

# Financing the State: Government Tax Revenue from 1800 to 2012

Codebook, Version 2.0

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## 1 Introduction

This dataset presents information on historical central government revenues for 31 countries in Europe and the Americas for the period from 1800 (or independence) to 2012.<sup>1</sup> Obtaining comprehensive information on the public finances of governments is challenging. Surprisingly, even for today's developed countries, for example the member countries of the OECD, there is no single cross-national database that provides a comprehensive picture of the sources of government funding starting with the establishment or independence of modern nation states in the early 19th century. What does exist are several databases with partial geographical or temporal coverage, often providing conflicting estimates of the size of the central governments, the sources of government funding, and nominal and real gross domestic products.

For this dataset, we have assembled information on the public finances of central governments as well as the level of economic activity of more than a dozen commonly used cross-national databases. We found that, unsurprisingly, several of these databases have themselves at least in part relied on the same cross-national and country-specific sources to construct their estimates. Nonetheless, estimates of our variables of interest, especially further back in time, are often wildly different.

To complement and adjudicate between existing databases, we combined information from these existing data collection efforts with additional country-specific sources to arrive at, to our knowledge, the most comprehensive historical dataset on public finances of central governments for the countries in our set. A description of the data aggregation process as well as all country specific sources are provided in this document.

In what follows we describe the coverage of the dataset across space and time (section 3) and present a detailed description of the variables (section 4). In addition, we provide a description of the coding process along with the references of the cross-national and country-specific sources that were used to construct our estimates (section 6).

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<sup>1</sup>If needed, users of the dataset can easily extend coverage beyond 2012 since the data series match with regularly updated information from the OECD and IMF.

## 2 Recommended Citations

Scholars who wish to use the data compiled here in their own work are kindly asked to include the following reference:

1. Anonymized

## 3 Coverage

The dataset provides an unbalanced panel of 31 countries: Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Canada, Chile, Colombia, Denmark, Ecuador, Finland, France, Germany (West Germany between 1949 and 1990), Ireland, Italy, Japan, Mexico, New Zealand, Norway, Paraguay, Peru, Portugal, Spain, Sweden, Switzerland, the Netherlands, the United Kingdom, the United States, Uruguay, and Venezuela from 1800 (or independence) to 2012. In other words, the dataset includes all South American, North American, and Western European countries with a population of more than one million, plus Australia, New Zealand, Japan, and Mexico.

## 4 Variables

The dataset contains information on the public finances of central governments. To make such information comparable cross-nationally we have chosen to normalize nominal revenue figures in two ways: (i) as a share of the total budget, and (ii) as a share of total gross domestic product<sup>2</sup>.

The total tax revenue of the central state is disaggregated guided by the *Government Finance Statistics Manual 2001* of the International Monetary Fund (IMF) which provides a classification of types of revenue, and describes in detail the contents of each classification category. Given the paucity of detailed historical data and the needs of our project, we combined some subcategories. First, we are interested in total tax revenue `centaxtot`, as well as the shares of total revenue coming from direct (`centaxdirectsh`) and indirect (`centaxindirectsh`) taxes. Further, we measure two sub-categories of direct taxation, namely taxes on property (`centaxpropertysh`) and income (`centaxincomesh`). For indirect taxes, we separate excises (`centaxexcisesh`), consumption (`centaxconssh`), and customs (`centaxcustomssh`).

Our categorization is thus:

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<sup>2</sup>Incomplete information on exchange rates of national currencies prevents us from providing additional data on government size and revenues in real terms in a common currency across countries, say U.S. Dollars or gold. However, since cross-national datasets of GDP in constant U.S. Dollars are available, for example see Maddison (2001a,b), analysts can normalize the fiscal variables using these data.

## 1. Total Tax Revenue

### (a) Direct Taxes

- i. Property
- ii. Income

### (b) Indirect Taxes

- i. Excise
- ii. Consumption
- iii. Customs

The variables in the dataset and their names are listed together with a short description below.

**cname** The name of the country, using names from the *Quality of Government* dataset (Teorell et al., 2018).

**ccode** ISO three-digit numeric country code.

**year** The year.

**gdpnom** Nominal Gross Domestic Product (in millions of local currency). When unavailable, we use the Nominal Gross National Product or the Net National Product.

**gdp** Real Gross Domestic Product (in millions of local currency).

**centaxgdp** Total central government tax revenue as a share of GDP.

**centaxtot** Total central government tax revenue (in millions of local currency). Taxes are defined as compulsory and unrequited levies by the government, following the Organisation for Economic Co-operation and Development (OECD). Excluded are social security contributions and non-tax revenues<sup>3</sup>.

**centaxdirectsh** Share of total central government tax revenue from direct taxes. A direct tax is imposed *directly* upon an individual person (legal or natural) or property, in contrast to a tax imposed upon a transaction. Direct taxes include taxes on income, property, and other direct taxes.

**centaxpropertysh** Share of total central government tax revenue from property taxes, most importantly levies on land and real estate. These include (i) recurrent taxes on immovable property, (ii) recurrent taxes on net wealth, (iii) estate, inheritance, and gift taxes, (iv) taxes in financial and capital transactions, (v) other taxes on property.

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<sup>3</sup>We consider social contributions as required payments, as they provide a benefit in return. See Kiss et al. (2009) for a discussion of the issues with classifying parts of the budget as taxes vs. non-tax revenues.

**centaxincomesh** Share of total central government tax revenue from income taxes. These include taxes on (i) income, profits, and capital gains by individuals, (ii) income, profits, and capital gains by corporations and other enterprises, and (iii) taxes on payroll and workforce. Ideally, we would prefer to separate these three sub-categories, however, especially historical data sources often do not allow a more fine grained presentation. The separation of individual and corporate income taxes is inconsistent across time and space. In many countries, individuals (including lawyers, doctors, and accountants) can choose whether to incorporate their personal business or remain ‘in persona’ businesses. Such choices, in turn, are often influenced by taxation rules. To circumvent such difficulties and reduce coding inconsistencies, we combined personal and corporate income taxes. The inclusion of payroll taxes is particularly problematic, if one studies the political economy of tax choices. However, payroll taxation as a concept started being introduced in the mid-twentieth-century without clear historical analogue. As a result, we also combine payroll taxes with other income taxes to arrive at an overall estimate of the level and extent of income taxation.

**centaxindirectsh** Share of total tax revenue from indirect taxes. An indirect tax is a tax on type of transaction, for example sales or importing goods. Indirect taxes include excises, customs, consumption taxes, and other indirect taxes.

**centaxexcisesh** Share of total tax revenue from excises. Excise taxes are domestic taxes on the production or sale of specific goods, or licenses granted for the sale of production of such goods. In this category we include monopoly profits of state-owned companies because we see the difference only in form rather than substance. For example, if a state owns all salt production in a country and charges a higher price as a result of this setup, the welfare results are no different compared to a situation in which salt was produced competitively and the price was increased by a special levy on salt sales.

**centaxconssh** Share of total tax revenue from consumption taxes. This category includes levies on value-added taxes, sales taxes, and turnover and other general taxes on goods and services. Before consumption taxes in their current form became popular (starting in the 1920s), there were various forms of other broad-based consumption taxes which are all included in this category.

**centaxcustomssh** Share of total tax revenue from customs and taxes on international trade. Customs are the international pendant to excises in that they tax the flow of goods across a country’s borders. Our measure of customs includes (i) customs and other import duties, (ii) taxes on exports, (iii) taxes on profits of export or import monopolies, (iv) exchange profits, (v) exchange taxes, and (vi) other taxes on international trade and transactions.

## 5 Data summary

The goal of the dataset is to provide the most comprehensive dataset on government revenues for the selected countries from 1800 (or independence) until today. Table 1 provides an overview of the data coverage by country. The *year of independence* is the year in which a country was independently able to collect revenues at the central government level. These years may differ from formal declarations of independence or the completion of independence wars. If fiscal independence was achieved before 1800, we enter 1800 as the starting year for our data collection effort.

Table 1 provides the total number of years of available data by country for *Nominal GDP*, *Total Tax Revenue*, the *Size of Government* (share of total tax revenue in nominal GDP), and the availability of at least one disaggregated *Budget Item*.

Unsurprisingly, far back in history, especially in the early 19th century, some data is simply unavailable. Figure 1 provides an overview of data availability over time. While total government revenues (top-right panel) are available for large swaths of time, the unavailability of nominal GDP estimates for many countries in the 19th century (top left panel) limits the calculations of government size (bottom left panel). In addition, disaggregated budgets are only available for a minority of independent countries before about 1870.

## 6 The Coding Process

Collecting data for a larger number of countries over long time spans presents difficult issues regarding measurement and consistency. The overall goal of the data collection has been to create long time series that are internally consistent within a country over time and that connect to contemporary datasets which in turn allow easy continual updates in the future. When different sources of data are combined, there need to be decisions about how to decide which sources to use and how to judge their quality. In addition, using and combining different sources has the potential to introduce measurement error and potentially bias the constructed estimates. Beyond the decisions about how we integrated disparate sources, we also address a few issues that are relevant for analysis based on these data below.

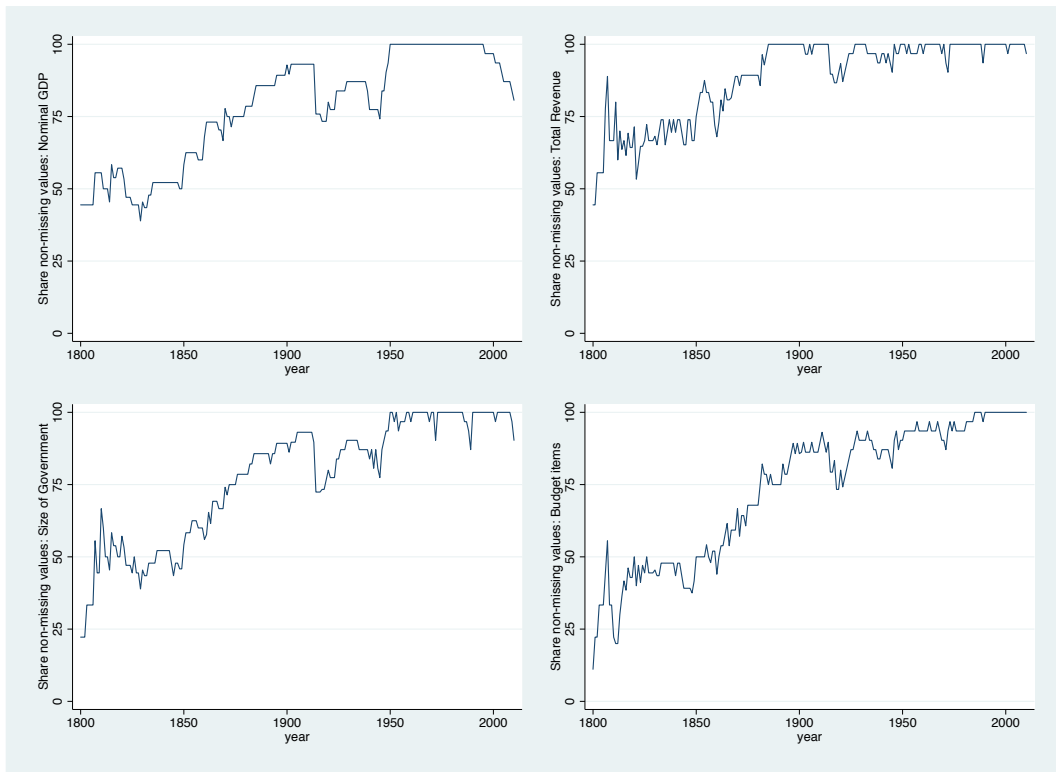
### Central vs. Total Government Revenues

The dataset covers central government tax revenues only. Although we would prefer to include all levels of government, this was not possible given our ambition regarding time and cross-sectional coverage. Considering the difficulties collecting

Table 1: Availability of Data in Number of Years by Country

Country	Year of Independence	Nominal GDP	Total Tax Revenue	Government Size	Budget Items
Argentina	1816	129	194	192	148
Australia	1901	111	110	111	110
Austria	1800	112	190	124	175
Belgium	1830	165	174	164	175
Bolivia	1825	61	127	59	43
Brazil	1822	152	189	147	131
Canada	1867	143	145	142	145
Chile	1818	186	194	201	195
Colombia	1831	213	174	176	161
Denmark	1800	194	192	192	176
Ecuador	1830	62	165	72	60
Finland	1917	152	129	130	129
France	1800	181	205	193	197
Germany	1871	139	134	117	133
Ireland	1921	64	89	86	90
Italy	1861	151	150	150	150
Japan	1800	127	132	132	132
Mexico	1822	118	186	113	99
Netherlands	1815	200	198	194	197
New Zealand	1857	145	172	151	156
Norway	1814	168	160	154	153
Paraguay	1811	71	112	69	31
Peru	1821	113	149	112	113
Portugal	1800	178	170	172	172
Spain	1800	162	194	157	194
Sweden	1800	212	212	212	152
Switzerland	1848	147	162	147	141
United Kingdom	1800	209	209	208	209
United States	1800	213	212	212	212
Uruguay	1830	142	126	126	114
Venezuela	1830	183	181	178	106

Figure 1: Data availability over time



the data for the central level of government, adding local or regional levels of government would require time and resources beyond the scope of this project and may simply be unavailable for some countries in the distant historical past.

Analysts should take this focus on central government tax revenues into account when drawing conclusions from the data. First, given the exclusion of sub-national taxation, the level of government taxation is likely biased downwards in federal countries like Germany or the United States. The omission of sub-national taxation could be particularly problematic if the extent of fiscal centralization has changed over time. Second, the relative shares of direct and indirect taxes may be affected depending on which level of government such taxes are collected. For example, if one type of tax – say income tax – is collected at the local level and another – the value-added tax for instance – on the central level, then the relative importance of these taxes is different when looking through the lens of central tax revenues only.

## Combining sources

When different sources are used for constructing a single data series, measurement error can arise from differences in definitions and methods of calculation. Researchers commonly average values when multiple sources are available. We chose not to do so for several reasons. First, many of the cross-national sources we rely on use an overlapping set of sources to construct their estimates. Averaging across available values would leave us with an unknown amalgamate of potentially duplicated sources. Second, the longitudinal coverage of the available sources varies substantially. Simple averages would overweight some sources. In addition, such weights would differ across countries and time periods, and result in jumps in the longitudinal record when the availability of sources changes. Third, the quality of available sources differs markedly. Generally, we prefer country-specific secondary or primary sources (for example, by country experts, central banks, treasury departments, or national statistical agencies) over available cross-national datasets for historical periods. Equally averaging sources of differing quality may increase rather than reduce measurement error.

Rather than averaging across available sources, we followed a decision tree to decide which sources to use as the basis for our estimates. Keeping in mind our goal of connecting historical time series to contemporary high-quality data sets (such as from the OECD, the IMF, and CEPAL), we were guided by the following rules in our data collection effort:

- *Minimize the number of sources.* We keep the number of sources to construct any data series as low as possible without reducing coverage over time. In addition, if several sources provide information on several concepts (e.g. the individual parts of the budget), we prefer to use a single source across concepts within the same time period.
- *Prefer high-quality sources.* We give primacy to primary and country-specific secondary sources, especially if detailed sources and explanations are provided. We find that country specific sources are often more fine-grained and more specific about the estimates they present. On the flip side, country-specific sources often entail idiosyncratic sources of government revenue (e.g. a stamp tax, or a tax on bubbly wine) that need to be categorized into the standard budget framework we employ. However, we often felt that doing such categorization ourselves (and providing the necessary information about such coding decisions) results in a more consistent coding than relying on other researchers' decisions by using data from existing cross-national datasets. That being said, several of the existing cross-national databases we rely on have done an excellent job for their selected time period/countries, so that we confidently relied on them for parts of our dataset as well.

In practice, we often had more than one source available for a specific country.



The correspondence between the estimates given by that source and country-specific information helped us decide which source provide the higher quality information. For instance, we preferred to rely on cross-country statistical compilations which did not depart dramatically from country-specific sources – such as statistical yearbooks or detailed studies of government budgets. In many cases we could use statistical yearbooks or country case studies to find out whether reported estimates from cross-national compilations such as Mitchell were credible.

We also used country-specific information to investigate volatility. For instance, if a source provides estimates that fluctuate widely between years this may reflect a particularly turbulent historical period (for instance a major war), but if there is no clear reason for the fluctuations, there might be other underlying issues with the data (such as missing data for one of the subcategories making up a variable) which explain the pattern.

Another way of detecting potential problems with historical cross-country sources was the correspondence between their estimates and ones given by contemporary sources such the OECD. For most countries, there were country years in which both OECD and other sources overlapped. A large discrepancy may indicate that the two sources used different underlying classifications (e.g., definition of income tax), different aggregation (e.g., central vs general government), or different underlying data.

Another red flag was when the tax revenue categories summed to more than 100 percent of total revenue. This may again have been caused by the categorization of revenue sources, but also by issues with the denominator. Without access to the underlying data on which the estimates are based it is not possible to know the causes of these discrepancies. Thus, by comparing different sources it was in most cases possible to make an informed decision about which one provided the most plausible estimates.

- *Check the consistency of sources.* When it is necessary to rely on two or more sources to construct a long-run data series, we make certain that these data are comparable when covering the same overlapping time period within a country, so that we can have confidence that the data are relying on similar methods or are drawing on the same primary source. When there are significant jumps at the intersection between two series, the last value of the ending series has been coded as missing.
- *Time series consistency trumps cross-sectional consistency.* We are particularly interested in understanding long-run trends within countries. In the occasional case of deciding between using the same source to reach cross-country consistency, and employing different sources to obtain consistent within-country estimates, we prefer to emphasize time series consistency.

This preference is also reflected in our preference for high-quality country-specific sources.

The focus of the dataset is on providing ratios (to the total budget and the size of the economy). For budget shares we have a strong preference for both the numerator and the denominator of the ratio to come from the same source. For example, if we have a series of nominal income taxes, we prefer to obtain the size of the total central government budget to come from the same source as well. Many sources already provide such ratios to begin with which suits our purpose.

Nominal GDP data for the distant past is often particularly difficult to obtain. In fact, the concept of gross domestic product was only first introduced by Simon Kuznets in 1937 to measure the productivity of the U.S. economy, and only afterwards was gradually adopted by other countries. As a result, there are no contemporary estimates of GDP before World War I. Economic historians have by now created estimates of varying quality for the size of the total economy of most countries in our dataset for a substantial part of the historical period we are interested in. If GDP estimates are unavailable, we rely on Gross National Product (GNP) or Net National Product (NNP) estimates. If the latter are also not available, we cannot provide government revenue estimates normalized by economic output, but may still present budget shares if available. Real GDP estimates provided for each country are always from one source only, as base years and the deflator series used may differ. Importantly, these estimates are not comparable in absolute terms across countries, but rather are included to judge relative economic growth within a country. For cross-nationally comparable estimates of real GDP and real GDP per capita, we recommend to use the data from (Bolt and van Zanden, 2013).

## **Historical cross-national databases**

We collect data on public finance and economic output from the the following cross-national sources:

- Mitchell (2007c,a,b). Provides historical statistics for a large number of countries. Often among the sources going farthest back in history but unfortunately also inconsistent in the way budget items are coded or even which parts of government budgets are presented. Other cross-national sources often rely on it.
- Abbas et al. (2010). Provides estimates of gross government debt-to-GDP ratios for a global sample from 1880 to today. We partially rely on it for its GDP estimates and its reference section.
- Mauro et al. (2013) covers an unbalanced panel of 55 countries from 1800-2011 with a focus on debt. We rely on its coverage of total central government revenues, nominal GDP, and the size of government.

- Global Financial Data Inc. (2013) is a commercial provider of historical financial data. Since we were unable to find a listing of its sources, we mainly use this dataset for cross-checking of total government revenue, as well as a source of real GDP estimates.
- The International Monetary Fund (IMF) publishes two sets of government financial statistics: IMF International Financial Statistics (IFS) and IMF Government Finance Statistics (GFS). We rely on these for the parts of the second half of the twentieth century.

For European countries (including their former colonial off-shoots in North America and the antipodes), we found the following cross-national databases particularly helpful:

- Flora et al. (1983) provides estimates of government revenue and its components from 1800 to 1975 for thirteen European countries. For many of the European countries this is the main source for total tax revenues and its sub-components. By using secondary, country-specific sources, we find that Flora often provides data of higher quality than other sources such as Mitchell.
- Flandreau and Zumer (2004) covers 18 countries between 1880 and 1913. The dataset focus mainly on debt and revenue but it also covers total tax revenues and GDP. We use the dataset primarily for cross-checking.
- The Organisation for Economic Co-operation and Development (OECD) covers total tax revenue and its components in member states from 1973 to 2011. For most OECD members in the dataset this source is used from 1973 for all variables except GDP and the size of government.

For Latin America, the following databases proved an important starting point:

- The Montevideo-Oxford Latin American Economic History Database (MOxLAD) (2010) is the most comprehensive database on historical financial statistics in Latin America for the 20th century. Unfortunately, a substantial part is taken from Mitchell without adjustment.
- The United Nations Economic Commission for Latin America and the Caribbean (ECLAC or in Spanish CEPAL, 2012) provides disaggregated data on government revenues starting in 1990. In addition, for some countries we used CEPAL's estimates of GDP ranging back to 1950 (CEPAL, 2012).

## Contemporary cross-national databases

The goal of the data collection is to join historical data series to high quality current databases to allow easy updating of the database in the future. In all cases, we thus try to take the most current data on all the indicators of interest from these selected databases. For the European countries, we found that the data provided by the *Organisation for Economic Co-operation and Development* best suits our purposes. For Latin America, the United Nations Economic Commission for Latin America and the Caribbean CEPAL (2012) provides high-quality data of government finances from 1990 onwards. For these countries in particular, we often judged CEPAL data of higher quality than the corresponding IMF data sets.

Overall, a substantial part of the final dataset comes from country-specific sources. In Table 2 we list the shares of the final dataset that were drawn from the most common existing cross-country databases. Among the historical sources, we retain significant portions of the data provided by Flora et al. (1983) in the final dataset. For total tax revenues, there is substantial overlap between Mitchell, GFD, and OxLAD, overstating the reliance on these sources in the table.

Table 2: Share of data sourced from existing cross-country databases

	Govt Size	Total Tax	Income	Customs	Excise	Consumption
GFD	4.9	12.6	.	.	.	.
CEPAL	2.9	2.4	2.0	2.0	2.6	4.5
Flora	7.3	2.2	29.4	27.0	32.4	17.3
Mauro	5.7	.	.	.	.	.
OxLAD	.	6.6	4.2	4.2	.	2.7
Mitchell	.	12.4	4.0	4.9	1.5	1.4
IMF GFS	.	1.4	2.2	2.6	1.9	4.7
OECD	6.0	0.7	15.5	9.3	8.9	14.6

### Country-Specific Sources

For most countries, we used additional sources to complement and cross-check the general sources that we have mentioned so far. These sources also helped us judge the quality of existing sources and with the choice between them. These country-specific sources are listed below.

**Argentina:** Alvaredo (2007), Ferreres (2005), Paolera and Taylor (2003).

**Australia:** Barnard (1987), Hutchinson (2012), Statistical yearbooks from The Government of the Commonwealth of Australia (n.d.) (several years), Reinhardt and Steel (2006).

**Austria:** Schulze (2000) and (2005), Bairoch (1976), Pammer (2010).

**Belgium:** Smits et al. (2009), Peeters et al. (2005).

**Bolivia:** Peres-Cajías (2014).

**Brazil:** Araújo et al. (2008), Goldsmith et al. (1986), Instituto Brasileiro de Geografia e Estatística (IBGE), Instituto de Pesquisa Econômica Aplicada (IPEA), Ludwig (1985).

**Canada:** Bird (1983), Statistical Yearbooks (various years).

**Chile:** Braun et al. (2000), Díaz et al. (2016), Mamalakis (1989).

**Colombia:** Departamento Nacional de Planeación (1998), Gómez (2007), Grupo de Estudios del Crecimiento Económico Colombiano GRECO (1999), Junguito and Rincón (2004), Kalmanovitz and Rivera (2009), Melo (1989), Robinson and Urrutia (2007), Roca and Ramírez (2010).

**Denmark:** Hansen (1984), Johansen (1985).

**Ecuador:** Guzmán and Arroba (1988), Rodríguez (1992).

**Finland:** Hjerppe (1989), Smits et al. (2009).

**France:** Toutain (1987).

**Germany:** Ritschl (2005), Feldman (1993).

**Ireland:** Broadberry and Klein (2012), Kennedy (1971).

**Italy:** Baffigi (2011).

**Japan:** Nakabayashi (2012), Ohsato (1966), Statistics Bureau Statistics Japan (2014), Okawa, ed (1971).

**Mexico:** Cabrera (2011), Instituto Nacional de Estadística y Geografía (INEGI), Sausi Garavito (2005).

**Netherlands:** Smits et al. (2000), Smits et al. (2009), van der Bie and Smits (2001).

**New Zealand:** Goldsmith (2008), Statistical Yearbooks (various years) New Statistics New Zealand (n.d.) Long Term Data Series (LTDS).

**Norway:** Grytten (2004), Statistics Norway (2000).

**Peru:** Seminario and Beltran (1996), Portocarrero S et al. (1992).

**Portugal:** Batista et al. (1997), Lains (2003a,b), Marinheiro (2006), Mata (1993), Nunes et al. (1989), Nunes (2003), Pinheiro (1997a,b), Valério (2001).

**Spain:** Comín (1995), Comín and Díaz (2005), Prados de la Escosura (2003).

**Sweden:** Krantz and Schön (2007), Gårestad (1987), Stenkula (2015), Central Bureau of Statistics (1960).

**Switzerland:** Halbeisen and Lechner (1990), University of Zurich (2012).

**United Kingdom:** Broadberry et al. (2011), Hills et al. (2010).

**United States:** Bureau of Economic Analysis (BEA,B), United States Bureau of the Census (USCB), U.S. Government Printing Office (GPO), Johnston and Williamson (2011), Wallis (2006).

**Uruguay:** Azar et al. (2009), Bonino et al. (2012), Dondo (2007), Instituto de Economía del Uruguay (IECON).

**Venezuela:** Baptista (1997), Batalla (2001), Batalla (2002), Batalla (2003), Corso (2011).

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