

# **Center for Economic Institutions**

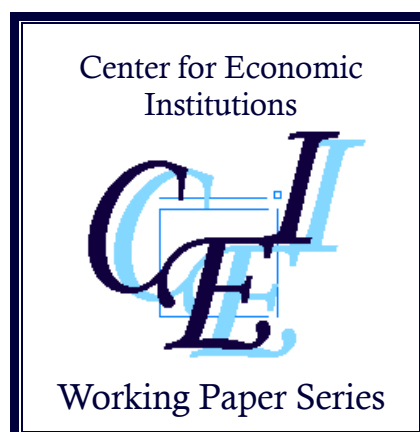
## **Working Paper Series**

**No. 2018-19**

**"Long-term Trends in Gross Domestic Expenditure in Indonesia:  
Provisional Estimates"**

**Pierre van der Eng**

**March, 2019**



Institute of Economic Research  
Hitotsubashi University  
2-1 Naka, Kunitachi, Tokyo, 186-8603 JAPAN  
<http://cei.ier.hit-u.ac.jp/English/index.html>  
Tel: +81-42-580-8405 / Fax: +81-42-580-8333

# **Long-term Trends in Gross Domestic Expenditure in Indonesia: Provisional Estimates**

Pierre van der Eng  
Research School of Management  
ANU College of Business and Economics  
The Australian National University  
26 Kingsley Street  
Acton ACT 2601  
Australia  
[pierre.vandereng@anu.edu.au](mailto:pierre.vandereng@anu.edu.au)

## **Abstract**

This paper seeks to overcome the fact that historical estimates of Gross Domestic Product (GDP) for Indonesia are currently only available in constant prices. Using the expenditure approach it offers new estimates of Gross Domestic Expenditure (GDE), the equivalent of GDP, in current prices. The paper anchors the estimates on Indonesia's Input-Output (I-O) Tables available for benchmark years between 1969 and 2010, which reveal that until 1995 Indonesia's official national accounts underestimated GDP and GDE. The paper combines corrections based on the I-O Tables with additional sources to present provisional new estimates of GDE in current prices for 1870-1941 and 1948-1995. It then analyses the composition of GDE, noting the generally modest proportions of discretionary public expenditure and capital formation, particularly during 1870-1913 and 1948-1966.

Keywords: GDP, Indonesia, expenditure, economic growth

JEL codes: E01, N15, O47

This version: 6 March 2019

This is an updated version of a paper that was first presented at the *International Workshop on Modern Economic Growth and Distribution in Asia, Latin America and the European Periphery: A Historical National Accounts Approach*, Hitotsubashi University, Tokyo, 16-18 March 2001.

# Long-term Trends in Gross Domestic Expenditure in Indonesia: Provisional Estimates

## 1. Introduction

Long-term estimates of Gross Domestic Product (GDP) in constant prices are available for Indonesia since the 19<sup>th</sup> century. They are based on output data in constant prices, extrapolated with suitable indicators of economic activity (Van der Eng 2010). A problem inherent to the used methodology of estimating GDP with output indicators is that it yields GDP series in constant prices, which inhibits their use for purposes that require GDP data in current prices.

As for other less-developed countries, the output approach has been preferred to the expenditure approach in making such estimates of GDP. There are generally more historical output data available for such countries than there are historical data that inform the expenditure approach to estimate the Gross Domestic Expenditure (GDE), an equivalent to GDP. On the other hand, the expenditure approach to estimate GDE is in principle easier to apply than the output approach to GDP. By definition there are just five components to estimate:

$$GDE_t \equiv C_t + G_t + I_t + (X_t - M_t)$$

Whereby  $C$  = private consumption,  $G$  = government consumption,  $I$  = gross fixed capital formation,  $X$  = exports of goods and services and  $M$  = imports of goods and services. By contrast, the output approach requires data to estimate value added in a wider range of economic sectors. However, this number of just five components disguises significant data problems, particularly with the estimation of  $C$ .

The expenditure approach has been used in several studies of long-term economic growth, *e.g.* Australia 1861-1939 (Butlin 1962), Netherlands 1800-1913 (Horlings and Smits 1996), Taiwan 1912-1941 (Mizoguchi 1999), Ghana 1891-1950 (Jerven 2014), and Malaya 1900-1939 (Nazrin 2017). Except for Ghana, those studies were able to draw on a greater range of historical data than available for Indonesia. Nevertheless, the methodologies and results of these studies inform this paper.

This paper uses the expenditure approach to estimate GDE in current prices for the whole of Indonesia.<sup>1</sup> At this stage, the paper only offers preliminary estimates, particularly because relevant data for estimating consumer expenditure are very limited. As soon as the output approach delivers more detailed estimates of GDP in current prices, they will be used to improve the estimates of GDE.

---

<sup>1</sup> Van Laanen (1979) made a first attempt, but his estimates were restricted to the Indonesian population of only the main island of Java during 1921-1939 and they were incomplete.

The next section outlines the significant discrepancies between GDE in Indonesia's national accounts and Input-Output Tables (I-O) until 1995, and the need to re-estimate GDE. The following sections each outline the steps taken to estimate private consumption expenditure, government consumption expenditure, gross fixed capital formation, exports and imports. Each section discusses the shortcomings of available data and the approach used to overcome limitations in the available data. The results are not necessarily consistent, but clarification of the approach may enhance transparency and improvement of the estimates at a later stage.

## **2. Gross Domestic Expenditure, the available data**

The Bureau of Statistics in the Netherlands was the first to make direct estimates of GDE for Indonesia, but only for the year 1938 (CBS 1948). Other estimates of national income in Indonesia made during the 1940s and 1950s were in principle based on the output approach (Van der Eng 2013). In the 1950s, the National Planning Bureau (*Biro Perancang Nasional*) used this approach to estimate GDP for 1951-1959. It also estimated some categories of GDE, but not private consumption. The residual difference between GDP and the other key components of GDE was assumed to be an approximation of private consumption, the main component of total expenditure. Consequently, the estimated level of private consumption depended on the accuracy of the estimates of GDP and the other key components of GDE.

In 1960 the Indonesian government transferred the responsibility for the compilation of the national accounts to the Central Bureau of Statistics (*Biro Pusat Statistik*, now *Badan Pusat Statistik*, BPS). The estimation methodology changed, but BPS continued to use the output approach as the basis for its estimates of GDE. It has published Indonesia's official annual national accounts since 1960, which include estimates of GDE. BPS did not publish the details of the estimation procedures for GDE and the detailed GDE results. But a closer look suggests that especially the early GDE data need to be used with caution. The main issue is that BPS until the revision of national accounting methodology starting with 1983 did not directly estimate private consumption, but assumed that it was the residual difference between GDP and the other key components of GDE.

Independent of Indonesia's national accounts, indirect estimates of GDE were generated as part of the Indonesia's I-O Tables since 1969. The compilation of the I-O Tables was based on separate surveys into input-output coefficients and into output in hitherto uncovered industrial sectors, particularly various services sectors. The I-O Tables therefore used different procedures to estimate value added and presented more complete output estimates. The I-O Tables allocate the value of production by industrial sector to the main categories of expenditure, then adding the balance of exports and

imports by industrial sectors. They thus approximate GDE as an aggregation of the five expenditure variables by industry, as per the equation above.

Table 1 compares the GDE components from the national accounts and the I-O Tables. It shows that the GDE components in the national accounts data were in several instances significantly lower than their equivalents in the I-O Tables. For instance, in 1971 the national accounts underestimated private consumption by 17%.

[Table 1 about here]

The I-O Tables of 1969-1985 were compiled independent of the national accounts. Starting in 1993, BPS first used the outcomes of the 1990 I-O Table for the revision of the national accounts in 1993. These revised national accounts data were taken back retrospectively to 1986. For that reason, there is no discrepancy in Table 1 for 1990. The 1995 I-O Table found that for several reasons the national accounts still underestimated GDE. Consequently, the next revision of Indonesia's national accounts, starting with 2000, was anchored on the next 2000 I-O Table. For that reason Table 1 shows only marginal discrepancies in 2000. The 2010 I-O Table was the next anchor for the revision of Indonesia's current national accounts series, starting in 2010. This is the reason why there are no discrepancies in 2010, except for exports.

Given that the I-O Tables are now the anchors of the regular revisions of Indonesia's national accounts, and the fact that additional efforts were invested in compiling the I-O Tables than the national accounts for benchmark years, it would be relevant to revise the GDE data from the national accounts in order to minimise the discrepancies with the GDE data from the I-O Tables shown in Table 1. The reasons and procedures for re-estimation may then be used to retropolate the annual time series for the main GDE components back to 1870. In principle, this would result in reasonably consistent historical time series of GDE can then be analysed further.

### **3. Private consumption**

The direct estimation of private consumption was long frustrated by the fact that relevant information was unavailable or incomplete for Indonesia. BPS designed the National Socio-Economic Survey (Susenas, *Survei Sosial Ekonomi Nasional*) in the early 1960s in part to help overcome this issue. It has implemented Susenas among households at regular intervals since 1964/65 and annually since 1986. The survey initially informed the compilation of Indonesia's national accounts, in particular for the purpose of estimating output in sectors not covered by administrative data.

Susenas proved less useful for estimating private expenditure. Table 2 shows that the Susenas estimates of annual private consumption are significantly lower than those in the national accounts. There are clear indications that Susenas does not

adequately cover high-income earning households. In addition, it long underestimated household expenditure on food (Van de Walle 1988; Surbakti 1995: 61). Non-food expenditure is also underestimated, particularly spending on consumer durables such as televisions and cars.<sup>2</sup> Consequently, while the coverage bias makes Susenas well-suited to tracking and analysing poverty trends, it is less useful to re-estimating private consumption.

[Table 2 about here]

The I-O Tables are an alternative source of information on the composition of private expenditure. As mentioned, they allocate production in between 175 (in 1971) and 185 industries (in 2010) to the main categories of expenditure. Consequently, the allocation of production by categories of expenditure allows the identification of the products and product groups in expenditure categories. Table 3 shows the shares of consumer spending on key products and product groups during key years. Interpolation of these benchmark results from the I-O Tables yields alternative series of consumer expenditure.

[Table 3 about here]

For the years before 1971, it difficult to identify nationally representative indications of the main items of private consumer expenditure for Indonesia. To start, Table 4 shows the results of the Susenas surveys in the 1960s, despite their limitations. Comparing the 1971 I-O Table results in Table 3 and the 1969/70 Susenas results in Table 4 confirms that Susenas is likely to have underestimated private consumption, particularly non-food consumption. The share of expenditure on food is 70.6% compared to 58.1% in the I-O Table. This underlines the difficulty of only using the Susenas data for the 1960s to estimate private consumption.

[Table 4 about here]

The only alternatives to Susenas are the results of various other household expenditure and consumption surveys. Table 5 gives an overview of the surveys that have been conducted in Indonesia since the 1880s. These surveys were conducted for different purposes, for example to estimate the burden of taxation, assess changes in the living wages of civil servants or day labourers, or to obtain weights for the construction of a consumer price index. There are therefore several problems that make it difficult to compare these data across time. For example: (1) The methodology differed, *e.g.* a

---

<sup>2</sup> The estimation of expenditure on consumer durables relies on the memory of the head of the households regarding spending during the year prior to the survey. For whatever reasons, low-income households tend to be less 'forgetful' than high-income households.

single interview based on recollections vs. daily recording of household expenditure. (2) The value of consumption of own production was not always fully included. (3) The surveys recorded expenditure of items that were not consistently included. (4) Surveys were based on a-select samples in terms of geography and socio-economic coverage. For example, the CKS (1928) sample contained almost only middle and higher income households. (5) Not all surveys covered a full year, and therefore did not include additional expenses for *lebaran*, the festive season after *ramadan*.

[Table 5 about here]

Despite the difficulties of comparing these survey results, Table 6 shows their outcomes. It confirms some of the issues noted above. For instance, the share of food in the surveys of 1926, 1932 and 1949 is relatively low, which seems to reflect the fact that the value of expenditure per household is relatively high in those years as the surveys were biased towards urban middle-income earners. Nevertheless, most of the survey results confirm some key features from the 1960s Susenas (Table 3) and the 1971 I-O Table (Table 3), particularly that expenditure on just food long dominated household expenditure.

[Table 6 about here]

An alternative approach to using the outcomes of household expenditure surveys is the commodity flow and retail valuation method. This method is difficult to use for Indonesia, because few data are readily available on the production of minor food products and on the production of non-agricultural products until the 1970s. A version of this approach would involve making informed time series estimates of physical quantities consumed, on the basis of snippets of possibly qualitative information and on the basis of imported goods. This would be an involved process, which may run into the problem of limited availability of nationally representative retail prices. The only representative prices available are rural retail prices for just 12 items since 1920, together with wholesale and urban retail prices of some, mainly imported products.

To overcome these difficulties, this paper uses the stylised consumption patterns shown in Table 7. These patterns are based on (a) Table 6, (b) a 1938 estimate of private consumption, which indicates that the share of six main food crops was 29%, and the total share of all food was 59% (CBS 1948), (c) the share of various consumption categories, particularly food, in Japan's private expenditure before World War II (Shinohara 1967: 136-139). The shares shown in Table 7 were interpolated and then anchored onto the value of the consumption of the six main food products in Indonesia in current prices, estimated with data on net food supply (Van der Eng 2000, updated

and extended to 1870) and rural retail prices (Van der Eng 1990, updated and extended to 1870).

[Table 7 about here]

Figure 1 shows the results of the estimation. The chart indicates that the estimates are of course not far off the estimates in the input-output tables for 1971-1990. The 1938 result is also close to the CBS (1948) estimate. The estimates are higher than the extrapolated data from Van Laanen (1979), because the latter only refer to consumption by the Indonesian population and exclude consumption by Chinese and European inhabitants of Indonesia. Nevertheless, the trend in the 1920s and 1930s is remarkably similar. The graph reveals that anchoring the estimates on the value of the net supply of the six main food crops enhances year-to-year fluctuations that are characteristic of agricultural production, despite mitigation by food imports and the likelihood of food consumption smoothing across years. Such fluctuations also take no account of the fact that expenditure on some items would not fluctuated in line with the consumption of basic food crops.

[Figure 1 about here]

Figure 1 also shows the consequences of the high rates of episodes of deflation (particularly in the 1880s and 1930s), high inflation (particularly during most of the 1950s-1960s), and moderately high inflation (1910s, 1970s-1980s) that Indonesia's economy experienced. These necessitate the use of a semi-log graph, which obscures some of the finer details for 1948-2018. Until 1990, Indonesia's national accounts estimated private consumption as a residual. The estimates in this section suggest that the residual may have been too high in the 1950s. This is not unlikely as during the 1950s capital formation and exports may have been underestimated (see below).

#### **4. Government consumption**

Indonesia's national accounts do not provide a breakdown of government consumption of goods and services. The I-O Tables yield the breakdown shown in Table 8. More than half of government consumption consisted of the services provided by people employed in the public service and the defence services, with employment in education in second place. Relevant details about government spending in the form of consumption or investment are not readily available for the 20<sup>th</sup> century. Public expenditure accounting and reporting changed over time and the definitions of expenditure items do not necessarily line up with the definitions of public consumption as part of GDE. Close scrutiny of available government accounts should allow the



compilation of consistent time series, but this work could not be conducted for the purpose of this paper.

[Table 8 about here]

Instead, Figure 2 shows the ratio of government consumption and total central government public spending since the 1950s. Where they overlap, the ratios based on the national accounts and I-O Tables are very similar. It is therefore likely that government consumption was estimated relatively accurately in the national accounts, as such data must have been almost readily available. The graph also shows that in the 1950s, general government consumption was on average 81% of central government spending. This is not surprising, as regional authorities were highly dependent on budgetary subventions from the central government, while general government investment was relatively low (Paauw 1960).

[Figure 2 about here]

The paper uses the available government consumption data from the national accounts and assumes that 80% of total central government expenditure (from BPS, *Ichtisar Bulanan*, *Statistik Konjunktur*, and *Statistik Keuangan*) was government consumption during missing years in the 1950s. Likewise, for the years 1870-1941, the paper also assumes that 80% of central government spending, excluding public spending on government-owned utility companies, was consumption of goods and services (CEI Vol.2 1976; CKS 1941).

## **5. Gross fixed capital formation**

Neither the national accounts, nor the I-O Tables distinguish between private and public gross fixed capital formation (GFCF), mainly because the estimates are largely based on the commodity flow method (Sudirman 1972; IDE 1977, vol.1: 124). The national accounts provide no breakdown by industry, and only since 1990 have they included a breakdown of GFCF by key asset categories. Table 9 shows the distribution of capital formation by main asset categories from the I-O Tables. GFCF did not take account of capital formation in non-structures in agriculture (particularly land clearing and cultivation, and for most years livestock) until 2010.

[Table 9 about here]

Table 1 indicated that the national accounts significantly underestimated GFCF for 1971, 1975 and 1980, and it is likely that this was also the case in earlier years.

Alternative estimates of GFCF are available for 1910-1957 (CEI Vol.3, 1977). However, they only refer to Dutch-owned companies and some public utilities. They do not include other foreign-owned companies, Chinese-Indonesian and Indonesian-owned companies, public investment in buildings and roads, and private investment in dwellings and small-scale agriculture (such as livestock, land clearing, irrigation and drainage structures). These estimates are therefore too low. For instance, for 1938 the estimate in CEI Vol.3 (1977) of total investment is *f*94 million. By contrast, CBS (1948) gives an estimate of *f*289 million for private investment and *f*78 million for public investment in 1938.

Van der Eng (2010) used the data from CEI Vol.3 (1977) as indicators of trends in total investment, linking them in 1938 to GFCF in order to estimate a time series of GFCF in current prices. This method takes no account of possible changes over time in the ratio of GFCF in Dutch-owned companies/utilities and total GFCF. This paper uses a different approach. It retropolates the value of GFCF by its main components according to Table 1 back from 1971. More specifically, the values of GFCF in total structures, machinery and equipment, motor vehicles, ships, and railway equipment are linked to the values of respectively cement supply (imports and domestic production valued with unit import prices), machinery and equipment imports, motor vehicle and parts imports, railway equipment imports, and ships imports (CEI Vol.8; CEI Vol.12a 1991; Foreign trade statistics). The category ‘other’ is added as 4% of the subtotal, which is the proportion in 1971. This procedure ignores, for example, the contributions of non-cement inputs in construction of structures and of domestically produced capital goods. It also takes no explicit account of non-structures capital formation in agriculture, except for the degree to which agricultural companies invested in structures and used imported machinery and other equipment.

The paper also estimated public GFCF, which is not included in the I-O Tables and the national accounts, except for respectively 1938 and some years in the 1950s. For 1870-1941, public GFCF is assumed to be the remaining 20% of total public expenditure net of expenditure for utilities (see section 4), except for 1931-1936, when an assumed 50% of the remaining public expenditure was used for crisis-related income transfers. For 1972-2017 the paper used general government investment (BPS, *Neraca Pemerintahan*), retropolated for 1966-1971 with central government expenditure on materials (BPS, *Warta BPS, Indikator Ekonomi*). As for section 4, close scrutiny of available government accounts should allow the identification of public investment, but this work could not be conducted for the purpose of this paper.

Figure 3 compares the results of the estimation procedure of GFCF with the results of the I-O Tables, expressed as percentages of total estimated GDE (this paper) and GDE (I-O Tables in Table 1). The graph shows that on average GFCF was of small to modest proportions during 1870-1910, before rising to an average of 13% during 1910-1940, which is comparable to the 11% in 1938 (CBS 1948). Figure 3 also shows considerable fluctuations in the GFCF during the 1910s-1930s, which are related to the

commodity booms and busts to which the Indonesian economy, and therefore its imports of capital goods, was exposed. Public investment dominated GFCF in the 1870s, but private enterprise carried GFCF growth during almost all years, with two exceptions. During the 1950s, private investment was small, and by the late-1950s it consisted largely of public investment. During the oil boom years 1966-1981, on average about one-quarter of GFCF was public investment. The graph indicates how massive total investment in Indonesia has been since 1971 relative to the size of the economy and relative to earlier years.

[Figure 3 about here]

## 6. Foreign trade

Data on the aggregated values of the foreign trade of goods and services on balance of payments basis were readily available: CEI Vol.8 (1987), CEI Vol.12a (1991) CKS (1941), Foreign trade statistics, Rosendale (1978) and IMF, *Balance of Payments* (based on submissions from the Java Bank and Bank Indonesia).

For the 1960s, the estimates of foreign trade in this paper are significantly higher than in Indonesia's national accounts as a consequence of Indonesia's system of multiple exchange rates during 1950-1970 (Van der Eng 2018). Since the 1950s, Indonesia's foreign trade and balance of payments data are denominated in US dollars. Conversion to rupiah was generally done on the basis of the official exchange rate, which for most years had no relation to the different nominal exchange (before export inducements and import surcharges that were differentiated by product categories) rates that applied to imports and exports. It is very likely that the official trade statistics understated imports and exports during the 1950s and 1960s, due to smuggling to evade the strict foreign exchange regulations during those decades (Simkin 1970).

Figure 4 shows the estimated shares of exports and imports in GDP. The graph shows that Indonesia's economy has since the late-1970s been much more open than any time during the 1870s-1930s. The 1950s and 1960s were a period when Indonesia increasingly withdrew from engagement with the international economy to a relative level comparable to the 1870s. The Indonesian economy experienced trade deficits during 4 decades: 1890s, 1930s, 1950s-1960s, and trade surpluses during 9 decades: 1870s-1880s, 1900s-1920s and 1970s-2000s.

[Figure 4 about here]

## 7. Trends in national expenditure

Figure 5 shows the results of the estimation procedure presented in this paper. Unfortunately, the trends are to a significant extent determined by price changes. Given the episodes of significant inflation in Indonesia in the past, this makes the presentation of growth rates meaningless. Figure 5 reveals that the estimates are in line with the 1938 estimate from CBS (1948) and of course with the I-O Tables for 1971-2010 on which the revisions were calibrated.

[Figure 5 about here]

Figure 6 shows the degree to which the estimates of GDE deviate from existing national accounts data. It confirms that the discrepancy with the I-O Tables is marginal, as expected. The estimates are significantly higher than the 1921-1939 data on Net National Product (NNP) of Polak (1943); on average by 23%. This is partly due to the difference between NNP and GDP (or GDE), as the first is net of depreciation and of net payments overseas. The estimates are also higher than those in the national accounts, with considerable variation for individual years. On average they were 3% higher than GDP in current prices estimated with the output approach during the 1950s, 18% in the 1960s, 10% in the 1970s, 3% lower during the 1980s and 9% higher in the 1990s. Compared with GDE (defined as  $GDP - G - I - (X-M)$ ) in current prices from the national accounts, the estimates were on average 1% lower in the 1950s, 22% higher in the 1960s, 11% 1970s, no difference in the 1980s, and 13% higher in the 1990s. The most significant discrepancies were in the 1960s and 1970s, as expected.

[Figure 6 about here]

Figure 7 shows the cumulative distribution of the main components of GDE. It confirms that private consumption has long been the most important component of total expenditure in Indonesia. On average it was 90% of GDE during 1870-1900, 80% 1900-1941, 86% 1948-1970, before decreasing to 58% by 2018. The high share before World War II is not unusual, as consumption was also by far the most important component in other countries. For example, in Japan it was on average 79% during 1885-1905 (Shinohara 1967), in The Netherlands 85% of GDP during 1880-1913 (Horlings and Smits 1996: 21), and in Australia 75% during 1900-1940 (Butlin 1962). In the last two cases both per capita private consumption and the share of services were higher.

[Figure 7 about here]

The high share of private consumption implies that discretionary spending on government consumption and on investment were quite low in the 1870s. They grew

only very gradually relative to the economy as a whole, reaching proportions in the 1920s that due to their cumulative effect must have started to accelerate the growth of real GDP. However, the crisis of the 1930s intervened, followed by the Japanese occupation and war of independence of the 1940s that destroyed a considerable part of capital stocks, followed in turn by the mounting economic troubles of the 1950s and 1960s. The expansion of discretionary expenditure only resumed in the late-1960s, this time boosted significantly by the oil boom that bolstered government consumption and investment, as especially private investment as Figure 3 already showed and Figure 7 confirms.

Figure 7 also indicates that the net contribution of foreign trade to domestic expenditure has long been marginal. This is the same as in many other countries. This was one of the reasons for Kravis (1970) to argue that trade is but a ‘handmaiden’ of economic growth, not a core driver. However, that does not mean foreign trade is unimportant in the process of economic development. In essence and from the perspective of aggregate expenditure, the purpose of exports is to pay for required imports. Imported consumer goods enhance domestic consumption as such goods may be cheaper and/or of better quality than domestically produced equivalents. Imported machinery and equipment introduce new production capacity and technology that allow domestic producers to increase productivity and productive capacity to produce for domestic and foreign markets.

As indicated in the previous sections, the estimation procedures presented in this paper are robust. There are at least three ways to improve on them through further research. Firstly, the estimates of private consumption are relatively arbitrary. Nevertheless, if it can be demonstrated that these are too high, the consequence will be that until the 1970s, the share of discretionary public consumption and investment and private investment will be even lower. There are other ways to approximate private consumption spending. A possible way is to estimate the value of physical quantities of goods consumed, through production and foreign trade data estimates or assumptions of per capita consumption. Apart from the surveys shown in Table 5, qualitative information may be of use to that end. Nevertheless, it will require data, considerations and judgements that are beyond the scope of this paper. Secondly, the estimates in this paper can be improved through closer scrutiny of government accounts in order to identify and categorise all public spending on goods and services for consumption and investment in line with national accounting principles. Thirdly, there is scope to improve the estimates of GFCF, for example through an as complete as possible commodity flow approach.

## References

### *Serials*

- BPS, *Neraca Pemerintahan Umum Indonesia* [Indonesian general government balance sheet], data series 1972-2017.
- BPS, *Pendapatan Nasional Indonesia* [National accounts of Indonesia], data series 1960-2018.
- BPS, *Survei Sosial Ekonomi Nasional: Pengeluaran untuk Konsumsi Penduduk Indonesia* [National socio-economic survey: Expenditure for private consumption in Indonesia], 1972-2018.
- BPS, *Statistik Keuangan Negara* [Financial statistics], data series since 1966.
- BPS, *Ichtisar Bulan Statistik* (1949-1954), continued as *Statistik Konjunktur* (1954-1963), *Warta BPS* (1966-1969), *Indikator Ekonomi* (1970-1990) [Monthly economic indicators], data series 1948-1990.
- Foreign trade statistics, *Statistiek van den Handel, de Scheepvaart en de In- en Uitvoerregten van Java en Madoera / op de Bezittingen Buiten Java en Madoera* (1870-1973); continued as *Statistiek van den Handel, de Scheepvaart en de In- en Uitvoerregten van Nederlandsch-Indië* (1874-1923); *Jaaroverzicht van de In- en Uitvoer van Nederlandsch-Indië* (1924-1940); *Meerjarige Overzichten van den In- en Uitvoer van Indonesië* 1936/1941-1946/1949 (1950); *Ichtisar Tahunan Impor dan Ekspor Indonesia* (1947-1951); *Statistik Perdagangan Impor dan Ekspor Indonesia* (1952-1953); *Impor dan Ekspor menurut Djenis Barang* (1954-1962), *Impor menurut Jenis Barang* (1963-1995).
- IMF, *Balance of Payments Yearbook*, data series 1950-1990.

### *Individual publications*

- Adyanthaya, Nitte K. (1962) 'Report to the Government of Indonesia on Labour Statistics (Family Living Surveys, Labour Force Surveys, Wage Surveys and Consumer Price Indices'. *ILO Report No.ILO/TAP/Indonesia/R.17*. Geneva: International Labor Organization.
- Arminius (H.G. Heijting) (1899) 'Het Budget van Een Javaanschen Landbouwer' [The budget of a Javanese farmer], *De Indische Gids*, 11: 1685-1720, 1885-1917, 2149-2186.
- Boeke, Julius H. (1926) 'Inlandsche Budgetten' [Indonesian budgets], *Koloniale Studiën*, 10: 229-334.
- BPS (1966) *Survey Sosial Ekonomi Nasional Tahap Pertama (Desember 1963 – Djanuari 1964): Pengeluaran untuk Konsumsi Penduduk Djawa-Madura*. [National Socio-Economic Survey (December 1963 – January 1964): Expenditure for the people's consumption in Java-Madura]. Jakarta: Biro Pusat Statistik.

- BPS (1968) *Survey Sosial Ekonomi Nasional Tahap Kedua (Nopember 1964 - Pebruari 1965): Pengeluaran untuk Konsumsi Penduduk*. [Third National Socio-Economic Survey (November 1964 – February 1965): Expenditure for the people's consumption]. Jakarta: Biro Pusat Statistik.
- BPS (1970) *Survey Sosial Ekonomi Nasional Tahap Ketiga (September 1967 – Oktober 1967): Pengeluaran untuk Konsumsi Penduduk Djawa-Madura*. Jakarta: Biro Pusat Statistik.
- BPS (1973a) *Survey Biaya Hidup, Cost of Living Survey, Jakarta, 1968-1969*. Jakarta: Biro Pusat Statistik.
- BPS (1973b) *Survey Biaya Hidup, Cost of Living Survey, Surabaya, 1968-1969*. Jakarta: Biro Pusat Statistik.
- BPS (1973c) *Survey Biaya Hidup, Cost of Living Survey, Bandung, 1968-1969*. Jakarta: Biro Pusat Statistik.
- BPS (1973d) *Survey Sosial Ekonomi Nasional Tahap Ke-Empat (Oktober 1969 – April 1970): Pengeluaran untuk Konsumsi Penduduk* [Fourth National Socio-Economic Survey (October 1969 - April 1970): Expenditure for the people's consumption]. Jakarta: Biro Pusat Statistik.
- BPS (1978) *Tabel Input-Output Indonesia, 1975*. Jakarta: Biro Pusat Statistik.
- BPS (1984) *Tabel Input-Output Indonesia, 1980*. Jakarta: Biro Pusat Statistik.
- BPS (1989) *Tabel Input-Output Indonesia, 1980*. Jakarta: Biro Pusat Statistik.
- BPS (1994) *Tabel Input-Output Indonesia, 1990*. Jakarta: Biro Pusat Statistik.
- BPS (1998) *Tabel Input-Output Indonesia, 1995*. Jakarta: Biro Pusat Statistik.
- BPS (2003) *Tabel Input Output Indonesia 2000*. Jakarta: Badan Pusat Statistik.
- BPS (2008) *Tabel Input Output Indonesia 2005*. Jakarta: Badan Pusat Statistik.
- BPS (2015) *Tabel Input Output Indonesia 2010*. Jakarta: Badan Pusat Statistik.
- Butlin, Noel G. (1962) *Australian Domestic Product, Investment and Foreign Borrowing 1861-1939*. Cambridge: Cambridge UP.
- CBS (1948) 'De Nationale Rekeningen voor Nederlandsch-Indië, 1938' [The national accounts of colonial Indonesia, 1938], *Statistische en Econometrische Onderzoekingen*, 61-75.
- CEI *Changing Economy in Indonesia: A Selection of Statistical Source Material from the Early 19th Century up to 1940*:
2. *Public Finance 1816-1939*. The Hague: Nijhoff, 1976;
  3. *Expenditure on Fixed Asssets*. The Hague: Nijhoff, 1977;
  5. *National Income*. The Hague: Nijhoff, 1979;
  6. *Balance of Payments 1822-1939*. Amsterdam: Royal Tropical Institute, 1987;
  7. *Manufacturing Industry, 1870-1942*. Amsterdam: Royal Tropical Institute, 1987;
  - 12a. *General Trade Statistics 1822-1940*. Amsterdam: Royal Tropical Institute, 1991.
- CKS (1928) 'Onderzoek naar Gezinsuitgaven in Nederlandsch-Indië Gedurende Augustus 1925 en het Jaar 1926.' [Investigation into household expenditure in the

- Netherlands Indies during August 1925 and the year 1926] *Mededeelingen van het Centraal Kantoor voor de Statistiek No.60*. Weltevreden: Albrecht.
- CKS (1939) 'Een Onderzoek naar de Levenswijze der Gemeentekoelies te Batavia in 1937.' [Investigation into the living standard of coolies employed by the council of Batavia city in 1937.] *Mededeelingen van het Centraal Kantoor voor de Statistiek No.177*. Batavia: Cyclostyle Centrale.
- CKS (1941) *Indisch Verslag 1940* [Statistical yearbook 1940]. Batavia: Centraal Kantoor voor de Statistiek.
- Horlings, Edwin and Smits, Jan-Pieter (1996) 'Private Consumer Expenditure in the Netherlands, 1800-1913', *Economic and Social History in the Netherlands*, 7: 15-40.
- Huizinga, Luidolf Harm (1958) *Het Koeliebudgetonderzoek op Java in 1939-40*. Wageningen: Vada.
- IDE (1977) *Input-Output Table Indonesia, 1971*. Tokyo: Institute of Developing Economies (2 volumes).
- ILO (1967) *Household Income and Expenditure Statistics No. 1, 1950-1964*. Geneva: International Labour Office.
- Jerven, Morten (2014) 'A West African experiment: Constructing a GDP series for colonial Ghana, 1891-1950', *Economic History Review*, 67(4) 964-992.
- Joesoef, Daoed (1973) *Monnaie et Politique Monétaire en Indonésie de 1950 à 1960*. [Money and monetary policy in Indonesia 1950-1960] PhD thesis, University of Paris I (Sorbonne), Sciences Économique.
- Kravis, Irvin B. (1970) 'Trade as a handmaiden of growth: Similarities between the nineteenth and twentieth centuries', *Economic Journal*, 80(323) 850-872.
- LEKNAS (1972) *Input-Output Table of Indonesia, 1969: Inter-Industrial Transaction Studies*. Jakarta: Lembaga Ekonomi dan Kemasharakatan Nasional.
- Mizoguchi, Toshiyuki (1999) 'Estimates of Long-Term National Accounts Statistics of Taiwan, 1912-90', *The Developing Economies*, 37(1) 114-130.
- Muljatno (1960) 'Perhitungan Pendapatan Nasional Indonesia untuk Tahun 1953 dan 1954' [The calculation of national income of Indonesia for 1953 and 1954], *Ekonomi dan Keuangan Indonesia*, 13: 162-211.
- Nazrin Shah (2017) *Charting the Economy: Early 20th Century Malaya and Contemporary Malaysian Contrasts*. Kuala Lumpur: Oxford UP.
- Paauw, Douglas S. (1960) *Financing Economic Development: The Indonesian Case*. Glencoe: The Free Press.
- Polak, Jacques J. (1943) *The National Income of the Netherlands Indies, 1921-1939*. New York: Institute of Pacific Relations. (Reprinted in CEI Vol.5, 1979: 25-102)
- Ochse, Jacob J. and Terra, Gerardus Jacobus Antonius (1934) *Geld- en Producten-Huishouding, Volksvoeding en -Gezondheid in Koetowingangoen*. Buitenzorg: Archipel.
- Rosendale, Phyllis (1978) *The Indonesian Balance of Payments, 1950-1976: Some New Estimates*. Unpublished PhD thesis, Australian National University, Canberra.



- Sato, Shigeru (1994) *War, Nationalism and Peasants: Java under the Japanese Occupation*. Sydney: Allen and Unwin.
- Shinohara, Miyohei (1967) 'Kojin shohi shishutsu' [Personal consumption expenditures]. *Choki Keizai Tokei 6* [Estimates of Long-Term Economic Statistics of Japan since 1868 Vol.6.]. Tokyo: Toyo Keizai Shinposha.
- Simkin, Colin G.F. (1970) 'Indonesia's Unrecorded Trade', *Bulletin of Indonesian Economic Studies*, 6(1) 17-44.
- Sudirman, Tjahjani (1972) 'Sources and Methods Used for Estimating Capital Formation Within the Framework of National Accounts in Indonesia' in OECD (1972) *National Accounts in Developing Countries of Asia*. (Paris: OECD) 195-210.
- Sukanto (1962) 'Laporan Penjelidikan Biaya Hidup untuk Daerah Istimewa Jogjakarta 1954-1960' [Report of research into the cost of living for DI Yogyakarta, 1954-1960], *Laporan Kongres Ilmu Pengetahuan Nasional Kedua, Djilid Kesembilan Seksi E-3 (Ekonomi)*. (Djakarta: MIPI) 331-378.
- Surbakti, Pajung (1995) *Indonesia's National Socio-Economic Survey: A Continual Data Source for Analysis on Welfare Development*. Jakarta: Central Bureau of Statistics.
- Van de Graaff, E.A. (1955) *De Statistiek van Indonesië*. [Indonesia's statistics]. The Hague: Van Hoeve.
- Van de Walle, Dominique (1988) 'On the Use of the Susenas for Modelling Consumer Behaviour', *Bulletin of Indonesian Economic Studies*, 24(2) 107-121.
- Van der Eng, Pierre (1990) "Growth and Productivity Change in Indonesian Agriculture, 1880-1985." *Research Memorandum No.348*. Groningen: Institute of Economic Research, University of Groningen.
- Van der Eng, Pierre (1998) 'Exploring Exploitation: The Netherlands and Colonial Indonesia 1870-1940', *Revista de Historia Económica*, 16(1) 291-321.
- Van der Eng, Pierre (2000) 'Food for Growth: Trends in Indonesia's Food Supply, 1880-1995', *Journal of Interdisciplinary History*, 30(4) 591-616.
- Van der Eng, Pierre (2010) 'The Sources of Long-Term Economic Growth in Indonesia, 1880-2008', *Explorations in Economic History*, 47(3) 294-309.
- Van der Eng, Pierre (2013) 'The Institutionalisation of Macro-Economic Measurement in Indonesia before the 1980s', *Masyarakat Indonesia*, 39(2) 551-578.
- Van der Eng, Pierre (2018) 'Exchange Rate Systems and Long-term Economic Growth in Indonesia.' Paper presented at the 18<sup>th</sup> World Economic History Congress, Boston, 29 July – 3 August 2018.
- Van Laanen, Jan T.M. (1979) 'Het Bestedingspakket van de "Inheemse" Bevolking op Java (1921-1939)' [The pattern of expenditure of the Indonesian population in Java, 1921-1939] in F. van Anrooij *et al.* (eds.), *Between People and Statistics: Essays in Modern Indonesian History*. (The Hague: Nijhoff) 133-145.
- Volksovoeding (1940) 'Patjet-Rapport: Onderzoek naar de Voeding en Voedingstoestand van de Bevolking te Patjet (Regentschap Tjiandjoer) in 1937-1939.' [Pacet report: Investigation into the food consumption and nutritional status of the population of

- Pacet (Cianjur Regency) in 1937-1939] *Mededeeling van het Instituut voor Volksvoeding No.2*. Batavia: Instituut voor Volksvoeding.
- Volksvoeding (1941) 'Goenoeng Kidoel-Rapport: Onderzoek naar de Voeding en Voedingstoestand der Bevolking in het Regentschap Goenoeng Kidoel (Djokdjakarta) in 1938-1941.' [Guning Kidul report: Investigation into the food consumption and nutritional status of the population of Gunung Kidul Regency (Yogyakarta) in 1938-1941] *Mededeeling van het Instituut voor Volksvoeding No.5*. Batavia: Instituut voor Volksvoeding.
- Weinreb, Fryderyk and Ibrahim, A. Madjid (1957) 'Penjelidikan Biaja Hidup di Djakarta' [Research into the cost of living in Jakarta], *Ekonomi dan Keunangan Indonesia*, 10: 738-795.
- Wirjosudarmo, Suratman (1964) *Beberapa Penemuan pokok Penjelidikan Anggaran Belandja Keluarga di Daerah Istimewa Jogjakarta, Agustus 1958-Agustus 1959* [Some findings from research into household budgets in Yogyakarta, August 1958 – August 1959]. Yogyakarta: Gadjah Mada University.

*Table 1: Comparison of Gross Domestic Expenditure According to the National Accounts and the Input-Output Tables, 1969-2010*

	Consumption		Gross	Exports	Imports	GDP(E)
	Private	Government	Fixed	Goods	Goods	
			Capital	and	and	
			Formation	Services	Services	
A. National Accounts (billion Rupiah at market prices)						
1969	2,360	199	317	245	-403	2,718
1971	2,833	341	580	530	-611	3,672
1975	8,745	1,254	2,572	2,851	-2,778	12,643
1980	27,503	4,688	9,485	13,849	-10,080	45,446
1985	57,201	10,893	22,367	21,534	-19,835	92,160
1990	124,184	18,649	59,758	53,289	-50,046	205,834
1995	279,876	35,584	129,217	119,592	-125,656	438,613
2000	856,798	90,779	275,881	569,490	-423,317	1,369,631
2005	1,785,596	224,980	655,854	945,121	-830,083	2,781,469
2010	3,858,822	618,178	2,127,841	1,667,918	-1,537,720	6,735,039
B. Input-Output Tables (billion Rupiah at purchaser's prices)*						
1969	2,327	204	270	344	-316	2,830
1971	3,178	323	937	570	-711	4,297
1975	8,583	1,359	2,846	3,346	-2,370	13,765
1980	25,595	5,148	10,550	16,162	-9,886	47,569
1985	57,201	11,400	21,780	22,523	-15,473	97,430
1990	124,184	18,649	59,758	53,289	-50,046	205,834
1995	359,849	35,702	140,245	122,360	-126,764	531,393
2000	856,798	90,780	272,638	569,490	-418,719	1,370,987
2005	1,785,591	224,981	693,057	977,105	-820,078	2,860,656
2010	3,858,822	618,178	2,127,841	1,520,295	-1,537,720	6,587,416
C. Difference (B minus A as percentage of A)						
1969	1.4	-2.6	14.7	-40.6	21.5	-4.1
1971	-12.2	5.2	-61.6	-7.7	-16.4	-17.0
1975	1.8	-8.4	-10.7	-17.4	14.7	-8.9
1980	6.9	-9.8	-11.2	-16.7	1.9	-4.7
1985	0.0	-4.7	2.6	-4.6	22.0	-5.7
1990	0.0	0.0	0.0	0.0	0.0	0.0
1995	-28.6	-0.3	-8.5	-2.3	-0.9	-21.2
2000	0.0	0.0	1.2	0.0	1.1	-0.1
2005	0.0	0.0	-5.7	-3.4	1.2	-2.8
2010	0.0	0.0	0.0	8.9	0.0	2.2

\* 1969 input-output table data in producer's prices.

Sources: LEKNAS (1972), IDE (1977), BPS (1978, 1984, 1989, 1994, 1998, 2003, 2008, 2015), and BPS *Pendapatan Nasional Indonesia*.

*Table 2: Total Private Consumption According to Susenas and National Accounts, 1964/65-1990 (billion current Rupiah, market prices)*

	Susenas	National Accounts	% difference
1964/65	6,682	13,363	50.0
1969/70	1,928	2,527	76.3
1976	7,101	10,464	67.9
1980	14,763	27,503	53.7
1984	30,782	54,067	56.9
1987	44,503	71,989	61.8
1990	65,106	124,184	52.4

*Note:* Total expenditure Susenas obtained by multiplying average of monthly expenditure per capita in the respective income brackets by the numbers of people in each of these brackets, and multiplying the total by 12 months.

*Sources:* BPS reports on household expenditure, BPS *Pendapatan Nasional Indonesia*.

*Table 3: Shares of the Main Items of Private Consumption According to the Input-Output Tables, 1971-2010 (percentages)*

	1971	1980	1990	2000	2010
Rice	21.4	18.3	12.1	7.2	6.0
Non-rice main foods, products	5.6	6.3	5.5	4.0	1.8
Vegetables, fruits	7.6	7.3	7.4	5.0	3.3
Other foods, products	7.0	9.8	8.2	8.4	9.2
Meat, poultry, dairy, fish	9.8	10.1	8.9	12.2	10.6
Restaurants, prepared food	<u>6.6</u>	<u>6.4</u>	<u>8.4</u>	<u>7.6</u>	<u>7.9</u>
Sub-total food	58.1	58.1	50.5	44.3	38.8
Tobacco, cigarettes	4.0	5.4	5.4	4.2	5.3
Firewood, kerosene, electricity, gas, water	4.7	3.6	3.3	3.7	3.1
Clothing, footwear	6.8	4.0	4.2	3.3	3.6
Housing, furnishings	6.8	7.9	7.8	9.1	15.3
Transport, communications	6.2	7.5	8.2	10.7	14.9
Health care, education	1.7	4.0	4.7	3.1	6.7
Leisure, entertainment	5.0	1.2	1.0	1.2	0.2
Other	<u>6.9</u>	<u>8.2</u>	<u>14.9</u>	<u>20.2</u>	<u>12.1</u>
Total	100.0	100.0	100.0	100.0	100.0

*Notes:* Non-rice main foods are maize, cassava, sweet potatoes, peanuts and soybeans. 1969 is excluded, because it identifies only 19 items of private expenditure, compared to 128 in 1971.

*Sources:* Calculated from IDE (1977) and BPS (1984, 1994, 2004, 2015).

*Table 4: Shares in Private Consumption, Socio-Economic Surveys 1964/65-1969/70 (percentages)*

	Java only			Indonesia	
	1964/65	1967	1969/70	1964/65	1969/70
Cereals, products	40.2	35.2	32.9	37.4	31.1
Cassava, products	2.4	3.6	3.3	2.9	2.9
Fish, sea food	5.9	5.7	5.1	7.1	6.8
Meat, eggs	2.7	2.4	3.2	3.3	3.6
Milk, products	0.2	0.3	1.2	0.3	1.3
Vegetables, fruits	8.8	9.6	6.0	8.3	6.1
Other food	10.4	9.0	14.6	11.4	14.9
Prepared food	<u>4.4</u>	<u>4.5</u>	<u>3.6</u>	<u>4.6</u>	<u>4.0</u>
Sub-total food	75.0	70.3	69.9	75.3	70.6
Alcoholic beverages, tobacco	5.0	5.3	6.2	5.1	6.6
House rent, maintenance	1.8	2.9	3.3	1.9	3.4
Fuel, electricity, water	5.1	6.0	5.7	4.2	4.7
Clothing, footwear	4.3	4.3	5.4	4.6	5.5
(Semi)durables	1.7	1.7	1.7	1.7	2.2
Education	0.5	1.4	1.1	0.6	0.9
Misc. goods, services	3.7	4.3	3.3	4.2	3.3
Consumer tax, insurance	0.1	0.5	0.7	0.1	0.6
Festivals, ceremonies	<u>2.7</u>	<u>3.4</u>	<u>2.6</u>	<u>2.4</u>	<u>2.2</u>
Total	100.0	100.0	100.0	100.0	100.0

Sources: Calculated from BPS (1968, 1970, 1970d).

*Table 5: Household Expenditure Surveys Conducted in Indonesia, 1886-1970*

Source (= original source)	Sample size	City/district (region)	Year(s)
Arminius (1889)	3 farm hh	Kutoarjo (Bagelen, C.Java)	1886-88
Boeke (1927)	29 rural hh	Java (various regions)	1924-25
CKS (1928)	314 urban hh*	Indonesia	1925
Van de Graaff (1955) = CKS unpubl.	3,000 hh	Indonesia	1932
Van de Graaff (1955) = CKS (1936)	n.a., civil servant hh.	Jakarta (W.Java)	1932
Ochse and Terra (1934: 59, 77)	30 farm hh	Kutawinangun (Kebumen, C.Java)	1932-33
CKS (1939)	95 urban labourers' hh	Jakarta (W.Java)	1937
Volksvoeding (1940)	12 rural hh	Pacet (Cianjur, W.Java)	1938
Volksvoeding (1941)	100 rural hh	Gunungkidul (Yogyakarta, C.Java)	1938-39
Huizenga (1958)	1,945 rural labourers' hh	Java	1939-40
Sato (1994: 96)	421 farm hh	Tasikmadu (Malang, E.Java)	1942
Sato (1994: 102-3)	345 farm hh	Tumut (Bantul, C.Java)	1942
Ibrahim/Weinreb (1957) = CKS unpubl.	158 urban hh	Jakarta (W.Java)	1949
Van de Graaff (1955) = KPS unpubl.	461 labourers' hh	Jakarta (W.Java)	1953
Ibrahim and Weinreb (1957)	50 hh	Jakarta (W.Java)	1953-54
Adyanthaya (1962) & ILO (1967)	2,639 urban hh	Jakarta (W.Java)	1957
Adyanthaya (1962) & ILO (1967)	2,180 urban hh	Surabaya (E.Java)	1958a
Adyanthaya (1962) & ILO (1967)	123 rural hh	Wuryantoro (Solo, C.Java)	1958-59
Sukanto (1962) & Wirjosudarmo (1964)	503 hh	DI Yogyakarta (C.Java)	1958b
BPS (1966) Susenas	16,108 hh	Java	1963-64
BPS (1968), Susenas	21,305 hh	Indonesia	1964-65
BPS (1970), Susenas	24,000 hh	Java	1967
BPS (1973a), Survey Biaya Hidup	n.a., urban	Jakarta (W.Java)	1968-69a
BPS (1973b), Survey Biaya Hidup	n.a., urban	Surabaya (E.Java)	1968-69b
BPS (1973c), Survey Biaya Hidup	n.a., urban	Bandung (W.Java)	1968-69c
BPS (1973d), Susenas	n.a.	Indonesia	1969-70

*Notes:* hh = households.

*Sources:* As indicated and listed in the references to this paper.

Table 6: Private Consumption in Java According to Household Surveys, 1886-1970

	1886-88	1924-25	1925*	1932	1932-33	1937	1938
Six main foods	60.0%	30.1%	23.0%	24.3%	59.7%	33.7%	70.3%
Other food	9.2%	27.6%	12.1%			36.8%	
Tobacco, betel nut, alcohol	2.0%	5.8%			6.5%	4.5%	2.5%
Clothing	5.2%	6.6%	9.7%	7.3%	5.2%	8.0%	3.6%
Housing, furnishing	1.0%	5.4%	12.6%	22.9%		0.6%	5.0%
Fuel, electricity, water	4.1%	9.8%	4.7%	6.6%		9.8%	6.5%
Transport		1.3%	4.4%			0.9%	
Social expenses	6.7%	9.7%	33.4%		2.5%	2.2%	7.5%
Other	11.8%	3.7%	33.4%	39.0%	26.2%		4.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Share of all food	69.2%	57.7%	35.1%	24.3%	59.7%	70.6%	68.9%
Annual, f per household	58	256	2,154	325	217	136	137

	1939-40	1942	1949	1953-54	1957	1958a	1958b	1958-59
Six main foods	42.4%	57.6%		29.6%	63.4%	63.3%	38.1%	55.1%
Other food	26.5%	17.2%	53.9%	44.5%			23.4%	
Tobacco, betel nut, alcohol	6.9%	7.9%			6.2%	7.6%		3.8%
Clothing	5.0%	7.9%	6.5%	4.6%	8.4%	7.3%	5.1%	8.9%
Housing, furnishing	1.6%		7.0%	1.8%	9.2%	9.7%	2.9%	9.7%
Fuel, electricity, water	7.8%		5.8%	8.0%	4.4%	4.6%	4.5%	8.4%
Transport	1.0%				1.4%	1.1%	0.4%	0.4%
Social expenses	7.1%	8.2%		0.7%	0.6%	0.6%	10.0%	4.8%
Other	1.6%	1.2%	26.9%	10.8%	6.4%	5.8%	15.6%	8.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Share of all food	74.8%	74.8%	53.9%	74.0%	63.4%	63.3%	61.5%	55.1%
Annual, f/Rp per household	100	69	550	5,690	7,674	7,957	4,874	4,849

	1963-64	1964-65	1967	1968-69a	1968-69b	1968-69c	1969-70
Six main foods	33.5%	42.7%	38.8%	26.4%	26.7%	28.4%	36.2%
Other food	22.9%	32.4%	31.5%	27.0%	27.0%	24.7%	33.7%
Tobacco, betel nut, alcohol	3.5%	5.0%	5.3%	4.1%	6.3%	3.6%	6.2%
Clothing	7.5%	4.3%	4.3%	8.5%	9.3%	9.5%	5.4%
Housing, furnishing	9.9%	3.5%	4.6%	11.2%	12.9%	13.0%	5.1%
Fuel, electricity, water		5.1%	6.0%	4.3%	6.3%	4.7%	5.7%
Transport				6.5%	3.5%	3.2%	
Social expenses	6.9%	2.7%	3.4%				2.6%
Other	15.8%	4.3%	6.1%	12.0%	8.1%	13.0%	5.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Share of all food	56.4%	75.0%	70.3%	53.8%	54.4%	53.6%	69.9%
Annual, Rp per household	34,739	57,984	66,900	120,924	101,028	98,136	174,876

\* Most participants were literate high income earning public servants. The average is for 81 Indonesian and European households with a maximum annual income of f3,300.

Notes: Six main foods are: rice, maize, cassava, sweet potatoes, peanuts and soybeans.

Not all results of the surveys in Table 5 were available to be included in this table.

Sources: See Table 5.

*Table 7: Largely Stylised Shares in Private Consumption, 1870-1980 (percentages)*

	1870	1900	1920	1940	1960	1971	1980
Six main foods	30.0	30.0	30.0	27.5	27.5	27.0	24.6
Other food	30.0	30.0	30.0	32.5	32.5	30.1	32.2
Tobacco, betel nut, alcohol	5.0	5.0	5.0	5.0	5.0	4.1	5.7
Clothing	10.0	10.0	8.0	8.0	6.0	6.8	4.0
Housing, furnishing	5.0	3.0	3.0	4.0	4.0	6.8	7.9
Fuel, electricity, water	5.0	5.0	5.0	5.0	5.0	4.7	3.6
Transport	0.0	1.0	2.0	4.0	4.0	6.2	7.5
Other	<u>15.0</u>	<u>16.0</u>	<u>17.0</u>	<u>16.5</u>	<u>16.0</u>	<u>14.3</u>	<u>14.5</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Share of only food products      60.0    60.0    60.0    57.5    60.0    57.1    58.1

*Sources:* 1870-1960 are hypothetical estimates as noted in the main text; 1971 from IDE (1977); 1980 from BPS (1984).

*Table 8: Shares of Goods and Services in Government Consumption, 1971-2010 (percentages)*

	1971	1980	1990	2000	2010
Public administration, defence	57.5	47.9	51.7	64.1	60.5
Education	9.4	15.3	13.7	23.7	28.2
Restaurants, hotels	4.8	6.4	4.9	8.0	7.3
Buildings, public works, utilities	4.3	3.9	3.9		
Petroleum refinery products	2.1	1.4	6.3		
Transport, communications	4.0	2.9	3.6		
Banking, finance, insurance	1.6	1.0	2.1		1.1
Other	<u>16.2</u>	<u>21.2</u>	<u>13.7</u>	<u>4.3</u>	<u>2.9</u>
Total	100.0	100.0	100.0	100.0	100.0

*Note:* Blanks indicate that the sources recorded no values.

*Sources:* IDE (1977), BPS (1984, 1994, 2004, 2015).

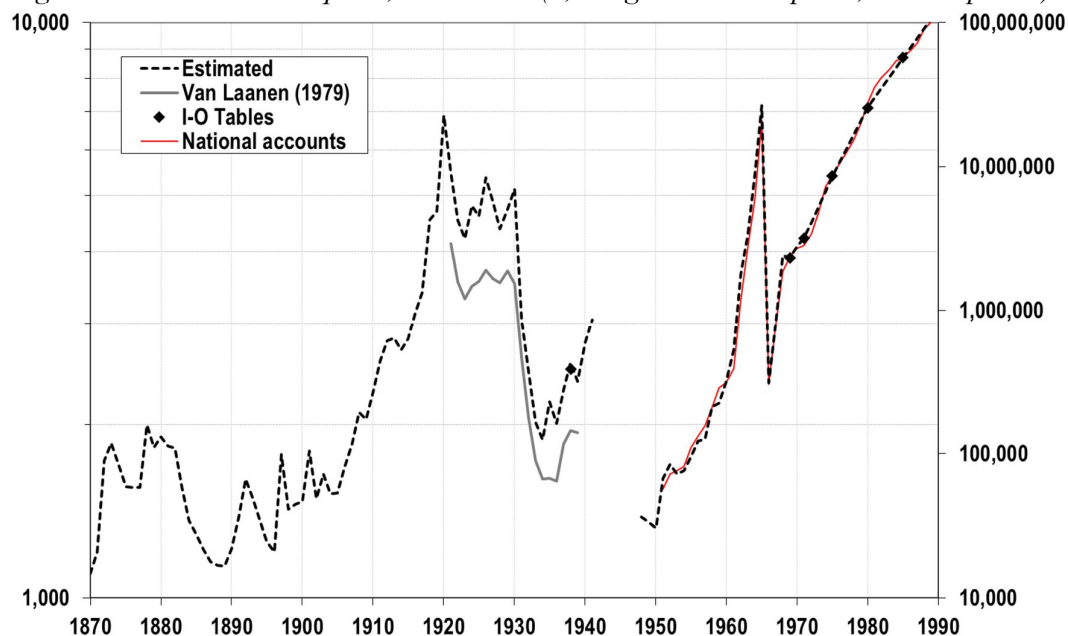


*Table 9: Shares in Total Gross Fixed Capital Formation, 1971-2010 (percentages)*

	1971	1980	1990	2000	2010
Residential buildings	14.8	41.3	30.8	30.5	24.5
Non-residential buildings	10.9				
Public works, roads, bridges	3.7	10.3	16.5	30.0	25.1
Public works, agriculture	2.6	4.9	5.0	9.2	8.9
Installation public utilities	2.5	2.2	3.1	3.7	12.6
Other structures	<u>18.3</u>	<u>6.2</u>	<u>4.8</u>	<u>3.1</u>	<u>3.2</u>
Sub-total structures	52.8	64.9	60.2	76.4	74.3
Machinery, equipment	33.5	14.7	27.9	14.0	11.6
Ships	0.3	9.6	2.7	2.0	0.9
Motor vehicles	9.2	6.7	3.9	3.7	3.7
Aircraft	0.9	1.7	1.4	1.4	0.6
Railway equipment	0.2	0.2	0.1	0.0	0.1
Other	<u>3.2</u>	<u>2.1</u>	<u>3.7</u>	<u>2.4</u>	<u>9.0</u>
Total	100.0	100.0	100.0	100.0	100.0

*Sources:* IDE (1977), BPS (1984, 1994, 2003, 2015).

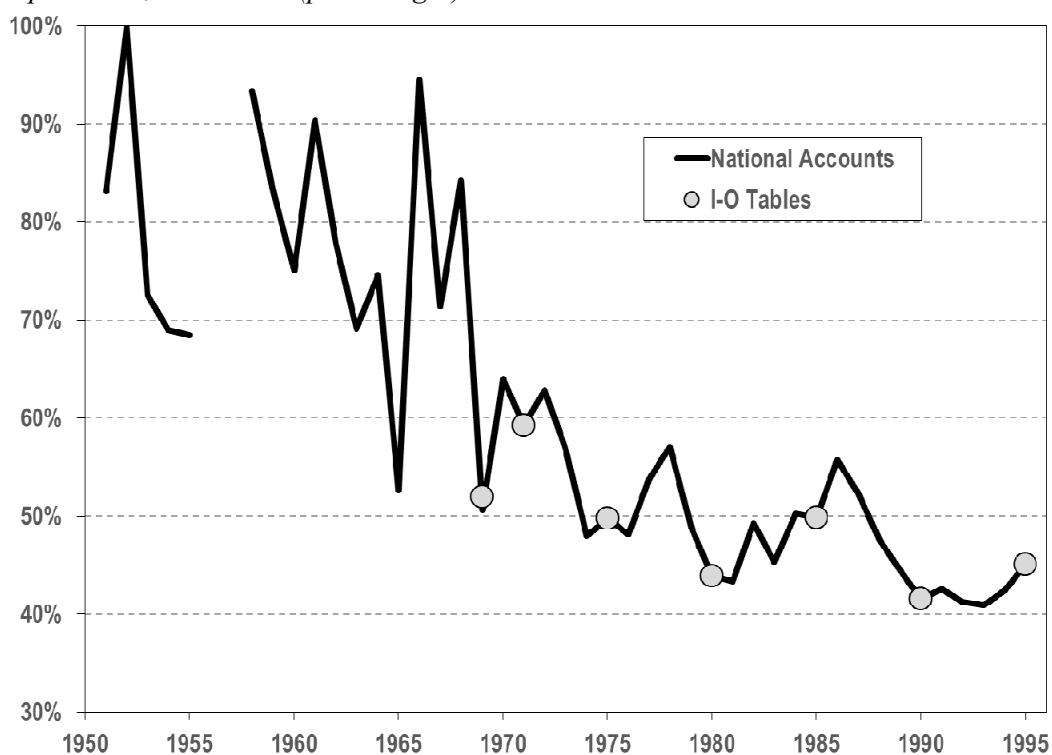
Figure 1: Private Consumption, 1870-1990 (1,000 guilders or rupiahs, current prices)



Notes: 1870-1941 left-hand scale, 1948-1990 right hand scale. Both are logarithmic. Van Laanen (1979) results extrapolated from Java to the whole of Indonesia with population data.

Sources: Table A.1; Van Laanen (1979); CBS (1948); Muljatno (1960) and Joesoef (1973: 32); Table 1.

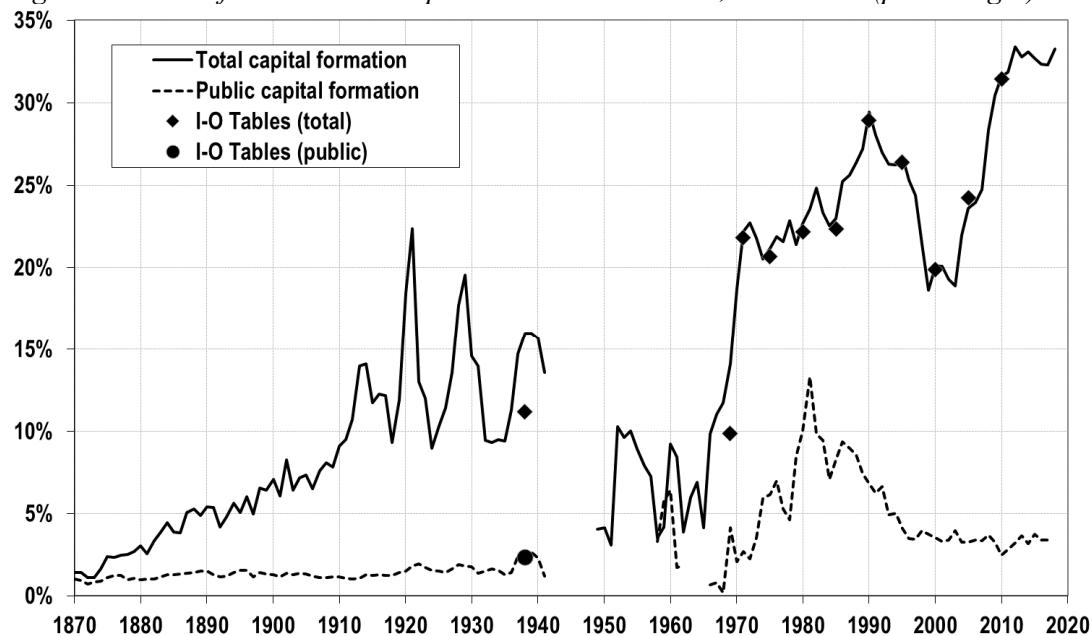
Figure 2: Ratio of General Government Consumption and Central Government Expenditure, 1951-1995 (percentages)



*Note:* General government consumption refers to central, provincial, district and village government together during calendar years. Central government spending refers to fiscal years (April-March).

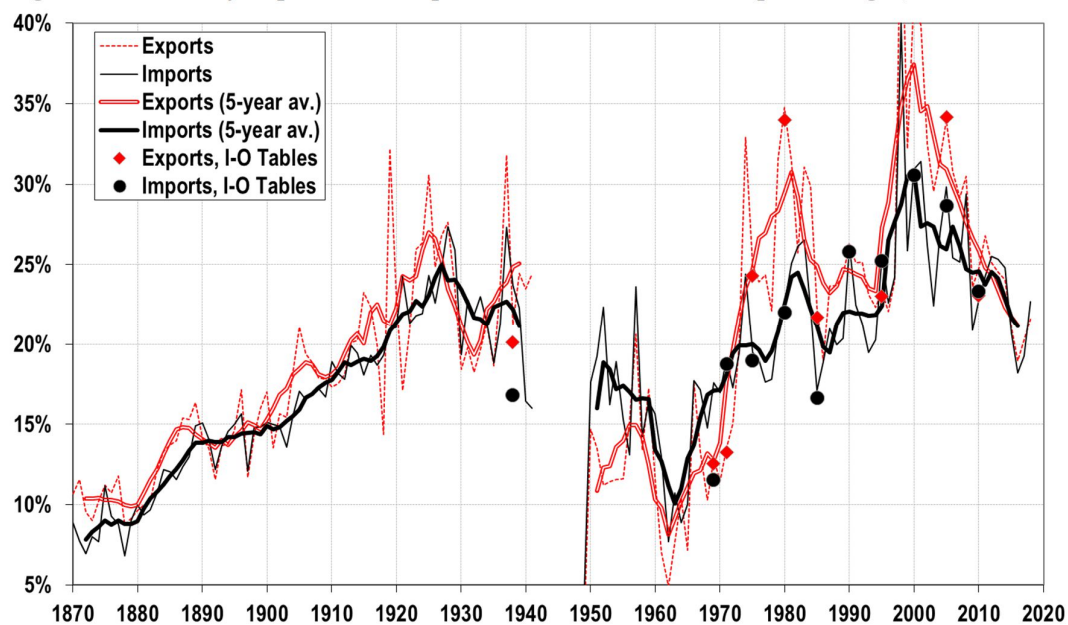
*Sources:* Table 1; BPS, *Pendapatan Nasional*; Muljatno (1960) and Joesoef (1973); BPS, *Statistik Konjunktur* and *Statistik Keuangan*.

Figure 3: Share of Gross Fixed Capital Formation in GDE, 1870-2018 (percentages)



Sources: See main text and Table 1; CBE (1948); Muljatno (1960) and Joesoef (1973: 32).

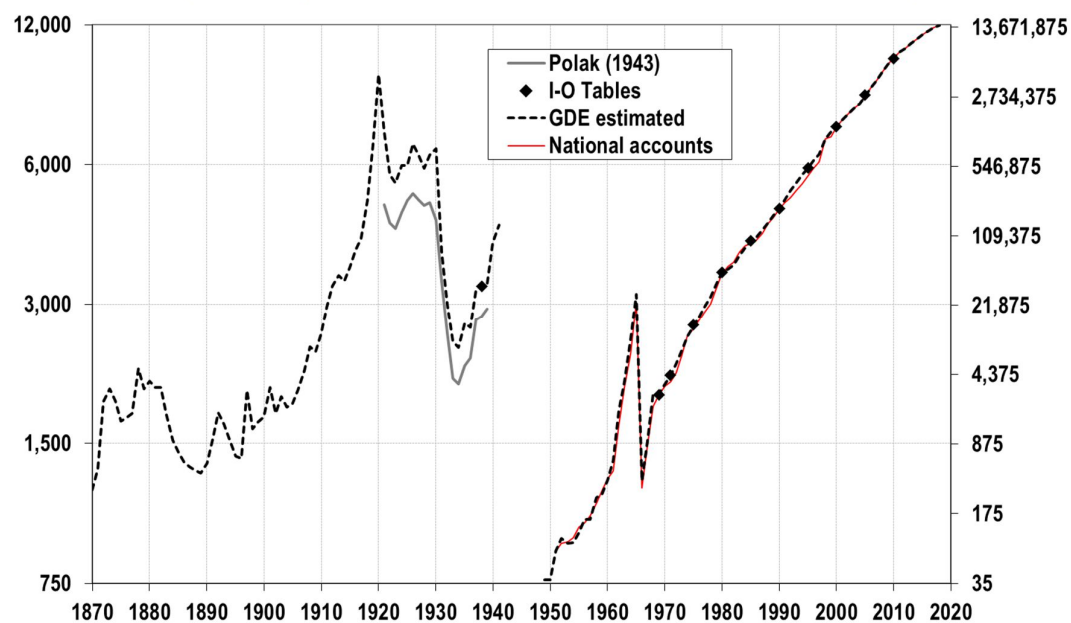
Figure 4: Shares of Exports and Imports in GDE, 1870-2018 (percentages)



Note: Imports and exports comprise goods and services.

Sources: See main text and Table 1; CBS (1948).

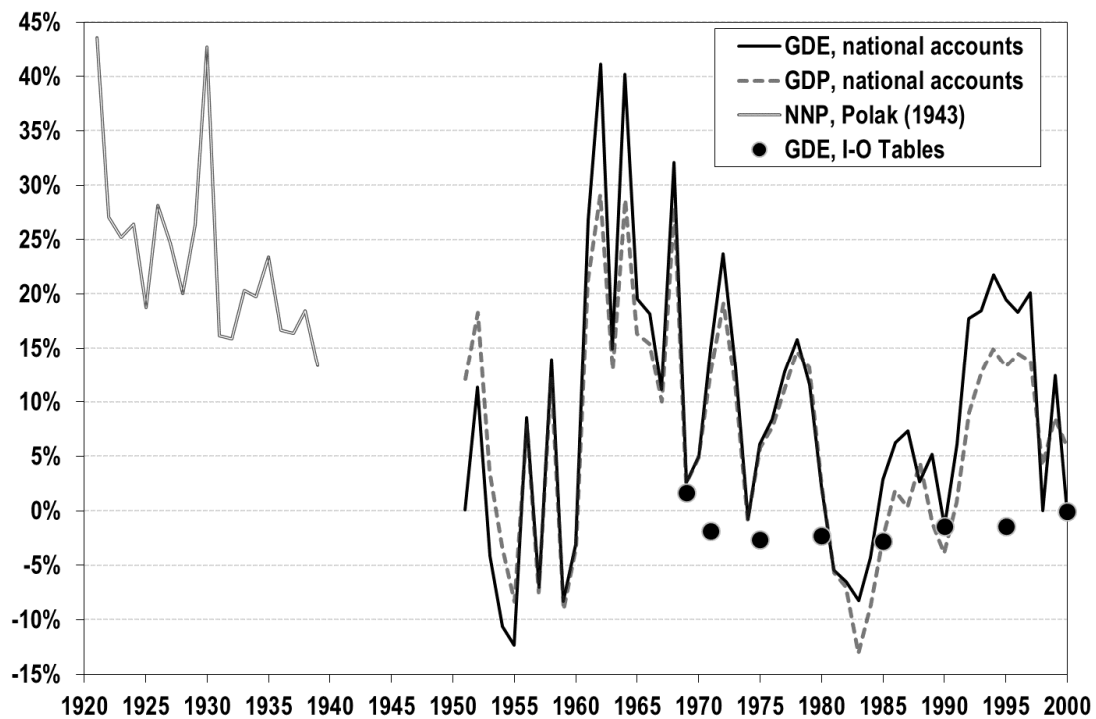
Figure 5: Comparison of GDP Estimates, 1870-2018 (1000 guilders or rupiahs)



Notes: 1880-1941 left-hand scale, 1948-1990 right hand scale. Both are logarithmic.

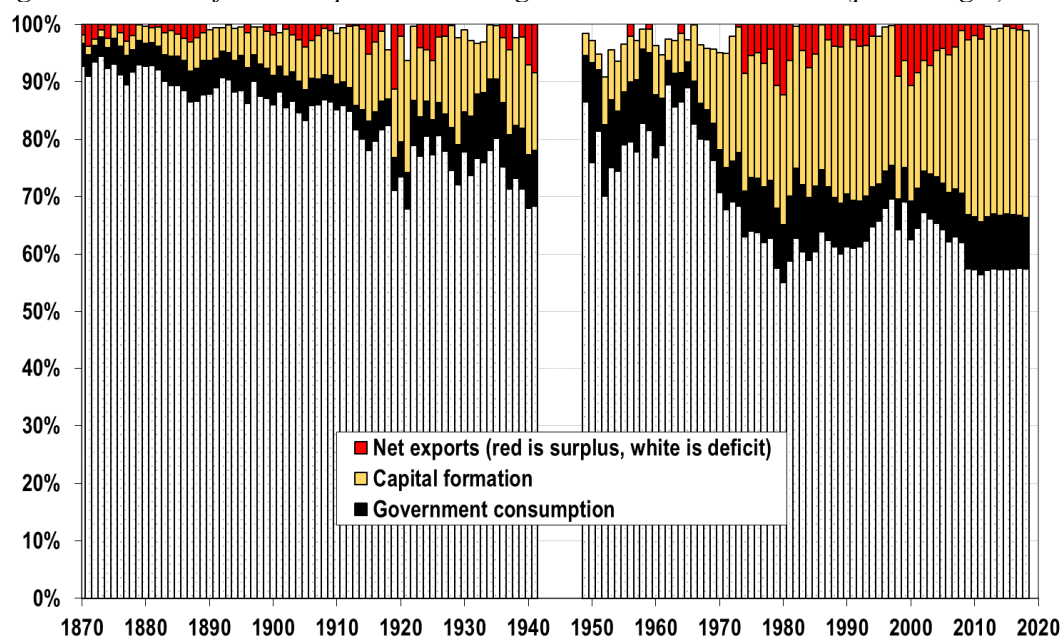
Sources: See main text and Table 1; Polak (1943); CBS (1948); Muljatno (1960) and Joesoef (1973); BPS, *Pendapatan Nasional*.

Figure 6: Discrepancies Between New and Existing GDE and GDP Estimates, 1921-2000 (percentages)



Sources: See main text and Table 1; Polak (1943); Muljatno (1960) and Joesoef (1973); BPS, *Pendapatan Nasional*.

Figure 7: Shares of Main Expenditure Categories in GDE, 1870-2018 (percentages)



Sources: See main text.



Appendix Table A1: Main Components of Gross Domestic Expenditure in Indonesia, 1870-2018 (million guilders, billion rupiah)

	Consumption		Gross Fixed Capital Formation			Exports of Goods and Services	Imports of Goods and Services	Gross Domestic Expenditure (GDE)
	Private	Government	Private	Government	Total			
1870	1,102	48	5	12	17	127	-105	1,189
71	1,201	50	6	13	19	153	-102	1,321
72	1,727	52	8	13	21	176	-128	1,848
73	1,855	67	5	17	22	177	-157	1,964
74	1,711	67	13	17	30	189	-143	1,854
1875	1,558	75	21	19	40	188	-187	1,674
76	1,554	85	18	21	40	183	-158	1,704
77	1,556	88	21	22	43	205	-153	1,739
78	1,994	83	34	21	55	190	-148	2,174
79	1,824	84	32	21	53	179	-177	1,963
1880	1,902	81	42	20	62	196	-203	2,038
81	1,834	80	30	20	50	197	-185	1,976
82	1,819	79	47	20	66	201	-191	1,975
83	1,555	79	47	20	67	211	-186	1,726
84	1,362	78	48	19	68	203	-186	1,525
1885	1,284	74	37	18	56	197	-173	1,438
86	1,210	72	35	18	53	191	-158	1,368
87	1,156	73	49	18	68	206	-165	1,337
88	1,137	75	50	19	69	201	-170	1,313
89	1,135	77	44	19	63	212	-193	1,295
1890	1,219	81	54	20	74	192	-205	1,361
91	1,376	79	62	20	82	206	-215	1,528
92	1,605	81	53	20	73	202	-213	1,748
93	1,490	80	60	20	80	226	-225	1,650
94	1,368	85	65	21	86	210	-222	1,527
1895	1,254	87	49	22	71	205	-211	1,406
96	1,203	87	62	22	84	239	-218	1,394
97	1,773	89	74	22	97	228	-236	1,951
98	1,424	91	83	23	105	231	-239	1,613
99	1,452	89	85	22	107	267	-247	1,668
1900	1,471	87	100	22	122	291	-259	1,711
01	1,799	90	97	22	120	268	-297	1,980
02	1,485	96	119	24	143	272	-258	1,737
03	1,641	96	98	24	122	292	-257	1,894
04	1,517	98	104	24	129	328	-279	1,792
1905	1,519	98	110	24	134	384	-311	1,825
06	1,683	94	104	24	127	380	-324	1,961
07	1,847	96	139	24	163	405	-364	2,148
08	2,100	106	169	27	195	433	-417	2,418
09	2,039	109	157	27	184	420	-394	2,358
1910	2,274	122	205	30	235	448	-490	2,589
11	2,572	125	251	31	282	520	-538	2,961
12	2,790	134	320	34	353	596	-585	3,288
13	2,825	146	448	37	485	696	-690	3,462
14	2,691	170	432	43	475	680	-653	3,362

*Appendix Table A1 (continued): Main Components of Gross Domestic Expenditure in Indonesia, 1870-2018  
(million guilders, billion rupiah)*

	Consumption		Gross Fixed Capital Formation			Exports of Goods and Services	Imports of Goods and Services	Gross Domestic Expenditure (GDE)
	Private	Government	Private	Government	Total			
1915	2,818	181	378	45	423	839	-652	3,608
16	3,123	199	431	50	481	876	-757	3,922
17	3,399	205	455	51	506	830	-778	4,163
18	4,543	252	405	63	468	720	-968	5,015
19	4,706	377	694	94	788	2,131	-1,385	6,617
1920	6,897	572	1,591	143	1,734	2,169	-1,978	9,393
21	5,485	506	1,455	127	1,582	1,209	-1,716	7,067
22	4,534	445	630	111	741	1,194	-1,216	5,698
23	4,215	376	564	94	658	1,420	-1,195	5,474
24	4,810	366	445	91	537	1,575	-1,311	5,977
1925	4,613	364	524	91	615	1,824	-1,451	5,966
26	5,374	376	667	94	761	1,655	-1,506	6,660
27	4,892	408	751	102	853	1,682	-1,554	6,280
28	4,389	445	931	111	1,042	1,626	-1,612	5,890
29	4,743	461	1,113	115	1,228	1,475	-1,626	6,281
1930	5,147	461	833	115	948	1,197	-1,258	6,495
31	3,043	422	491	53	543	770	-888	3,891
32	2,467	361	239	45	284	549	-657	3,004
33	2,017	324	192	41	233	490	-573	2,491
34	1,883	298	192	37	229	513	-515	2,409
1935	2,189	281	221	35	256	507	-512	2,721
36	2,005	298	264	37	301	630	-567	2,668
37	2,297	305	398	76	475	1,024	-880	3,221
38	2,561	323	452	81	533	708	-791	3,334
39	2,370	351	444	88	531	813	-741	3,324
1940	2,773	376	546	94	640	957	-670	4,076
41	3,043	431	550	54	604	1,085	-713	4,450

Appendix Table A1 (continued): Main Components of Gross Domestic Expenditure in Indonesia, 1870-2018 (million guilders, billion rupiah)

	Consumption		Gross Fixed Capital Formation			Exports of Goods and Services	Imports of Goods and Services	Gross Domestic Expenditure (GDE)
	Private	Government	Private	Government	Total			
1948	36,291	2,500			791	986	-1,106	39,463
49	33,763	3,126			1,526	1,099	-1,719	37,794
1950	30,404	6,981			1,561	5,548	-6,670	37,824
51	67,442	8,830			2,298	10,017	-14,318	74,269
52	84,623	15,000			10,158	11,058	-22,083	98,755
53	72,377	11,357			8,455	10,043	-14,268	87,964
54	76,220	10,609			8,956	10,328	-16,862	89,251
1955	95,198	11,179			10,001	13,051	-17,164	112,264
56	121,672	16,012			12,109	23,290	-20,060	153,023
57	126,977	20,488			11,148	31,754	-36,352	154,016
58	211,952	32,982	619	8,287	8,906	33,660	-35,891	251,607
59	223,770	36,917	-4,349	15,868	11,519	47,264	-45,064	274,406
1960	312,826	45,000	10,562	24,246	34,808	44,038	-59,061	377,612
61	526,042	55,000	40,151	10,224	50,375	42,022	-77,359	596,081
62	1,779,471	83,000	38,547	34,817	73,363	92,499	-144,723	1,883,610
63	3,351,071	228,000			220,985	282,200	-395,010	3,687,246
64	8,647,563	508,000			692,558	1,042,685	-888,925	10,001,881
1965	26,643,299	1,330,000			1,174,353	2,032,800	-2,838,000	28,342,452
66	309,058	27,800	34,318	2,500	36,818	65,910	-66,215	373,371
67	811,744	62,500	96,272	7,536	103,808	125,523	-161,443	942,131
68	2,412,373	156,000	320,351	5,000	325,351	284,272	-409,446	2,768,550
69	2,326,939	199,000	278,060	115,651	393,711	358,392	-490,266	2,787,776
1970	2,752,264	293,000	583,603	73,343	656,946	402,116	-594,972	3,509,355
71	3,177,590	341,000	824,433	112,928	937,361	570,292	-806,356	4,219,887
72	4,073,670	414,000	1,155,863	126,357	1,282,220	848,378	-974,371	5,643,896
73	5,222,444	716,000	1,396,302	268,716	1,665,018	1,524,221	-1,486,413	7,641,271
74	6,695,173	841,000	1,547,821	633,227	2,181,048	3,494,690	-2,591,505	10,620,406
1975	8,583,211	1,253,700	2,017,845	824,899	2,842,744	3,346,311	-2,611,755	13,414,212
76	10,677,755	1,590,500	2,495,471	1,173,270	3,668,741	4,014,188	-3,187,899	16,763,286
77	13,283,426	2,077,300	3,501,902	1,129,087	4,630,989	5,227,012	-3,776,682	21,442,046
78	16,524,954	2,658,900	4,799,541	1,217,443	6,016,984	5,821,720	-4,691,665	26,330,892
79	20,557,504	3,733,400	4,607,785	3,035,000	7,642,785	11,269,948	-7,474,510	35,729,127
1980	25,574,110	4,688,200	5,877,745	4,672,000	10,549,745	16,162,162	-10,469,023	46,505,194
81	30,041,511	5,787,900	5,225,079	6,814,000	12,039,079	16,047,034	-12,815,778	51,099,746
82	35,289,296	6,831,700	8,364,861	5,482,000	13,846,861	14,345,680	-14,560,953	55,752,585
83	41,453,789	8,077,000	9,528,309	6,499,000	16,027,309	21,333,948	-18,222,431	68,669,615
84	48,695,122	9,121,500	12,797,632	5,848,000	18,645,632	24,723,541	-18,426,430	82,759,365
1985	57,201,404	10,893,100	13,939,000	7,841,000	21,780,000	21,166,274	-16,234,097	94,806,681
86	66,809,971	11,328,700	16,543,591	9,818,000	26,361,591	19,839,089	-19,770,790	104,568,561
87	78,032,564	11,763,500	20,849,395	11,214,900	32,064,295	29,619,283	-26,274,148	125,205,493
88	91,140,303	12,755,800	26,488,354	12,726,300	39,214,654	35,281,631	-29,666,805	148,725,584
89	106,449,852	15,697,600	35,062,959	13,186,700	48,249,659	43,242,093	-36,130,502	177,508,701

*Appendix Table A1 (continued): Main Components of Gross Domestic Expenditure in Indonesia, 1870-2018 (million guilders, billion rupiah)*

	Consumption		Gross Fixed Capital Formation			Exports of Goods and Services	Imports of Goods and Services	Gross Domestic Expenditure (GDE)
	Private	Government	Private	Government	Total			
1990	124,331,065	18,649,100	45,920,041	13,838,000	59,758,041	53,288,762	-53,110,661	202,916,307
91	153,775,759	20,784,600	54,903,764	15,759,000	70,662,764	63,319,430	-56,625,067	251,917,486
92	190,193,690	24,731,300	63,016,264	20,671,617	83,687,881	78,050,597	-66,240,820	310,422,649
93	235,236,295	29,756,700	80,587,300	18,675,586	99,262,886	87,477,731	-73,667,953	378,065,659
94	290,946,112	31,014,000	95,404,770	22,501,644	117,906,415	100,466,897	-91,120,519	449,212,904
1995	359,849,400	35,584,200	118,810,792	21,434,208	140,245,000	122,359,619	-133,954,510	524,083,709
96	428,028,165	40,299,200	136,032,356	21,620,344	157,652,700	137,533,300	-140,812,000	622,701,365
97	509,124,400	42,952,000	152,742,456	24,943,644	177,686,100	174,871,300	-176,599,800	728,034,000
98	663,459,600	54,415,900	180,251,640	41,112,160	221,363,800	506,244,800	-413,058,100	1,032,426,000
99	838,097,200	72,631,300	180,654,850	45,360,950	226,015,800	390,560,100	-313,720,200	1,213,584,200
2000	856,798,300	90,779,700	227,378,470	48,502,730	275,881,200	569,490,300	-423,317,900	1,369,631,600
01	1,039,655,000	113,416,100	270,281,230	53,594,070	323,875,300	642,594,600	-506,426,300	1,613,114,700
02	1,231,964,500	132,218,800	291,971,400	61,995,600	353,967,000	595,514,000	-480,815,400	1,832,848,900
03	1,372,078,000	163,701,400	310,226,920	82,561,640	392,788,560	613,720,800	-465,940,891	2,076,347,869
04	1,532,888,300	191,055,700	438,944,510	76,436,720	515,381,230	739,639,307	-632,376,144	2,346,588,393
2005	1,785,596,400	224,980,600	565,641,370	90,212,880	655,854,250	945,121,767	-830,083,444	2,781,469,573
06	2,092,655,670	288,079,870	692,065,073	113,721,050	805,786,123	1,036,316,461	-855,587,836	3,367,250,288
07	2,510,503,800	329,760,103	851,937,300	133,689,800	985,627,100	1,162,973,800	-1,003,271,309	3,985,593,494
08	2,999,956,900	416,866,669	1,192,081,990	178,634,980	1,370,716,970	1,475,119,100	-1,422,902,089	4,839,757,550
09	3,290,995,934	537,588,828	1,557,755,531	186,601,559	1,744,357,090	1,354,409,380	-1,197,092,700	5,730,258,532
2010	3,858,821,790	618,177,990	1,961,657,835	166,182,845	2,127,840,680	1,667,917,820	-1,537,719,780	6,735,038,500
11	4,340,605,430	709,450,770	2,235,119,968	216,794,042	2,451,914,010	2,061,886,160	-1,868,074,970	7,695,781,400
12	4,858,330,830	796,848,280	2,545,881,470	273,145,000	2,819,026,470	2,118,979,000	-2,152,937,000	8,440,247,580
13	5,425,016,630	908,574,300	2,709,960,160	341,536,000	3,051,496,160	2,283,776,660	-2,359,212,090	9,309,651,660
14	6,039,436,230	996,197,440	3,108,282,740	328,641,000	3,436,923,740	2,501,424,820	-2,580,508,040	10,393,474,190
2015	6,621,880,250	1,123,749,870	3,349,516,860	432,495,000	3,782,011,860	2,438,992,670	-2,394,879,290	11,571,755,360
16	7,171,522,830	1,181,613,130	3,616,759,810	423,442,000	4,040,201,810	2,367,365,190	-2,273,528,020	12,487,174,940
17	7,788,168,380	1,234,554,340	3,912,949,770	457,625,000	4,370,574,770	2,743,062,480	-2,605,237,430	13,531,122,540
2018	8,450,535,590	1,332,534,480			4,790,606,990	3,110,754,990	-3,272,523,130	14,411,908,920

Note: 2017 and 2018 are provisional estimates, to be revised by BPS in the course of 2018 and 2019.