Discussion Paper Series

No.27

Estimating Gross Value Added in Indonesian Manufacturing Industries, 1917-1940

Shigeru Ishiwata

April 2004

Hitotsubashi University Research Unit for Statistical Analysis in Social Sciences
A 21st-Century COE Program

Institute of Economic Research
Hitotsubashi University
Kunitachi, Tokyo, 186-8603 Japan
http://hi-stat.ier.hit-u.ac.jp/

Estimating Gross Value Added in Indonesian Manufacturing Industries, 1917-1940

Shigeru Ishiwata (International Christian University)

Contents

I. Introduction: Purpose of research and issues involved

The main purpose of our research is to make log-term estimates of gross value added in Indonesian manufacturing industries, including the period before and after the time of World War II. In this paper we would like to focus only on the prewar period. For this purpose, we have a large degree of freedom to choose how far backward tracing raw materials of which we will make use. In considering our relative disadvantages of the availability of original materials and of poor ability of handling materials in Dutch language, we have to select in the direction to specialize in the method of estimation, taking the statistical information of original materials is given outside. Fortunately, the fifteen volumes of CEI(*Changing Economy in Indonesia*) are available at our hands, and they can provide a solid foundation for our research project. If we decide to set CEI volumes as basic sources of our research project, we need to clearly mention here that our estimating works are solely based on the statistical information compiled and recorded in the 8th volume, W.A.I.M. Segers, *Manufacturing Industry 1879-1942.*

Looking at any one of time series data in the above 8th volume, they do not show any smooth trend at all, but present drastic ups and downs over time. An appropriate hypothesis can be presented that the performance mentioned could be due to heavy dependence of Indonesian manufacturing activities in the 1920s and 1930s on Indonesian agriculture and foreign demand. The dependency on these two sectors

could have caused, in the long run, the secular downward trend of prices of Indonesian manufacturing products with their sharp fluctuations in the short run. Note that our simple interpolating works were executed in the sole aim of avoiding discontinuity of our estimated total values from missing data in the original statistical information.

The reason why we set 1917-1940 as the period for our present estimation project is that CEI has relatively very little coverage over classified number of products before 1917. Based on the scope of products covered by CEI, the next stage for future project is 1911-1916. We have not conducted sufficient investigations to identify why this is the case.

II. Method of estimation and materials

We have adopted a typical production approach in order to make estimates of gross value added in Indonesian manufacturing industries.

1. Production values

Information on the values of production is fairly incomplete, putting our attempt to carry out our estimating works under strong constraints. They are actually derived from the following identity equations in order to solve them.

(1) $V_{i,t} = Q_{i,t} * P_{i,t.}$

When the price vector is not available, we decide to use value vector ($V_{x,i,t}$) and volume vector ($Q_{x,i,t}$) of the applicable goods(i) shipped between islands. We then derive the price vector($P_{x,i,t}$) using the following equation.

(2) $P_{x,i,t} = V_{x,i,t} / Q_{x,i,t}$

These procedures assume homogeneity of each commodity (price equality) between commodities traded internationally and domestically (described as Exports in volume 8 of CEI) and commodities produced on the islands. This assumption is expected to create upward biases for commodity prices.

From equations (1) and (2), the following equation can be obtained.

(3) $V_{i,t} = Q_{i,t} * P_{i,t}$

$= Q_{i,t} * P_{x,i,t}$ where $P_{i,t} \fallingdotseq P_{x,i,t}$

$= Q_{i,t} * V_{x,i,t} / Q_{x,i,t.}$

As mentioned earlier, Exports in CEI includes both foreign and domestic trades. In order to carry out our ASHSTAT DATABASE project, therefore, a thorough and intensive investigation to handle volume and value vectors in production is requested.

This request will be applicable to the way we conduct our study in this paper. For a detailed discussion on the basic materials, see the explanation of estimating manufacturing production in Appendix A of this paper.

2. Gross value added at current factor costs (VA_i)

Based on the value of production (V_i) in equation (2), gross value added can be derived from the following equation:

$$(4) \quad VA_{i,t} = V_{i,t} * VAR_i$$

VAR_i indicates the ratio of value added (= value added/value of production) in the i-th industry and the statistical information from the *Census of Manufacturing*, 1974/75 was adopted. By doing so we naturally assumed that the postwar information on the ratio be applicable to the prewar period, and the ratios by industries be kept constant. These heroic assumptions have been utilized in many other attempts to estimate value added in the prewar period as in our present project. In one sense, however, the assumptions validate our attempt. That is, despite the assumptions we explicitly adopted – the applicability of the constant ratio of value added for each industry over a long period of time – shifts in industrial composition within total value added (or the values of production) inevitably bring about changes in the ratio of value added in manufacturing industries as a whole. This fact could be a positive or negative point, depending on whether or not it better reflects what actually happened. At any rate, it is impossible to confirm whether it happened or not because of a lack of necessary information. Our estimated results show that working with the constant ratio of gross value added by industries or by regions does not necessarily lead to the assumption of a constant ratio of gross value added in all manufacturing industries. Even over a long period of time, this is impossible by subdividing industrial or regional classifications in more detail.

3. Classification and ratio of value added of manufactures /manufacturing industries, using three digit classification codes

Petroleum products are a dominant factor in setting the gross value added for all manufacturing industries. See table b for the case where petroleum products are excluded from the measurement.

Table a. Manufactures, Industrial Code Number of1974/75 Census, Value Added Ratio, Etc.

Code	Manufactures	Census Industry #	Value added ratio	Availability of value data (Available/Not available)
A	Food	311	0.5277	Av
B	Sugar	311	0.5277	Av
C	Petroleum	354	0.2942	Av
D	Clothes	321	0.3121	Av
E	Batik	322	0.3514	Av
F	Tobacco	314	0.4375	Av
G	Others	n.a.	n.a.	N
G1	Beverage	313	0.6701	Av
G2	Kapok	390	0.4864	Av
G3	Tannery	323	0.2694	N
G4	Hats	390	0.4864	N
G5	Mats	390	0.4864	N
G6	Furniture	332	0.4839	Av
G7	Paper	341	0.2865	Av
G8	Printing	342	0.5311	N
G9	Paint	342	0.3405	N
G10	Medicine	352	0.3405	N
G11	Opium	352	0.3504	N
G12	Quinine	352	0.3504	N
G13	Soap	352	0.3504	Av
G14	Oil	352	0.3504	Av
G15	Tires	355	0.2648	N
G16	Re-smashed rubber	355	0.2648	N
G17	Cement	355	0.2648	Av
G18	Others	n.a.	n.a.	N
G181	Tin plates	372	0.2237	Av

4. Use of other CEI volumes

We can obtain vectors of Indonesian export values as well as volumes from the time series listed in the two CEI volumes, 12 a and b, titled *General Trade Statistics 1822-1940*, edited by W.L. Korthala Altes. If the other vectors, namely values and volumes of domestic consumption, are available as a time series, we can derive the values of domestic production. At least, since the vales and volumes of exports are a part of the values of domestic products, a part of missing values can be supplemented by adding what is not included in the values and volumes of products in the manufacturing industries. This may be expected to be attempted when we will conduct further estimating works before 1916. We did not make it this time, because we thought that the quality of estimated results would be one level lower than what we are deriving this time.

III. Estimated results

The estimated results for gross value added obtained through our measurement is shown in Table b below. We limit our comparisons between our estimates and the Polak's estimates as existing ones, because of at current prices and of the duration of the observation period. (Polak, 1943) , see the appendix. Polak's estimates cover the period of 1921-1939. However, they only cover the period of 1928-1939 for Industry, and thus the period of comparison is limited to that period. Polak's value added estimates are in terms of national income(at current prices) and evaluated at market prices. Since the commercial margins are excluded from his estimates, it can be, in spite of that, judged nearly at factor costs. In contrast our estimates also exclude Petroleum Industry (Mfg. code 354) as Polak's estimates, but they are in terms of gross value added at market prices. Note, therefore, that we cannot directly compare between the two in a precise way.

Table b Comparison between Polak's National Income estimates and our gross value Added estimates (Unit : million florins)

Year	Polak's estimates(1)	Our estimates(2)	(2)/(1)=(3)
1928	345	635	1.84
1929	384	615	1.60
1930	385	522	1.36
1931	275	448	1.63
1932	230	359	1.56
1933	205	333	1.62
1934	205	299	1.46
1935	215	306	1.42
1936	225	317	1.41
1937	255	358	1.40
1938	285	357	1.26
1939	300	373	1.24

Table c Gross Values Added in Manufacturing Industries

(At current prices, Unit: million florins)

Mfg codes	31	32	33	34	35	36	37	39	3
1917	0.9	14.7			0.5	1.1	8.6	0.5	26.3 (71784.0)
1918	1.5	12.9			0.4	1.1	8.2	0.5	24.5 (90425.9)
1919	9.1	18.5			0.7	1.1	11.4	1.3	42.1 (115079.7)
1920	11.2	46.6			0.0	1.1	9.3	2.6	70.9 (100812.2)
1921	64.1	36.5			0.5	1.6	5.3	2.3	110.2 (94162.0)
1922	54.0	27.5			0.6	1.5	6.0	3.3	92.9 (125115.9)
1923	54.3	29.3		330.2	0.8	1.4	7.4	4.1	427.4 (70387.6)
1924	235.8	31.3		362.8	1.1	1.3	9.7	4.1	646.2 (64131.0)
1925	209.0	35.0		406.4	1.5	1.4	9.5	3.4	666.3 (69486.9)
1926	198.1	26.2		354.0	1.6	1.7	12.0	3.5	597.1 (63128.4)
1927	259.1	24.1		334.7	1.4	1.8	11.4	5.0	637.5 (59866.4)
1928	275.7	22.3		321.0	1.1	2.1	8.1	5.0	635.3 (50150.3)
1929	254.4	23.8		321.0	1.1	2.2	7.1	3.7	615.2 (53713.3)
1930	227.9	20.2		262.5	1.2	1.8	5.5	3.0	522.1 (48025.5)
1931	177.3	18.0		245.0	0.6	1.4	3.7	2.3	448.4 (51465.9)
1932	118.4	14.9		220.7	0.5	0.8	2.0	2.1	359.2 (31756.6)
1933	101.0	12.6		213.8	0.7	0.7	2.9	1.6	333.2 (66112.1)
1934	135.7	10.4		207.2	0.7	0.7	3.8	1.6	298.9 (29575.5)
1935	82.5	11.0		205.5	0.9	0.7	3.9	1.6	305.9 (27103.8)
1936	111.7	13.6		182.6	1.0	0.7	4.1	3.2	316.8 (30895.2)
1937	140.8	19.2	0.2	185.1	1.1	0.7	6.3	5.2	358.5 (54687.6)
1938	132.3	14.6	0.1	200.3	1.4	0.7	2.5	4.7	356.6 (23035.2)
1939	157.7	16.1	0.1	187.1	1.8	1.4	5.9	3.0	373.2 (53834.8)
1940	153.3	21.0	0.2	172.0	1.7	1.4	9.0	2.6	361.0 (56098.3)

[Note]Manufacturing total (3) does not necessarily meet the sum of the figures for the two digit code of manufacturing industries due to round up. And we decoded to exclude Mfg code 38 in this bable because there are proper figures missing in the basic materials of CEI.

Figures in the parentheses include 'petroleum manufacturing industry.'

IV. Concluding remarks: Further work remained

Having obtained the estimates and examined them carefully, we see that the most important work left for further study is how to connect these estimate to those of the postwar period. As an examination of Indonesian government estimates is currently underway, we would like to wait for the results to come out and the begin investigating the problem of linkages between the two periods.

The second task to be done is to extrapolate our estimates backward to the years before 1916. Whether this can be done largely depends on the availability of basic statistical information for those years. The first step of the extrapolation work will aim at extending up to the period of 1911-1916. The second step will be to extend it further back to the period of 1870-1910. Even if basic statistical information is available for those periods, they will only contain data for a limited number of manufacturing products. If that is the case, we will finally need to apply the Major Index Method (MIM) and make some necessary adjustments.

The third work remained is to examine trends in the ratio of manufacturing GDP to the total GDP of Indonesian economy. In order to solve this problem, we have to begin to make estimating GDP for industries other than manufacturing. Estimates of long-term real GVA in the service industries have already been made, for 1919-1940. (See Shigeo Teranishi and Kazuki Yokoyama, 1998,D98-1)

The fourth task to be done, which relates to the third, is to decide how to determine the base year for the prewar period. Whether we should use a prewar base or a postwar one is an important issue for our whole project. We need to involve all the members of this project in a thorough discussion in order to arrive at our final decision. Applicability of the decision to each country and region can be examined later. At least we should have a common base year at first and then better lease some local base years for each country or region, or for each period.

Appendix B. Tables of production of muanufacturing industries

Table 1. Manufactures of food products, except sugar

Year	1 vegetable oil	2 coconut oil	4 exports of coconut oil	5 as (4)	6=5/4 export price	7=2*6 coconut oil	8 exports of coconut bung	9 as (8)	10=9/8 export price
1917		39.6	23740	15946.0	671.7	26599.1	2302	192	0.0834
1918		55.0	31440	17615	560.3	30815.0			
1919		100.0	44546	72407	1625.4	162544.3	21765	1741	0.0800
1920		101.6	57257	67125	1172.3	119110.3	73764	4426	0.0600
1921	42.4	66.2	37575	22128	588.9	38985.3	14176	1134	0.0800
1922	21.4	37.0	2761	1503	544.4	20141.6	16755	1005	0.0600
1923	21.2	39.8	1325	662	499.6	19885.0	19215	1153	0.0600
1924	32.1	49.8	7165	4299	600.0	29880.0	24127	1930	0.0800
1925	44.3	71.5	9360	5096	544.4	38927.8	34611	3288	0.0950
1926	42.6	78.3	14905	7243	485.9	38049.4	37824	2805	0.0742
1927	49.5	90.1	8700	4224	485.5	43745.1	46879	3284	0.0701
1928	70.7	126.6	32994	15598	472.8	59850.5	64333	5836	0.0907
1929	62.5	128.2	30998	12662	408.5	52366.9	65199	6033	0.0925
1930	47.3	109.6	14492	5484	378.4	41474.4	54895	3375	0.0615
1931	36.3	107.2	4372	1284	293.7	31483.3	53545	2897	0.0541
1932	25.8	116.5	16308	2976	182.5	21259.7	58696	2475	0.0422
1933	23.4	130.1	9476	1393	147.0	19125.1	66272	2328	0.0351
1934	16.5	140.9	2593	254	98.0	13802.0	72270	1419	0.0196
1935	14.8	127.1	8462	768	90.8	11535.4	64597	1604	0.0248
1936	22.9	131.9	5946	843	141.8	18700.3	67302	1802	0.0268
1937	40.0	154.3	27955	6093	218.0	33630.8	79717	3390	0.0425
1938	28.4	176.1	20020	2536	126.7	22307.2	91861	3453	0.0376
1939	24.0	183.3	9205	879	95.5	17503.6	90791	2812	0.0310
1940	22.4	200.3	13898	1192	85.8	17179.3	46553	1153	0.0248
Unit	f million	million kg	kg	f 1000	f/kg	f million	1000kg	f 1000	f/kg

Table A.1. Food products (Vegitable oil)

Year	2	4	5	1.1 2*(5/4)	1.2 (11)	1.3 (13)	1.4 (16)	1.1+1.2+1.3+1.4 =A.1
1921	66.2	37575	22128	38.985	1.134	0.448	1.296	41.863
1922	37	2781	1503	19.997	1.005	0.051	1.781	22.834
1923	39.8	1325	662	19.885	1.153	0.011	1.475	22.524
1924	49.8	7165	4599	31.965	1.93	0.058	2.185	36.138
1925	71.5	9360	5096	38.928	3.288	0.499	2.335	45.050
1926	78.3	14905	7243	38.049	2.805	0.273	4.290	45.417
1927	90.1	8700	4224	43.745	3.284	0.605	7.113	54.747
1928	126.6	32994	15598	59.850	5.836	3.273	9.219	78.178
1929	128.2	30998	12662	52.367	6.033	2.005	11.177	71.582
1930	109.6	14492	5484	41.474	3.375	0.949	13.564	59.362
1931	107.2	4372	3209	78.684	2.897	0.759	12.084	94.424
1932	116.5	16308	2857	20.410	2.475	1.126	11.844	35.855
1933	130.1	9476	3087	42.383	2.328	1.048	10.698	56.457
1934	140.9	2593	3228	175.405	1.419	0.711	8.717	186.252
1935	127.1	8462	1880	28.238	1.604	0.705	13.637	44.184
1936	131.9	5946	2005	44.477	1.802	1.311	21.392	68.982
1937	154.3	27955	4722	26.063	3.39	1.904	26.101	57.458
1938	176.1	20020	3660	32.194	3.453	1.991	16.527	54.165
1939	183.3	9205	2274	45.282	2.812	2.25	15.773	66.117
1940	200.3	13898			1.153	1.736	9.561	
Unit	million kg	1000 kg	f 1000	f million	f million	f million	f million	f million

Table A.2 & A.3.	Food products			(Palm kernels and Tapioca)				
Year	17	18	19	17*19/18 =A.2	25	27	30	25+27+30 =A.3
1917					10859	6790	383	18032
1918					5168	3167	225	8560
1919					28937	20075	1228	50240
1920	338				14405	11545	1470	27420
1921	153	43	16	56.9	10561	7494	629	18684
1922	512	78	39	256.0	14231	10156	1247	25634
1923	727	492	126	186.2	17909	12596	629	31134
1924	1131	1262	347	311.0	17920	11380	2138	31438
1925	5767	5732	859	864.2	31600	12726	1976	46302
1926	7066	6837	933	964.3	20145	11049	2105	33299
1927	9821	9639	1188	1210.4	13441	9412	2253	25106
1928	12805	12200	1093	1147.2	11594	7800	1332	20726
1929	1745	1505	331	383.8	12974	9839	816	23629
1930	1627	2154	340	256.8	13750	9794	993	24537
1931	3876	3772	566	581.6	20510	12552	1787	34849
1932	18414	17887	1192	1227.1	8267	5365	1786	15418
1933	22805	23100	1239	1223.2	8102	6393	1602	16097
1934	24878	25068	969	961.7	6753	5079	939	12771
1935	30615	30622	1201	1200.7	5967	4614	933	11514
1936	36136	36802	1748	1716.4	10777	7765	1360	19902
1937	41826	41471	2950	2975.3	17960	11828	1573	31361
1938	48036	47489	2349	2376.1	9158	5473	840	15471
1939	53766	43805	1747	2144.3	9843	7132	1635	18610
1940	20401	29031	913	641.6	13122	10736	2180	26038
Unit	1000 kg	1000 kg	f 1000	f 1000	f 1000	f 1000	f 1000	f 1000

Table A.4 & A.		Food products		(Rice and Food total)				
Year	20	21	22	20*22/21 =A.4	A.1	A.2	A.3	A.1+A.2+ A.3+A.4 =A
1917		120922	4451				18.032	
1918		151854	351				8.560	
1919		140570	4052				50.240	
1920	338	126202	1844	0.005			27.420	
1921	160000	1367	369	43.189	41.863	0.057	18.684	103.793
1922	214542	11535	1846	34.334	22.834	0.256	25.634	83.058
1923	173742	25699	3855	26.062	22.524	0.186	31.134	79.906
1924	206779	39781	6743	35.050	36.138	0.311	31.438	102.937
1925	215002	30403	5147	36.398	45.05	0.384	23.629	105.461
1926	339000	30369	5166	57.667	45.417	0.257	24.537,	127.878
1927	349000	10226	1795	61.261	54.747	0.582	34.849	151.439
1928	349027	9124	1413	54.053	78.178	0.864	46.302	179.397
1929	349651	10320	1587	53.769	71.582	0.964	33.299	159.614
1930	308611	6006	949	48.763	59.362	1.21	25.106	134.441
1931	332387	14379	1768	40.869	94.424	1.147	20.726	157.166
1932	365378	6919	619	32.688	35.855	1.227	15.418	85.188
1933	391390	12860	924	28.122	56.457	1.223	16.097	101.899
1934	517317	12909	918	36.788	186.252	0.962	12.771	236.773
1935	526439	13841	1034	39.328	44.184	1.201	11.514	96.227
1936	690113	22913	1774	53.431	68.982	1.716	19.902	144.031
1937	868426	28488	2488	75.844	57.458	2.975	31.361	167.638
1938	933543	15840	1369	80.683	54.165	2.376	15.471	152.695
1939	1114825	19912	1623	90.868	66.117	2.144	18.61	177.739
1940	1161961	64604	4786	86.081		0.642	26.038	
Unit	1000 kg	1000 kg	f 1000	f million	f million	f million	f million	f million

Table B. Production of sugar

Year	2	3	4	2*4/3=B.1	10	11	12	10*12/11 =B.2	B.1+B.2 =B
1917	1822.1	1184.4	212.4	326.8		0.2	0.0		
1918	1778.2	1538.5	183.6	212.2					
1919	1336.1	1862.1	762.2	546.9		4.5	1.0		
1920	1543.9	1510.2	1048.5	1071.9		3.6	1.3		
1921	1655.7	1675.1	414.6	409.8		2	0.3		
1922	1775.7	1434.5	270.7	335.1		1.3	0.2		
1923	1760.9	1822.1	498.3	481.6		5.4	0.9		
1924	1963.6	1864.6	488	513.9	43	13.9	1.9	5.9	519.8
1925	2261.1	2048.6	364.6	402.4	61	19.0	2.7	8.7	411.1
1926	1941.6	1702.6	264.5	301.6	60	12.7	1.8	8.5	310.1
1927	2351.2	1978.0	358.8	426.5	59	19.7	2.6	7.8	434.3
1928	2923.6	2534.5	369.3	426.0	58	30.3	3.3	6.3	432.3
1929	2871.0	2402.9	304.3	363.6	71	28.9	2.7	6.6	370.2
1930	2915.9	2222.0	244.2	320.5	63	17.8	1.4	5.0	325.5
1931	2772.4	1553.1	124.7	222.6	54	24.0	1.6	3.6	226.2
1932	2560.2	1501.6	97.1	165.6	50	12.0	0.6	2.5	168.1
1933	1372.6	1151.7	61.1	72.8	44	12.0	0.4	1.5	74.3
1934	636.1	1089.2	44.7	26.1	42	2.0	0.1	2.1	28.2
1935	509.7	1029.4	35.0	17.3	55	3.0	0.1	1.8	19.1
1936	574.7	880.5	33.6	21.9	58	3.0	0.1	1.9	23.8
1937	1379.9	1128.8	49.8	60.9	73	8.0	0.4	3.7	64.6
1938	1375.5	1071.1	44.4	57.0	91	6.0	0.3	4.6	61.6
1939	1562.5	1357.7	76.5	88.0	88	11.0	0.5	4.0	92.0
1940	1587.4	803.5	52.0	102.7	85	9.0	0.4	3.8	106.5
Unit	million kg	million kg	f million	f million	million kg	million kg	f million	f million	f million

Table C. Petroleum products

Year	3.1	4.1	5.1	3.1*5.1/ 4.1=C.11	3.2	4.2	5.2	3.2*5.2/ 4.2=C.12
1917	490088	264199	39300	72901	351049	334565	38966	40886
1918	499924	309096	61388	99287	279941	233049	60647	72850
1919	539836	331298	100449	163677	307016	421188	99668	72651
1920	484256	291184	62360	103708	371544	359945	59997	61930
1921	506388	263653	50198	96413	404993	395991	123916	126733
1922	393029	199161	57601	113671	510941	468706	178555	194645
1923	387529	207137	25681	48046	521342	469810	92684	102850
1924	376074	181515	15732	32595	545532	484068	84300	95004
1925	439121	231428	19967	37886	618320	544307	94791	107680
1926	412512	213767	18112	34951	671403	601729	98930	110385
1927	458208	237461	17905	34550	806893	704141	81432	93315
1928	590528	370205	18243	29100	947839	830441	71086	81135
1929	762528	541203	29892	42116	1291208	1124946	96712	111006
1930	759823	520445	28331	41362	1508377	1314474	105296	120829
1931	649658	423266	20513	31485	1410851	1158192	81290	99023
1932	710338	455798	14142	22040	1320614	1155732	45891	52438
1933	727250	538984	17464	23564	1448949	1246182	45103	52442
1934	833949	605507	14896	20516	1521287	1454069	41808	43741
1935	853131	629767	13158	17825	1750760	1661160	39264	41382
1936	1051974	878314	18890	22625	1861412	1689584	44361	48872
1937	1165143	942803	29013	35855	2145916	1968120	77945	84986
1938	989459	788201	23313	29266	2252308	2080102	80981	87685
1939	1088998	929772	22842	26754	2515859	2185143	79402	91419
1940	1008706	820252	22011	27068	2243756	2001851	82502	92472
Unit	million kg	f million	million kg	f million	million kg	f million	million kg	f million

Table C. Petroleum products Cont'd 1)

Year	3.3	4.3	5.3	3.3*5.3/ 4.3=C.13	3.4	4.4	5.4	3.4*5.4/ 4.4=C.14
1917	9716	13501	3240	2332	365902	144653	6222	15739
1918	15224	24529	9566	5937	367491	110537	8320	27661
1919	14707	27056	10958	5957	388565	209291	19129	35514
1920	19344	16152	8237	9865	416625	249628	26842	44799
1921	16154	11326	5097	7270	412853	249783	18801	31075
1922		15086	6034			345050	25971	
1923		25141	7542			467157	16800	
1924		23604	6137			445272	15379	
1925		25226	6559			435118	14230	
1926		28117	7286			469714	15566	
1927		31266	5069			364505	10737	
1928		32470	3702	0		570291	14101	
1929		31283	3505	0		968251	18767	
1930		26023	2800	0		1225224	22435	
1931	26997	21660	2111	2631	1453575	1029111	19107	26988
1932	20132	14812	914	1242	1690960	1250226	17399	23533
1933	22551	17303	969	1263	1954429	1405793	19058	26496
1934	25630	20824	1047	1289	1983607	1518803	19568	25556
1935	22940	16776	593	811	2072347	1706324	19032	23115
1936	23278	17094	717	976	2217183	1856627	20182	24101
1937	32527	19675	1915	3166	2706570	2221342	32573	39688
1938	25138	13610	1357	2506	2792748	2565828	36395	39614
1939	29242	17310	1440	2433	2902392	2576038	31686	35700
1940	33790	20919	1639	2647	2853570	2460380	35580	41266
Unit	million kg	f million	million kg	f million	million kg	f million	million kg	f million

Table C. Petroleum products (Cont'd 2)

Year	3.5	4.5	5.5	3.5*5.5/ 4.5=C.15	C.11	C.12	C.13	C.14	C.
1917	48775	27542	11389	20169	72901	40886	2332	15739	152027
1918	58625	27868	15696	33019	99287	72850	5937	27661	238754
1919	58126	31366	19622	36363	163677	72651	5957	35514	314162
1920	56529	41826	23613	31914	103708	61930	9865	44799	252216
1921	58488	45658	22858	29281	96413	126733	7270	31075	290772
1922		28928	17088		113671	194645			308316
1923		31978	10162		48046	102850			150896
1924		58893	12561		32595	95004			127599
1925		46992	13304		37886	107680			145566
1926		79925	14966		34951	110385			145336
1927		87624	11521		34550	93315			127865
1928		96765	9701		29100	81135			110235
1929		97934	10272		42116	111006			153122
1930		57769	5476		41362	120829			162191
1931	80425	60889	6505	8592	31485	99023	2631	26988	168719
1932	67277	53821	3884	4855	22040	52438	1242	23533	104108
1933	74327	79950	4971	4621	23564	52442	1263	26496	108386
1934	93421	86370	5051	5463	20516	43741	1289	25556	96565
1935	235793	60584	2919	11361	17825	41382	811	23115	94494
1936	325922	64789	3492	17567	22625	48872	976	24101	114141
1937	288174	92344	10952	34177	35855	84986	3166	39688	197872
1938	360652	98687	12109	44252	29266	87685	2506	39614	203323
1939	592690	128864	12845	59079	26754	91419	2433	35700	215385
1940	524800	135508	11826	45800	27068	92472	2647	41266	209253
Unit	million kg	million kg	f million	f million	million k	million k	f million	f million	f million

Table C. (Cont'd 3)

Year	3	4	5	3*5/4=C	1.1.	3/1.1.	C-alt	C/C-alt
1917	1265530	784460	151189	243906	1671610	0.757073	152027	1.60
1918	1221205	705078	177410	307277	1688541	0.723231	238754	1.29
1919	1308298	1020098	304879	391014	2081538	0.628525	314162	1.24
1920	1348298	958734	243482	342416	2273260	0.593112	252216	1.36
1921	1398843	966413	220869	319699	2285816	0.611967	290772	1.10
1922	1574552	1056932	285250	424948	2375671	0.662782	308316	
1923	1868488	1201223	152868	237784	2819159	0.662782	150896	
1924	1920185	1193352	134099	215774	2897159	0.662782	127599	
1925	2016290	1283071	148851	233913	3042161	0.662782	145566	
1926	1950072	1420877	154859	212535	2942252	0.662782	145336	
1927	2311535	1454450	126664	201305	3487625	0.662782	127865	
1928	2660571	1847098	116833	168287	4014248	0.662782	110235	
1929	3136948	2766308	159147	180470	4733001	0.662782	153122	
1930	3102193	3157567	164338	161456	4680563	0.662782	162191	
1931	3621506	2705139	129526	173403			168719	1.03
1932	3809325	2935296	82229	106714			104108	1.03
1933	4227506	3288160	87565	112580			108386	1.04
1934	4457894	3690163	82370	99507			96565	1.03
1935	4934971	4061840	74967	91082			94494	0.96
1936	5479769	4491445	87642	106927			114141	0.94
1937	6338330	5231245	152398	184650			197872	0.93
1938	6420305	5527863	154154	179041			203323	0.88
1939	7129181	5815162	148216	181708			215385	0.84
1940	6664622	5402167	153559	189445			209253	0.91
Unit	million kg	million kg	f million	f million	f million		f million	

Table D. Weaving Industry

Year	3	7	11.1	12.1	7*12.1/11.1	1	9	9*12.1/11.1
1917								
1918								
1919								
1920								
1921	2397	7192				9250		
1922	2117	6352				5147		
1923	2127	6380				5202		
1924	2591	7772				6245		
1925	2946	8837				9241		
1926	2877	8630				8333		
1927	2931	8792				6282		
1928	3411	10232				6978		
1929	3575	10726				7587		
1930	2898	8694				5367	600	
1931	3236	9708	4603	4424	9330	4201	1100	1057
1932	2555	7664	8833	4249	3687	3032	900	433
1933	3360	10080	13394	4222	3177	3439	1100	347
1934	3983	11678	6104	2099	4016	4115	2400	825
1935	4848	14543	6148	2472	5847	4934	4000	1608
1936	5336	16009	5634	2204	6263	4984	5400	2112
1937	11301	33903	5362	2355	14890	13334	7000	3074
1938	9256	27768	2019	879	12089	10259	9000	3918
1939	17076	51229	1007	305	15516	14586	10500	3180
1940	18256	54768	140	87	34034	15318	11500	7146
Unit	1000 kg	1000 pcs	1000 pcs	f 1000	f 1000	f 1000	1000 pcs	f 1000

Table E. Batik Industry

Year	17=E	18	17/18
1917	40.0	40.0	1.000
1918	35.0	28.0	1.250
1919	50.0	36.0	1.389
1920	130.0	63.0	2.063
1921	100.0	48.0	2.083
1922	75.0	44.0	1.705
1923	80.0	50.0	1.600
1924	85.0	52.0	1.635
1925	95.0	58.0	1.638
1926	70.0	54.5	1.284
1927	64.0	66.0	0.970
1928	58.0	60.3	0.962
1929	62.0	63.0	0.984
1930	53.0	52.4	1.011
1931	43.0	48.0	0.896
1932	39.0	50.2	0.777
1933	33.0	50.6	0.652
1934	26.0	48.6	0.535
1935	26.0	44.8	0.580
1936	33.0	61.2	0.539
1937	41.3	72.1	0.573
1938	30.8	54.5	0.565
1939	31.9	56.8	0.562
1940	29.4	51.4	0.572
Unit	f million	million pcs	f/pcs

Table F. Tobacco Manufactures

Year	3	5.1	6=F.2	3*6/5.1 =F.1	12=F.3	17=F.4	F.
1917	1.4						
1918	1.1						
1919	1.2	1.400	7.000	6.000			13.000
1920	0.6	1.700	8.000	2.824			10.824
1921	1.6	1.400	7.000	8.000	2.000		17.000
1922	2.1	1.400	7.000	10.500	2.000		19.500
1923	1.8	1.800	10.000	10.000	3.000		23.000
1924	2.7	2.100	14.000	18.000	6.000		38.000
1925	4.6	2.700	15.000	25.556	11.000		51.556
1926	7.0	3.300	16.000	33.939	22.000		71.939
1927	11.4	5.200	19.000	41.654	32.000		92.654
1928	13.3	7.200	23.000	42.486	33.000		98.486
1929	9.6	6.129	29.000	45.423	44.000		118.423
1930	13.6	6.332	26.000	55.843	39.000		120.843
1931	11.3	6.121	6.423	11.858	32.000		50.281
1932	9.1	5.429	5.667	9.499	28.900		44.066
1933	12.9	7.744	7.951	13.245	27.200	3.600	51.996
1934	20.4	10.523	10.758	20.856	24.400	3.175	59.189
1935	16.1	9.700	9.70	16.100	24.300	3.000	53.100
1936	18.4	10.630	10.63	18.400	26.425	3.200	58.655
1937	13.7	13.540	13.54	13.700	34.152	3.512	64.904
1938	13.9	12.400	12.40	13.900	35.208	3.260	64.768
1939	16.9	11.370	11.37	16.900	39.228	2.988	70.486
1940	11.6	9.954	9.954	11.600	49.312	3.500	74.366
Unit	million unt	million unt	f million	f million	f million	f million	f million

Table G.1 & G.2			Beverages and Kapok							
Year	2	4	7	2+4+7 =G.1	12	10	11	12*11/10 =G.21	14=G.22	G.21+ G.22=G.2
1917	767	627		1.394	2130	11939	5373	959	86	1.045
1918	943	1263		2.206	1825	9253	4811	949		0.949
1919	3522	1565		5.087	2115	17528	14198	1713	905	2.618
1920	7823	1826		9.649	3298	12666	14312	3727	1570	5.297
1921	2007	749		2.756	4289	17876	15552	3731	977	4.708
1922	2134	270		2.404	5089	15880	16833	5394	1444	6.838
1923	2771	2693		5.464	5357	13582	17385	6857	1517	8.374
1924	2265	408		2.673	6033	16528	19674	7181	1183	8.364
1925	2332	329		2.661	5568	17946	21630	6711	325	7.036
1926	2280	458		2.738	6142	15000	17369	7112	159	7.271
1927	3125	420		3.545	8206	17244	19969	9503	760	10.263
1928	3272	197		3.469	8668	17710	19291	9442	894	10.336
1929	2944	256		3.200	8597	16101	13307	7105	583	7.688
1930	2662	215		2.877	6901	19187	15559	5596	470	6.066
1931	1677	130	200	2.007	8019	19036	10038	4229	559	4.788
1932	989	98	1000	2.087	7665	16970	8128	3671	547	4.218
1933	493	39	1200	1.732	8068	20936	7427	2862	475	3.337
1934	418	58	2400	2.876	9160	19327	6011	2849	433	3.282
1935	235	62	3400	3.697	10450	23309	6228	2792	485	3.277
1936	239	89	3500	3.828	20681	26024	7336	5830	660	6.490
1937	400	113	4900	5.413	23282	17243	7344	9916	680	10.596
1938	374	160	5500	6.034	21973	14866	6373	9420	186	9.606
1939	358	54	5900	6.312	14335	20097	8542	6093	159	6.252
1940	489	139	6900	7.528	17253	15534	4583	5090	203	5.293
Unit	f 1000	f 1000	f 1000	f million	1000 kg	1000 kg	f 1000	f 1000	f 1000	f million

Table G.4, G.5, G.7, G.11, G.12, G.13 & G.14: Hats, Mats, Furniture, Paper Opium, Quinine, Soap & Essential oils

Year	21=G.4	24=G.5	27=G.6	29=G.7	35	36	37	35*37/36 =G.11	40=G.12	47=G.13	49=G.14
1917	1436	956			105540	94126	38205	42838	130	344	1402
1918	1572	1108			84777	90183	38750	36427	253	584	641
1919	2270	1526			86325	91717	42487	39989	640	729	1745
1920	2872	2200			119457	100665	53591	63595	310	735	2751
1921	1461	1032			74319	84719	53265	46726	285	420	1151
1922	1831	704			63481	65452	44186	42855	125	400	1551
1923	2310	779		1152	47910	53535	37566	33619	251	355	2375
1924	2622	861		1266	48018	50343	35296	33666	238	476	3392
1925	3480	981		1418	57965	52809	36621	40196	180	635	4463
1926	2629	1163		1235	52930	55187	37698	36156	132	1002	4517
1927	2633	1187		1168	57496	59105	40580	39475	75	1235	3421
1928	7821	980		1120	65956	61799	42826	45707	47	845	2782
1929	5615	853		1127	57752	58807	40938	40204	48	1199	2564
1930	3973	717		916	45160	49280	34549	31661	54	1147	2922
1931	3529	492		855	28633	35788	25312	20251	1431	819	1064
1932	886	303		770	20030	24428	17348	14225	1317	534	1174
1933	974	225		746	16521	18356	12661	11395	1498	425	1786
1934	1009	200		723	14566	16651	11145	9749	1399	402	2117
1935	644	261		717	13536	14513	9527	8886	2183	919	2123
1936	646	289		637	16349	15578	8882	9322	3200	1259	2157
1937	736	477	318	646	25014	20551	11476	13968	3677	1912	2099
1938	609	439	286	699	20570	22191	11948	11075	3514	1825	2909
1939	562		284	653		21514	11527		4126	1958	4313
1940	700		369			22099	11724		18418	2156	3504
Unit	f 1000	f 1000	f 1000	f 1000	kg	kg	f 1000	f 1000	f 1000	f 1000	f 1000

Table G.17 & G.18 .

Year	56	57	58	56*58/ 57=G.17	66=G.181
1917	34725		13090		40321
1918	30976		11560		38576
1919	24583		5270		53827
1920	36572		12070		43927
1921	44981	38914	2562	2961	24926
1922	62621	59354	2560	2701	28229
1923	79587	74552	2402	2564	34864
1924	82654	87086	2441	2317	45800
1925	100402	99002	2597	2634	44916
1926	108449	106639	3111	3164	56250
1927	108690	107227	3228	3272	53595
1928	135456	123236	3473	3817	37999
1929	142290	148920	4141	3957	33345
1930	134889	142290	3540	3356	25823
1931	134889	134889	2600	2600	17533
1932	79050	79050	1415	1415	9372
1933	74120	74120	1215	1215	13668
1934	113000		1831		17719
1935	140000		1900		18184
1936	136000		1897		19368
1937	130000		2333		29424
1938	155000		2699		11868
1939	170000	195633	2909	2528	27681
1940	211395				42397
Unit	1000 kg	1000 kg	f 1000	f 1000	f 1000