 total figures of the *Reichsamt* to the three different municipal bodies. As in the case of Prussia the original figures are converted to the territory of 1913. Thus we have a reliable picture of the municipal tax revenue structure in Bavaria 1913.

The problem is to link these figures to Bavaria's contemporary statistics, which turn out to be a historian's nightmare: the *Landesamt* published expected revenues in one year, actual revenues in the next, revenues from minor taxes only sporadically, and all scattered in several publications. However, at least the total amount of the surtaxes is available. What is missing is the breakdown in personal and impersonal taxes, which hence has been assumed to be the same as in 1913.

After Hesse, the state of Saxony was second in Germany to introduce a successful income tax in the 1870s. Its municipal tax system was dominated by the income tax as well. The Saxon statistical office did not publish continuous municipal finance surveys. However, it carried through two detailed surveys covering the fiscal years 1899-1901 and 1908-10. Their detailed breakdown of tax revenues allows to extract production taxes for these years without problems. The sum of total tax revenues minus the revenues of the income tax and a poll tax (*Kopfsteuer*) gives the production taxes.

29 *Königlich Preußisches Statistisches Landesamt (Hg.)* Finanzstatistik der preußischen Landkreise für das Rechnungsjahr 1908 (Preußische Statistik, Bd. 226), Berlin 1912, S. 26.

Table 6: Municipal Tax Revenues, Saxony 1899-1913 (mio. M)

	production taxes	income tax	total taxes
1899	17.9	39.8	57.7
1900	17.9	43.1	61.1
1901	18.0	46.4	64.4
1902	*18.6*	*48.5*	*67.1*
1903	*19.2*	*50.7*	*69.9*
1904	*19.8*	*53.0*	*72.8*
1905	*20.4*	*55.4*	*75.8*
1906	*21.0*	*57.9*	*78.9*
1907	*21.7*	*60.5*	*82.2*
1908	22.3	63.2	85.6
1909	23.8	70.9	94.6
1910	24.6	77.8	102.4
1911	*26.6*	*79.1*	*105.7*
1912	*26.6*	*82.4*	*109.0*
1913	24.2	88.1	112.5
Δ 1901-13	2.49 %	5.80 %	4.76 %

Notes: Income tax includes poll tax. Values in italics calculated by assumption of constant growth rates.

Sources: 1899-1901, 1908-10 Zeitschrift des Königlich Sächsischen Statistischen Landesamts, Dresden 1903, S. 168 f., 1913, S. 95; 1913 *Statistisches Reichsamt*, Finanzen und Steuern, S. 234.

Table 7: Municipal Tax Revenues, Württemberg 1901-13 (mio. M)

	production taxes i	*Umlagen* ii	rental tax iii	consump. tax (gross) iv	consump. tax (net) v	land transfer tax vi	dog tax vii	*Wandergewerbest.* viii	*Zuwachssteuer* ix
1901	30,2	*24,3*	*1,0*	*3,2*	2,6	*0,9*	*0,8*	*0,1*	-
1902	31,7	25,8	*1,0*	*3,2*	2,6	*0,9*	*0,8*	*0,1*	-
1903	32,9	*26,8*	*1,0*	*3,3*	2,7	*0,9*	*0,8*	*0,1*	-
1904	34,1	28,0	*1,0*	*3,2*	2,6	*0,9*	*0,9*	*0,1*	-
1905	30,3	24,9	*1,0*	*2,5*	2,0	*0,9*	*0,9*	*0,1*	-
1906	31,9	*26,4*	*1,1*	*2,5*	2,0	*0,9*	*0,9*	*0,1*	-
1907	33,6	27,9	*1,1*	*2,6*	2,1	*0,9*	*0,9*	*0,1*	-
1908	35,7	30,4	*1,1*	2,2	2,0	1,0	*1,0*	0,1	-
1909	38,2	32,7	*1,1*	2,1	1,9	1,1	*1,0*	0,2	-
1910	39,6	34,3	1,1	1,7	1,5	1,2	1,0	0,2	-
1911	42,4	36,4	1,2	2,0	1,2	1,2	1,0	0,2	0,4
1912	44,1	38,5	1,2	1,4	1,1	1,0	1,1	0,2	0,8
1913	45,6	40,1	1,4	1,5	n.a.	0,8	1,1	0,2	0,4

Notes: Estimated values in italics.
- Col. i: sum of cols ii to ix except v.
- Col. iv: values for 1901-07 calculated from col. v using the average ratio between gross and net consumption tax revenues 1908-12.
- Col. ix: not levied until 1911.

Sources: Königlich Statistisches Landesamt (Hg.), Statistisches Handbuch für das Königreich Württemberg, Stuttgart 1908/09, S. 359, 1912/1913, S. 292, 1914-1921, S. 210; 1913, *Statistisches Reichsamt*, Finanzen und Steuern, S. 235.

The case of Württemberg is also unproblematic because here the *Umlagen* were surtaxes to impersonal state taxes only, that is on real property, buildings and trade taxes, but not on income and capital taxes.[30] The only problem is that the revenues of less important taxes were not published before 1908/10. They have been estimated by using the growth rates of 1908-12.

Baden's municipalities relied heavily on the classical impersonal taxes to finance their expenditures. Indirect taxes were negligible. The published actual revenues from *Umlagen* were not split in personal and impersonal taxes, but the preliminary budgets fortunately were. Thus we can use the known split of total expected direct taxes into personal taxes (income and capital gains taxes) and impersonal taxes for the unknown split of effective direct tax revenues (cols iii minus iv). Again we see a more than proportional increase of income tax revenues.[31]

Table 8: Municipal Tax Revenues, Baden 1901-13 (mio. M)

	production taxes i	income tax ii	total taxes iii	total consump. taxes iv	sample consump. taxes v	*Umlagen* of which: vi	income tax vii	capital gains tax viii
1901	*16.9*	*5.1*	25.1	*1.6*	1.4	21.6	4.7	1.4
1902	*17.7*	*5.6*	26.5	*1.7*	1.5	23.4	5.3	1.5
1903	*18.7*	*5.7*	27.7	*1.7*	1.5	24.4	5.4	1.5
1904	*19.2*	*6.0*	28.6	*1.7*	1.5	24.9	5.5	1.6
1905	*20.0*	*6.4*	29.9	*1.8*	1.6	25.5	5.8	1.6
1906	*20.5*	*6.6*	30.9	*1.8*	1.6	26.2	6.0	1.7
1907	*22.6*	*7.7*	34.1	*1.9*	1.6	28.6	6.8	1.8
1908	*25.8*	*9.5*	40.2	1.9	1.7	35.5	8.8	2.8
1909	*27.4*	*10.3*	42.7	1.9	n.a.	37.3	9.4	2.8
1910	*29.2*	*11.1*	44.8	1.2	n.a.	40.1	10.2	3.0
1911	*30.5*	*12.3*	49.2	1.2	n.a.	43.8	11.2	4.8
1912	*32.0*	*13.3*	52.1	1.2	n.a.	46.0	12.0	5.1
1913	35.2	*14.1*	54.0	1.8	n.a.	49.4	13.3	5.4
Δ 1901-13	6.34 %	8.81 %	6.59 %					

Notes: Estimated values in italics.
- Col. i: consumption taxes plus effective *Umlagen* minus the ratio of expected personal taxes to expected *Umlagen*, that is cols iv + (vi-vii-viii) * (iii-iv) / (vi).
- Col. ii: cols vii * (iii-iv) / vi.
- Col. iii: effective *Umlagen* revenues plus consumption taxes in col. iv.
- Col. iv: values for 1901-07 concatenated with values in col. v.
- Col. v: sample of 10 large cities.
- Col. vi-viii: expected *Umlagen* revenues.

Sources: col. v *Most*, Gemeindefinanzstatistik, S. 231; 1913 cols i and iii *Statistisches Reichsamt*, Finanzen und Steuern, S. 235; all other Statistisches Jahrbuch für das Großherzogtum Baden, 1904/05, S. 687, 1906/07, S. 605, 615, 1912, S. 355, 1913, S. 371, 374, 1914/15, S. 460.

Alsace-Lorraine's state and municipal taxes relied on impersonal taxes and to a considerable amount on the *Oktroi*, a consumption tax taken over from the French system. The income

30 Mitteilungen des Königlich Statistischen Landesamts, Stuttgart 1912, S. 34.

31 The *Umlagen* of Baden's *Kreisverbände* were surtaxes on personal taxes only; see Statistisches Jahrbuch für das Großherzogtum Baden, Karlsruhe 1914/15, S. 454.

tax hardly mattered. The statistical information on the tax revenues of Alsace-Lorraine is scattered in various publications, but taken together fairly good. Especially, for several years the *Umlagen* were broken down in personal and impersonal taxes. For obvious reasons, the *Statistisches Reichsamt* did not reconstruct Alsace-Lorraine's municipal finances in the late 1920s. However, the study of Gerloff has data for Alsace-Lorraine in 1913.

Table 9: Municipal Tax Revenues, Alsace-Lorraine 1899-1913 (mio. M)

	Alsace-Lorraine					*Bezirke*		*Kommunen*			
	prod. taxes i	indirect taxes ii	total taxes iii	*Umlagen* iv	impers. taxes v	*Umlagen* vi	impers. taxes vii	*Umlagen* viii	impers. taxes ix	*Oktroi* x	dog tax xi
1899	*15.9*	*7.9*	*17.4*	*9.5*	*7.9*	**4.2**	**3.4**	**5.3**	**4.5**	**7.6**	**0.3**
1900	*16.3*	*8.1*	*18.1*	*10.1*	*8.2*	4.4	3.4	5.7	4.8	7.7	0.4
1901	*16.7*	*8.2*	*18.9*	*10.7*	*8.5*	4.6	3.5	6.1	5.0	7.8	0.4
1902	*17.2*	*8.3*	*19.7*	*11.3*	*8.9*	4.8	3.5	6.6	5.3	8.0	**0.4**
1903	*17.7*	*8.5*	*20.5*	*12.0*	*9.2*	5.0	3.6	7.0	5.6	**8.1**	**0.4**
1904	*18.5*	*8.9*	*21.7*	*12.7*	*9.6*	5.2	3.6	7.6	5.9	8.5	0.4
1905	*19.4*	*9.4*	*22.9*	*13.5*	*10.0*	**5.4**	**3.7**	**8.1**	**6.3**	**9.0**	**0.4**
1906	*20.4*	*9.5*	*24.2*	*14.7*	*10.9*	5.7	4.0	9.0	6.9	**9.0**	**0.4**
1907	*21.5*	*9.5*	*25.6*	*16.0*	*11.9*	6.0	4.3	10.0	7.6	**9.1**	**0.5**
1908	*22.6*	*9.6*	*27.0*	*17.5*	*13.0*	**6.4**	**4.7**	**11.1**	**8.3**	**9.1**	**0.4**
1909	*24.0*	*10.3*	*28.8*	*18.5*	*13.7*	**6.5**	**4.7**	**12.1**	**9.0**	**9.9**	**0.4**
1910	*23.5*	*8.6*	*28.9*	*20.3*	*14.9*	6.9	5.0	13.4	9.8	**7.9**	**0.7**
1911	*24.4*	*8.3*	*30.4*	*22.2*	*16.1*	7.4	5.3	14.8	10.8	**7.6**	**0.6**
1912	*25.5*	*8.0*	*32.3*	*24.3*	*17.5*	**7.9**	**5.7**	**16.4**	**11.8**	**7.4**	**0.6**
1913	**26.2**	**8.0**	**33.4**	**25.3**	*18.2*	*8.9*	*6.4*	**16.4**	*11.8*	*7.4*	0.6
Δ 1901-13	3.82 %		4.86 %								

Notes: Bold values from sources listed below, values in italics summations or calculated by assumptions explained in text, all other estimated by assumption of constant growth rates between the last and next bold or italic value in the column.
- Col. i: production taxes, sum of cols ii and v.
- Col. ii: indirect taxes, sum of cols x and xi plus *Wanderlagersteuer* (0.003 mio. M in 1913, hence ignored).
- Col. iii: total municipal tax revenues, sum of surtaxes (*Umlagen*) of *Bezirke* and *Kommunen* plus indirect taxes.
- Cols iv, v: sum of cols vi and viii, and vii and ix, respectively.
- Col. x: consumption tax.

Sources: Statistisches Bureau des Kaiserlichen Ministeriums für Elsass-Lothringen (Hg.), Statistisches Handbuch für Elsass-Lothringen, Straßburg 1902, S. 686 f., 737; *Eichelmann,* Das System der Gemeindebesteuerung in Elsaß-Lothringen, in: Gemeindefinanzen, Bd. I.1: System der Gemeindebesteuerung in Hessen, Württemberg, Baden, Elsaß-Lothringen, Bayern, Sachsen, Preußen (Schriften des Vereins für Socialpolitik, Bd. 126.1), Leipzig 1908, S. 172-212, hier S. 179, 187 f., *Statistisches Landesamt für Elsaß-Lothringen (Hg.),* Statistisches Jahrbuch für Elsass-Lothringen, Straßburg 1909-1913/14; *Most,* Gemeindefinanzstatistik, S. 237 f.; *Gerloff,* Die steuerliche Belastung, S. 87.

The remaining states accounted for 10 per cent of total population in 1910. However, their compound municipal tax revenues amounted to 100.2 mio. M in 1913, only 5.9 per cent of the total, and their compound production taxes 36.8 mio. M. (4.4 per cent of the total). The production tax figures for 1901-12 are calculated by assuming that the growth rates were the

same as the average for the six states discussed so far. An *un*weighted average is used because weighting would imply that the tax structure of the remaining states would resemble that of Prussia, which is not the case.[32] The results are shown in Table 10 (see next section).

IV. Concluding Remarks

The aim of this article was the reconstruction of the item 'taxes on production and on imports minus subsidies' which is a small but nevertheless important module for a reconstruction of Germany's national accounts in the industrialization process. We have seen that there are reliable and comprehensive data for 1913 which were reconstructed by the *Statistisches Reichsamt* in the late 1920s, and that the corresponding data for 1901-12 can be assembled from contemporary statistical sources. Concerning the reliability of the data, the preceding section should have shown that only the data for certain Prussian and Bavarian municipal units depend on the revenue structure of a single year, whereas the figures for the municipal tax revenues of all other states are based on several years with reliable data. Another minor problem might be the concatenation of the *Reich*'s figures to the 1913 figures of the *Statistisches Reichsamt*. In this respect we simply have to rely on the assumption that the methods and procedures of the *Statistisches Reichsamt* were superior to that of its predecessor. If this can be taken for granted, the quality of the data presented here can be assessed as good; and if not, the error is unlikely to be larger than 0.2 bn M. The only variable on which we have very little information is the amount of subsidies. However, as argued above, the amount in 1913 seems not to have been more than some 30 mio. M. Table 10 summarizes the results of this study.

Table 10: Taxes on Production and on Imports, Germany 1901-13 (mio. M)

	Germany	*Reich*	*Länder*	*Kommunen*						
				Prussia	Bavaria	Saxony	Württemberg	Baden	Alsace-Lorraine	other
1901	1,576.7	961.6	215.2	252.6	44.5	18.0	30.2	16.9	16.7	20.9
1902	1,601.2	958.5	218.9	270.4	46.5	18.6	31.7	17.7	17.2	21.8
1903	1,634.1	954.1	231.6	289.6	47.6	19.2	32.9	18.7	17.7	22.7
1904	1,670.0	957.1	238.7	310.5	48.6	19.8	34.1	19.2	18.5	23.6
1905	1,815.7	1,075.8	242.7	333.0	50.0	20.4	30.3	20.0	19.4	24.1
1906	1,936.9	1,163.6	249.5	352.1	52.8	21.0	31.9	20.5	20.4	25.2
1907	2,069.9	1,257.1	248.3	382.5	55.9	21.7	33.6	22.6	21.5	26.8
1908	2,066.9	1,216.7	241.9	414.1	59.2	22.3	35.7	25.8	22.6	28.7
1909	2,357.6	1,421.1	263.2	466.3	62.8	23.8	38.2	27.4	24.0	30.8
1910	2,609.5	1,574.2	310.8	511.2	64.5	24.6	39.6	29.2	23.5	32.0
1911	2,798.3	1,709.5	333.4	530.2	67.7	26.6	42.4	30.5	24.4	33.8
1912	2,817.3	1,717.3	304.0	551.6	80.3	26.6	44.1	32.0	25.5	35.8
1913	2,867.1	1,732.5	300.9	581.4	84.1	24.2	45.6	35.2	26.2	36.8
Δ 1901-13	5.11 %	5.03 %	2.83 %	7.20 %	5.44 %	2.49 %	3.49 %	6.34 %	3.82 %	4.84 %

Sources: Tables 3-9.

32 See *Statistisches Reichsamt*, Finanzen und Steuern, 1930, S. 234-7.

In how far do these figures have impact on the assessment of overall economic growth? Table 11 compares the growth rates of several economic aggregates expressed in factor cost.

Table 11: NDP and NNP Growth Rates, Germany 1901-13 (mio. M)

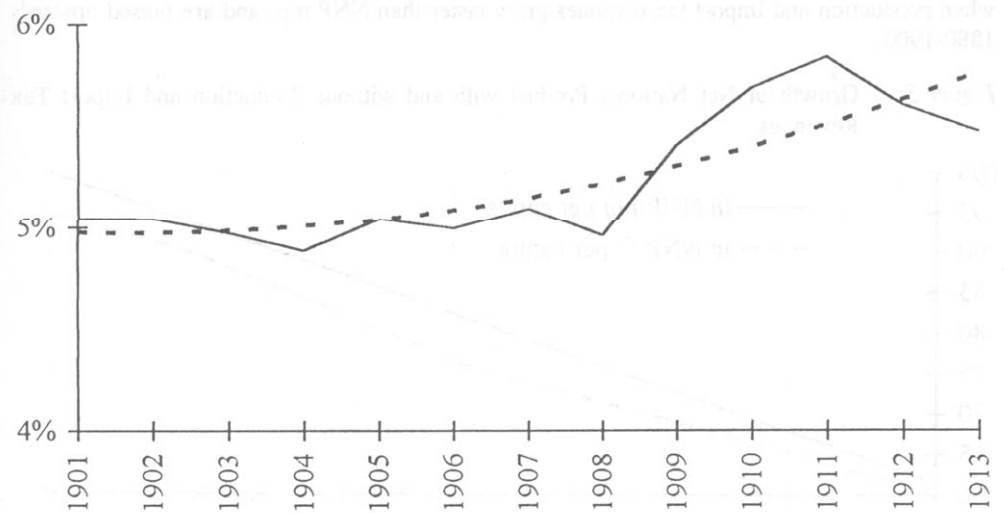
	NNP fc i	NNP fc ii	GNP fc iii	NNP fc iv	NDP fc v
Δ 1901-13	4.00 %	4.37 %	4.43 %	4.69 %	4.66 %

Note: all in nominal terms.

Sources: col. i *Statistisches Reichsamt*, Das deutsche Volkseinkommen, S. 32; ii *Hoffmann/Müller*, Das deutsche Volkseinkommen, S. 40; iii *S. Andic/J. Veverka*, The Growth of Government Expenditure in Germany since the Unification, in: Finanzarchiv N.F. 23, 1964, S. 169-278, hier S. 241; iv and v *Hoffmann*, Das Wachstum der deutschen Wirtschaft, S. 509.

This menu shows that, whatever source is used, the omission of production and import tax renvenues (which follow a steeper growth rate of 5.11 per cent) causes the calculation to slightly understate overall economic growth in the early 20th century. In Figure 2, our results of production and import taxes are added to the estimates of Hoffmann and Müller, which transforms their NNP fc to NNP mp, and then compared with the latter.

Figure 2: Ratio of Production and Import Taxes to Net National Product at Market Prices, 1901-13 (in per cent)



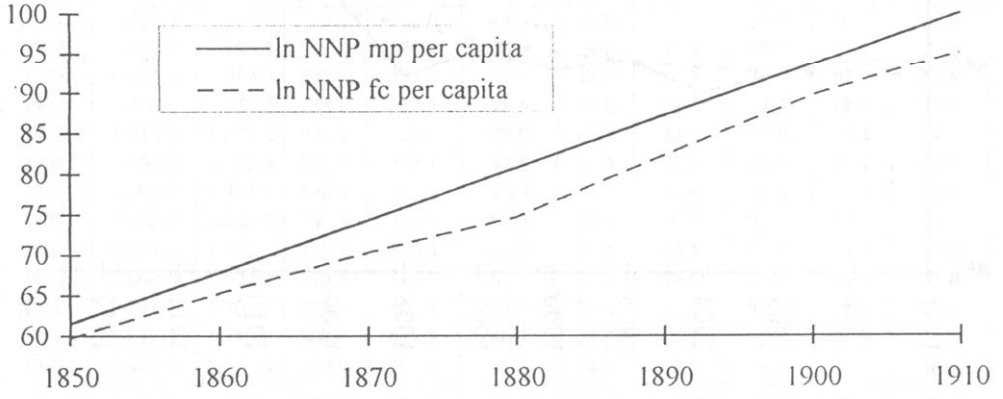
Note: the dotted graph is a polynomial trend approximation.

Sources: Table 10; *Hoffmann/Müller*, Das deutsche Volkseinkommen, S. 40.

As can be seen, the fraction of production and import taxes within NNP mp was about 5 per cent in 1901-08, and then increased from 1909-11. Over the whole period, there is a slightly

positive trend. What can we infer for 19th century growth rates from this? As a byproduct of our quest for production tax revenues, the income tax revenues of the states and of the municipalities in Saxony and Baden were collected as well (Tables 3, 6 and 8). In all three cases, the growth of income tax revenues was much larger than that of production taxes. In fact, most of the increase of rising public expenditure was financed via the 'modern' income tax introduced in the last third of the 19th century.[33] There was presumably little pressure to increase production taxes, and thus the slope of the trend in Figure 2 might even become negative if extended to the late 19th century. However, most personal taxes were not introduced before the 1870s, and until this decade nearly all tax revenues came from production and import taxes. As it can be taken for granted that the overall tax burden increased throughout the 19th century, the omission of (production and import) tax revenues clearly must produce a downward bias if NNP growth rates are calculated from factor cost data. Figure 3 illustrates these conjectures. The straight line displays a (hypothetical) 'true' NNP mp growth path of 3 per cent per capita (in logs). The dotted graph is the corresponding NNP fc growth path per capita, and the difference between both graphs are production and import tax revenues. For 1850-80 I assume that there are no personal taxes and that tax revenues increase by 7 per cent, i.e. more than NNP mp as a whole. Around 1880 personal taxes are introduced and carry most of the increase of the tax burden. Hence production and import tax revenues grow slower than NNP mp (1 per cent). From 1900 onwards it is assumed that, in compliance with our empirical results above, the growth rate of production and import taxes is again higher than that of NNP mp. Taken together, in this hypothetical scenario NNP fc growth rates understate 'true' growth 1850-80 and 1900-10, when production and import tax revenues grow faster than NNP mp, and are biased upwards 1880-1900.

Figure 3: Growth of Net National Product with and without Production and Import Tax Revenues



Note: hypothetical values.

33 See *F. Neumark*, Die Finanzpolitik in der Zeit vor dem 1. Weltkrieg, in: *Deutsche Bundesbank (Hg.)*, Währung und Wirtschaft in Deutschland 1876-1975, Frankfurt a.M. 1976, S. 57-111, S. 60, 93-99, *Schremmer*, Steuern und Staatsfinanzen, S. 160-162.

How far could the production and import tax series be stretched back into the 19th century? A *Denkschriftenband* published in 1908 compiles tax revenues of the *Reich* and the *Länder* for the years 1881 and 1891.[34] For the last two decades of the 19th century the statistical yearbooks of the *Reich* and the *Länder* might contain data to fill the gaps, although not comprehensively. Beyond that date, any effort to estimate production taxes on the level of the states must very probably rely on heroic assumptions - not to mention municipal finances.

34 *Reichsschatzamt (Hg.)*, Denkschriftenband zur Begründung des Entwurfs eines Gesetzes betreffend Änderungen im Finanzwesen, Berlin 1908.