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Money supply and
Greek historical monetary statistics:
definition, construction, sources and data

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MONEY SUPPLY AND GREEK HISTORICAL MONETARY STATISTICS: DEFINITION, CONSTRUCTION, SOURCES AND DATA

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ABSTRACT

This paper attempts to provide, for the first time, a survey of the construction of estimates of the quantity of money in Greece since the inception of the National Bank of Greece in 1842 until the eve of WWII. Specifically, we describe in detail the methods of construction and the sources of data used in building these aggregates. We discuss the data collection procedure and publication practices. The end product is presented in a data appendix.

JEL Classification: E51, N24

Keywords: money, monetary aggregates, data, sources.

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1. Introduction

Monetary aggregates have played a central role in the conduct of monetary policy. They have historically been constructed to guide monetary policy; long-run price developments are largely determined by the growth rate of the supply of money. Price stability, a necessary condition for maximizing sustainable economic growth, is the principle goal of monetary policy and is attained by appropriate long-run money growth. Data on monetary aggregates are the most important and widely used in macroeconomics and finance. Monetary aggregates have been used in practice as indicators of the stance of the monetary policy. They are also used in modelling money demand behaviour; in setting appropriate monetary targets to attain price stability ('money targeting'); and in testing financial market efficiency. Historically speaking, as Milton Friedman and Anna Schwartz have pointed out, the measurement of money is '...an activity that dates back almost to the beginning of the republic...' (1970, p.1).

However, measuring an abstract concept such as 'money' is always a difficult task. Typically, a monetary aggregate should accurately reflect the portfolio choices by households and firms. It should include the medium of exchange in an economy, namely, currency and banknotes in circulation as well as the deposits and liquid assets that households and firms hold and that affect their spending plans. Through time, innovation in financial instruments changes institutional arrangements and practices in the money market and, thus, affects the definition of monetary aggregates and revises the measures of money. But how many of these items should be included in a monetary aggregate? And on what criteria should they be selected?

Since 1842 when an issuing bank, the National Bank of Greece (NBG), was first established and its note was first introduced as a medium of exchange, the Greek monetary authorities tried to measure the quantity of money by simply reporting the stock of banknotes in circulation.¹ Monetary aggregates were not built. This paper aims at analyzing an important financial structure, namely the quantity of money. Specifically, it attempts to provide for the first time a survey of the construction of estimates of the

¹ For a detailed analysis of Greece's monetary history see Lazaretou (1995, 2005).

quantity of money for Greece from 1842 till the onset of WWII and to present a consistent time series of monetary aggregates for that period.

To this end, we use definitional and statistical issues in order to trace the history of money in Greece. We describe the methods of construction and the sources of the data used. We discuss the data collection procedure and publication practices. It is worth mentioning that, till now, Greek historical time series for money have not been compiled in an official and easily accessible database. The historical long-run time series that has been recently published refers only to banknotes in circulation.² Moreover, it is not compiled in a systematic way, nor has any attempt ever been made to build monetary aggregates. Therefore, we are hopeful that this paper will contribute to the dissemination of monetary aggregates data to a wider audience so as to further stimulate research in monetary developments in the European periphery.

The paper proceeds as follows. Section 2 provides the standard definitions of money and monetary aggregates. Section 3 deals with monetary aggregates. In particular, it concerns construction and measuring, time series availability, data constraints and data sources. It also discusses problems of comparability since a wide variety of data have been received and incorporated. The end product is presented in a data appendix at the end of the paper. Section 4 concludes.

2. Money and monetary aggregates: definitions

Both economic thought and statistical practices affect the definitions of monetary aggregates and hence their usefulness as indicators and/or targets of monetary policy. Structural changes in financial markets and new financial instruments call for a re-definition of the monetary aggregate since its ability to predict economic activity might be adversely influenced.

According to the monetarist approach to measuring the money supply, fluctuations in prices and quantities result from monetary policy. The monetary explanation goes back to the ‘currency school’ of the 19th century: further issue of

² See, OeNB (2008) and Bank of Greece (2009).

banknotes without metallic backing will cause inflationary pressures in the domestic economy. Therefore, the institutionally set reserve-banknote ratio was regarded as a key policy variable in the metallic monetary regimes of the 19th century. This was because the advocates of the currency school could not consider other items – apart from banknotes – such as demand bank deposits, as money substitutes. They supported that banknotes were the only money substitutes and the amount of banknote issue should be determined by a strict and clear cut convertibility rule so as to preserve price stability.³

The standard approach to measuring money relies on the monetarist approach of Friedman and Schwartz (1970). They adopt an empirical rather than an *a priori* definition.⁴ They consider that the best way to define money is to rely on the statistical correlation between the money supply and some macroeconomic indicator such as national output. They sum up this approach in one phrase: ‘Which counterpart is most useful in making predictions about observable phenomena on the basis of the theory one accepts’ (1970, p.139). The money supply is thus equal to the aggregate value of several items treated as money (i.e. coins, notes, demand deposits, time deposits, savings, and government bonds) while an ‘optimal’ monetary aggregate is that with the highest correlation with either current or lagged real income (see Friedman and Meiselman 1969).⁵

More recently, Andersen and Kavajecz (1994) argue that the ‘ideal’ monetary aggregate would be composed of assets that satisfy three criteria: (i) they are capital certain or nearly so; (ii) they are highly liquid; (iii) they are closely related to economic activity.

Monetary aggregates are generally distinguished according to ‘narrow’ and ‘broad’ aggregates. Narrow monetary aggregates are composed of the medium of exchange, that is, assets that are highly liquid and whose market value remains invariant to realized or expected changes in economic activity or market interest rates. Hence, narrow measures satisfy well the first two criteria. By contrast, broader monetary

³ Irving Fisher (1913) pointed out, for the first time, that bank deposits (demand and time) could equally substitute notes as a mean of payment.

⁴ For a critique, see Mason (2007).

⁵ See also Kaufman (1969), Smith (1978) and Laidler (1966, 1969).

measures often include assets that are capital uncertain - assets such as long-term deposits, whose market value varies with market interest rates, the pace of economic activity or private agents' expectations of these variables. Therefore, monetary aggregates are defined to include the nominal rather than the market value of these assets. Households and firms, however, substitute financial assets at market rather than nominal values. However, if such assets were included in monetary aggregates at market values, the measured aggregate would become capital uncertain and might vary with market rates. Thus, its usefulness as an indicator or a target of monetary policy would be considerably reduced.

3. Greek historical monetary aggregates, 1842-1939

3.1 Data sources

For Greece, definitions of money primarily include the liabilities of private financial institutions, namely deposits and banknotes. Therefore, banks' balance sheets and their annual reports are the primary sources of historical monetary aggregates data. However, definitions of money as a mean of payment, such as M1 or M2, or even a liquidity index, such as M3, are nowhere to be found.

In particular, for the pre-1928 period, data on banknotes circulated by the NBG appeared for the first time in 1843.⁶ The published sources were the Bank's *balance sheets* and its *annual report*. In its annual and semi-annual balance sheets, the stock of banknotes in circulation was reported for end-June and end-December call dates. In its annual report, observations appeared on a monthly and a yearly basis. Analytically, *Table 1* of the NBG's annual report is the only well-defined information set for the 19th century. It presents the stock of notes (of both high and low denominated values) in circulation on the Bank's statement on the last day of every month. The maximum and minimum values in any year as well as annual averages based on the monthly observations were also

⁶ In the first year of the NBG's operation, that was 1842, the end-of-June and end-of-December call dates are only available. The entries are from its annual and semi-annual balance sheets for that year. Both Bank's balance sheets and profit-loss statements for that year were published in French and were not printed but hand-written. Prior to 1842, the Greek ministry of Finance had the right of money issue. Coins of low denominated value were chiefly used in money transactions; however, data do not exist.

reported. Keeping the same publication practice throughout the period under study, data comparability was enhanced.

The NBG was created in 1842 and functioned as a ‘universal’ bank; it was a deposit and a discount bank as well as a provider of short- and long-term lending to the private sector and to the state. At the same time, it was granted by the government till 1927 the monopoly of note issue. The Bank’s monopoly covered almost the whole territory of the country except for Crete, the new provinces of Epirus and Thessaly and the Ionian islands. Three other smaller banks with both commercial and issuing activities had the exclusive privilege of note issue in these specific regions, namely the Bank of Epirus and Thessaly (1882-1897), the Bank of Crete (1899-1919) and the Ionian Bank (1839-1920).⁷ Located in the country’s provinces, they circulated their own note, albeit for only a short period of time and over an extremely limited geographical area. They gradually retired from their privilege to the advantage of the NBG. Fortunately, they followed the same publication practice with the NBG, i.e., they reported the stock of banknotes in circulation on the last day of every year or month.

For the period 1928-1939, the primary data source is the *Monthly Statistical Bulletin* of the Bank of Greece (BoG). The BoG was established in May 1928 as the country’s central bank with the monopoly of money issue and the prime responsibility of ensuring price and exchange rate stability. Again, the data did not refer to a consistent time series of narrow or broad money definitions but to reported data for money in circulation and private bank deposits at monthly and annual frequencies.

Table 3 of the *Bulletin* shows notes and coins in circulation and demand deposits of the government and commercial banks with the BoG for each call data of the month since its inception. It includes monthly developments in the balance sheet items of the central bank and the commercial banks as well; it reports monthly figures for all commercial bank private deposits and money balances held as vault cash by the banks. It should be mentioned that the modified *Table 1* of the Bank’s *Monthly Statistical Bulletin*

⁷ Data for the banknotes issued and circulated by the Ionian Bank do not exist since only the consolidated financial statements of the parent bank in London were published.

in its post-war version – it first appeared post-1950 - comes from Table 3. In that Table, the staff of the BoG reported data for M1 and its components.⁸

3.2 Data collection

The data collection process is the most important underlying principle of the construction of monetary aggregates data. And this is because throughout the whole sample period many changes had been made to the data collection process and/or publication practices. Therefore, in this section we present a brief outline of the data inflows reported in the data sources and used in the construction process during a small number of distinct time periods over which data collection and data reporting differed notably.

1842 is the starting date of our sample; it marks a watershed for Greece. It was the year that the NBG started to operate; and more importantly, it first issued and circulated banknotes ‘payable to the bearer upon request’ that were readily and fully convertible into specie. Pre-1880, banknotes issued solely by the NBG were circulated in a limited amount. During that period, financial development progressed only slowly; bank deposits were negligible and exchange was largely based on barter. However, in the period 1880-1911, the picture changed. Key features of Greece’s economic and financial environment were the gradual urbanization and appearance of a creditor-urban class. The continuous opening of the NBG’s branches in all major cities and in the provinces largely contributed to the increase in banknotes in circulation and their use by the public as a mean of payment and a store of value. Moreover, the gradual territorial enlargements of the country during that time led to the establishment and operation of other issuing banks that circulated their own note in the new provinces (the Epirus-Thessaly Bank and the Bank of Crete, mentioned above).

From 1912 to 1927 some changes in data reporting and data collection were made. From the turn of the century to the early 1920s, the process of financial intermediation moved quickly and numerous deposit banks were created. However, data

⁸ The Bulletin stopped appearing in 2004.

on total bank private deposits only began to be reported on an annual basis in 1912. Till then, bank money deposits referred chiefly to the private deposits kept with the issuing banks only.⁹

During the last distinct period under study, from 1928 to 1939, major institutional reforms took place concerning central and commercial banking. In particular, the foundation of an independent central bank, namely the BoG,¹⁰ in May 1928 was the outcome of the international trend in the interwar period to re-organize central bank functions. The new institution had the sole privilege of issuing and circulating the country's legal tender and operated as an official body in the conduct of monetary and exchange rate policy according to the central banking orthodoxy of the time. Moreover, a rigorous set up for commercial bank regulation and supervision was initiated by law in 1931.¹¹ Among other rules, all commercial banks were obliged to keep reserves with the central bank to meet excess liquidity demand. Thus, from 1931 onwards data for commercial compulsory deposits were also officially reported.¹²

3.3 Construction and measuring

We build two aggregates: (i) a broad definition of money (M3) which serves as a liquidity index for the domestic economy and (ii) the monetary base (M0) which is measured using the issuing and central banks' liabilities, i.e., the uses side of the base (currency and deposits with the central bank). The sample period is 1842-1939 and the values are shown at annual (end-of-year) frequencies.

The Bank of Greece started to measure the quantity of money and build aggregates by using the standard definitions as late as the early 1950s. This was because, in the context of the gold standard, which was the monetary orthodoxy of the pre-war time, the monetary authorities conducted a 'bank rate policy'. This means that the short-

⁹ Besides, the largest part of the private deposits was kept with these banks.

¹⁰ By the detachment of the NBG's issuing department and the remainder's transformation into a pure commercial credit institution.

¹¹ See the laws of 30 June and 7 July 1931.

¹² Till then, smaller banks used to keep deposits with the biggest bank, i.e. the NBG. The latter, however, saw fit to act as an 'implicit' or 'unofficial' central bank or a banks' bank. Data on these deposits do not exist since the NBG used to report only the sum of all private (non-government) deposits kept with it.

term rate imposed on discounts and advances provided by the central or issuing bank to the commercial banks was the operating target of monetary policy. For example, in the context of the interwar gold standard, the Bank of Greece used to change its rate taking into account inflation trends and liquidity conditions in the domestic money market so as to keep foreign exchange reserves intact and preserve the stability of the international price of the national currency.

The monetary rule was simple and clear cut. The ‘discount window’ was the most important monetary policy tool. By changing the discount rate, that is the key interest rate at which banks borrowed money from the central or issuing bank, the latter could control the stock of money in the market. The higher the discount rate, the lower the amount of money that banks would decide to borrow and *vice versa*. In other words, manipulation of the discount rate could influence the short-term lending rates in the money market.

Furthermore, the metallic monetary regimes required each country’s central bank to maintain a constant ratio of reserves to banknotes in circulation. Excess unbacked note issue would strengthen inflationary pressures in the domestic economy and would cause capital outflows and reserve losses. In other words, the reserve banknote ratio determined the correlation between the domestic money supply and metallic and foreign exchange holdings. Obviously, banknote circulation was a key monetary variable, since the central or issuing bank was obliged to announce and preserve a statutory lowest bound for banknotes in circulation that were to be readily and fully convertible into specie or foreign exchange. Therefore, the precise knowledge of the stock of banknotes was of paramount importance if convertibility was to be secured.

In accordance with the monetary policy rules pursued in the context of a metallic regime, the NBG, from its inception, tried to measure the stock of money in the domestic economy by simply reporting the stock of the banknotes in circulation. According to its statute (article 36), no less than 25% of banknotes in circulation were to be covered by metallic or/and foreign exchange reserves. Further, according to the Bank of Greece’s statute (article 61) it was strictly defined that no less than 25% of ‘actual’ money in circulation (i.e. coins and banknotes) should be convertible into specie or foreign exchange. By the same article, it was also defined that a lowest bound of 40% of

‘potential’ money in circulation should be covered. ‘Potential’ money circulation, in contrast to ‘actual’ circulation, was defined as the sum of notes and coins in the hands of the public plus reserves and commercial balances with the central bank, namely what today we call the ‘monetary base’. Even though the concept of a monetary aggregate was found nowhere, this was the first time the Greek monetary authorities implicitly made the summation to explicitly estimate the quantity of money in the domestic economy.

In the first decade after the end of WWII the operating target changed. According to the new orthodoxy of the monetary policy implementation, namely the quantity school of central banking, a monetary aggregate such as the monetary base, was set as the new operating target. It was at this time that the Bank of Greece started to measure the quantity of money explicitly by building aggregates, such as the monetary base or M1. By operating (selling or buying) in the open market the central bank tried to change the monetary base and *via* the money multiplier to check the money supply directly.¹³

¹³ Following the advanced countries, in 1975, the Bank of Greece started to set and announce monetary targets and a specific year-on-year rate of growth of M0 till 1982 and M3 till 1998 were set. In other words, the Bank started to use monetary aggregates as policy targets or indicators. Thereafter, it stopped considering them as policy targets.

Table 1: Information on Greek historical monetary statistics, 1842-1939

<i>Monetary Statistics</i>	<i>Definitions</i>	<i>Availability</i>		<i>Source of Information</i>
		<i>Time period</i>	<i>Time frequency</i>	
1. <i>Broad money (M3)=</i>	Liquidity index	1842-1927	yearly and semi-annually	
		1928-1939	yearly and monthly	
(+) total private deposits kept with the issuing banks till 1911 and with all commercial banks from 1912 to 1939	Sight, time, savings and bank bonds	1842-1927	yearly and semi-annually	Issuing Banks' <i>Balance Sheets</i> and <i>Annual Reports</i> ; Bank of Greece
		1928-1939	yearly and monthly	<i>Monthly Statistical Bulletin</i> ; monthly statements of the commercial banks to the central bank
(-) vault cash	Cash held solely by the issuing banks till 1927; and by all depository institutions from 1928 to 1939	1842-1927	yearly and semi-annually	Issuing Banks' <i>Balance Sheets</i> ; Bank of Greece
		1928-1939	yearly and monthly	<i>Monthly Statistical Bulletin</i>
(+) currency in circulation	Banknotes of small value, i.e. 1 and 2 drachmas, held by the non-bank public	1886-1910	yearly and semi-annually	Issuing Banks' <i>Balance Sheets</i>
(+) banknotes in circulation	Banknotes held by the non-bank public (i.e. outside the banking sector)	1842-1939	yearly and monthly	Issuing Banks' <i>Balance Sheets</i> and <i>Annual Reports</i> ; Bank of Greece
				<i>Monthly Statistical Bulletin</i>

Table 1: continued

<i>Monetary Statistics</i>	<i>Definitions</i>	<i>Availability</i>		<i>Source of Information</i>
		<i>Time period</i>	<i>Time frequency</i>	
2. <i>Monetary Base (M0) =</i>		1842-1927	yearly and semi-	
		1928-1939	annually yearly and monthly	
(+) banknotes in circulation (plus notes of small value)	Banknotes held by the non-bank public	1842-1939	yearly and monthly	Issuing Banks' <i>Balance Sheets</i> and <i>Annual Reports</i> ; Bank of Greece <i>Monthly Statistical Bulletin</i>
(+) vault cash	Cash held by the issuing banks in their notes and other depository institutions. From 1928 onwards, cash referred to money balances held by all commercial banks.	1842-1927	yearly and semi-annually	Issuing Banks' <i>Balance Sheets</i> ; Banks' statements to the Bank of Greece
		1928-1939	yearly and monthly	
(+) reserve requirements	Till 1931, no commercial bank was subject to keep reserves with the central bank. Before 1931, only the NBG was obliged to keep money balances with the BoG	1928-1939	yearly and monthly	Bank of Greece, <i>Monthly Statistical Bulletin</i>

Table 1: continued

<i>Monetary Statistics</i>	<i>Definitions</i>	<i>Availability</i>		<i>Source of Information</i>
		<i>Time period</i>	<i>Time frequency</i>	
3. <i>Money Multiplier</i> =	The ratio of broad money (M3) to monetary base (M0). It is an index of public confidence in the domestic banking and monetary system.	1842-1927 1928-1939	yearly, semi-annually yearly, monthly	
4. <i>Reserve-Banknote Ratio</i> = total reserves over banknotes in circulation*	In the metallic monetary regimes this ratio determined the correlation between the money supply and metallic or foreign exchange reserves. <i>Metallic</i> = gold plus silver stock as a barren metal. <i>Foreign exchange</i> = deposits denominated in gold backed currencies	1842-1939 (from 1877 mainly gold) 1869-1939	yearly, monthly	National Bank of Greece, <i>Annual Reports</i> ; Bank of Greece, <i>Monthly Statistical Bulletin</i>

Notes: (*) the data refer to the NBG (1842-1927) and the BoG (1928-1939).
Source: compiled by the author.

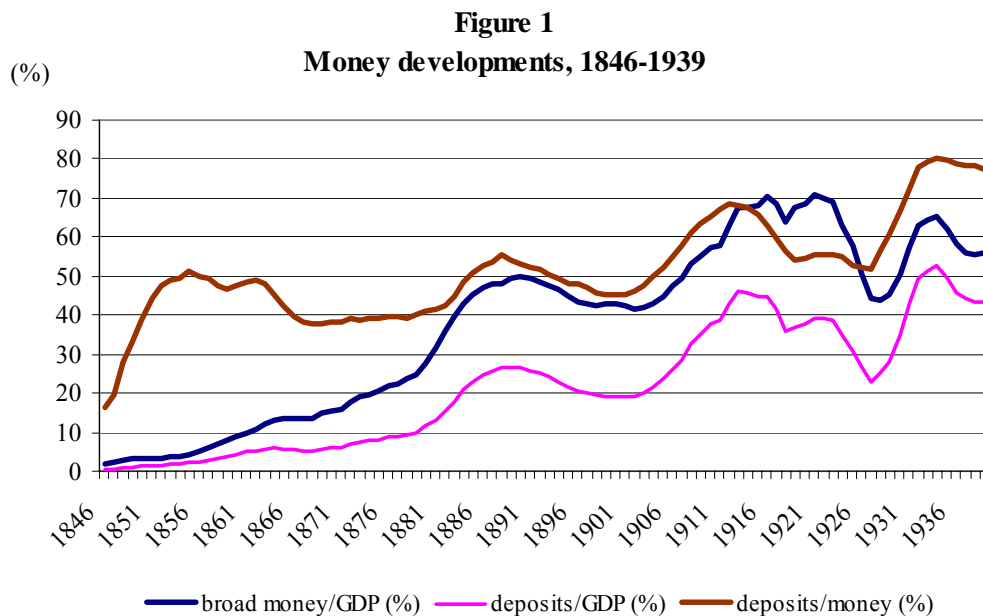
Even though monetary aggregates are difficult to control and their measurement is uncertain, money targeting might help the central bank stabilize inflationary expectations and therefore the inflation rate. However, in the 1990s the globalisation of money and capital markets as well as numerous financial innovations made money demand unstable and thus reduced the usefulness of monetary aggregates as indicators of the stance of monetary policy.¹⁴ Thus, in 1998, the Bank of Greece stopped considering monetary aggregates as an intermediate policy target or an indicator of the impact of policy actions.

Table 1 provides important details on the definitions of monetary statistics, the data availability (time period and frequency) and the source of information. Fortunately, in the 19th and the early 20th centuries the money stock could be well measured by simply summing the currency in circulation and private bank deposits. In contrast to the past, nowadays the possibility of substituting among a wide variety of financial assets at low cost makes the measurement of money and its control more difficult.

In the sense of the ‘optimum’ aggregate, we empirically find that the constructed M0 and M3 aggregates are better measures of the money stock than solely banknote circulation. The correlation between the rate of change of these monetary aggregates and the growth of real GDP is higher than that for the rate of change of banknotes in circulation. This correlation takes an even higher value after 1912 when data on total private deposits at commercial banks started to be published. As a breakdown of commercial bank deposits between demand, saving and time deposits is acquiring accuracy first only for the biggest banks and afterwards (from 1928) for all banks, we can also compute the correlation between income and each element of the monetary aggregate. Several elements were tested: cash, notes in circulation, demand deposits, time deposits, savings deposits. In all cases, the M3 aggregate recorded the highest correlation.

¹⁴ Lucas (1988) reassesses the evidence on the stability of the money demand estimated by Meltzer (1963). He justifies that there is a theoretical equilibrium relationship between real money balances, a nominal interest rate as a measure of the opportunity cost of money and GDP growth. He further estimates that equilibrium relationship using M1 data for the US up to 1985 and finds that there is a stable relationship between these variables. However, banking deregulation in the 1980s and the 1990s and financial innovation in the 1990s, associated with the impact of technological change on payments, made other monetary aggregates as liquid as M1, suggesting that we need to reconsider the measure of money. See, for example, Beyer *et al.* (2007), Hall *et al.* (2007) and Teles and Zhou (2005).

Figure 1 depicts monetary developments over the long time span. The ratios of broad money to GDP and private deposits to GDP reflect the size of the country's banking system. As the country's economy gradually relies more heavily on the banking activity than in the past, the ratio of deposits and money to GDP will exhibit a strong upward trend over time. As is evident, the degree of financial intermediation was poor during the 19th century; however, it accelerated thereafter. Specifically, broad money to GDP was less than 2 per cent in 1846 and it remained at the low level of 32 per cent in 1881. Post 1900, the picture is considerably changed; the ratio accelerated to 43 per cent, reaching a peak of 71 per cent in 1921, while it declined notably after wartime.¹⁵ In the figure, the trend behaviour of the ratio of private bank deposits to money is also depicted. As seen, no more than 50% of money was kept in the form of bank deposits during the 19th century, implying that the use of money as a medium of exchange and a store of value proceeded only at a very slow and gradual pace.



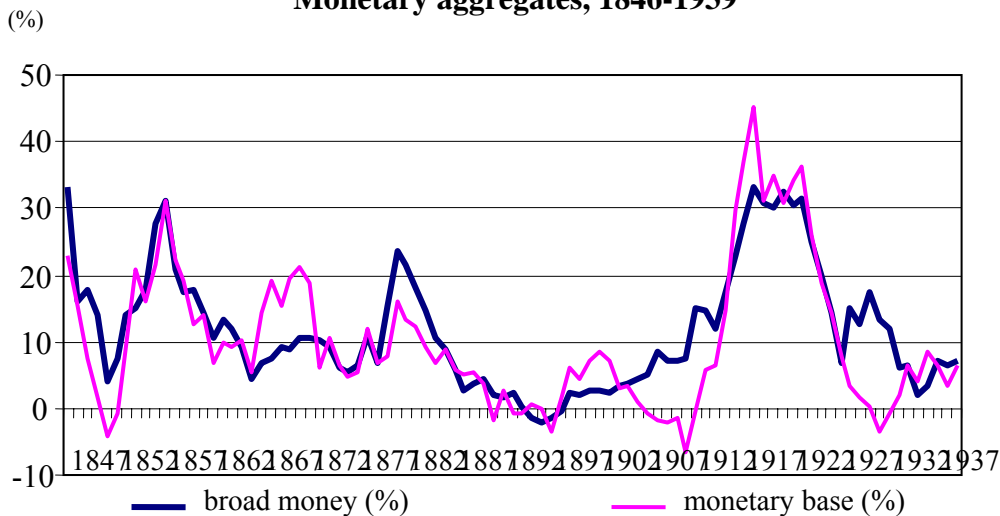
Notes: Computations are based on year averages using a 5-year rolling time span. Using a rolling time span helps minimize the resulting loss of information, which is the principle drawback of averaging. End-of-year data.

Source: The data for GDP are from Kostelenos *et al.* (2007). For the monetary data, see Table 1.

¹⁵ The Greco-Turkish War of 1919-1923 in which Greece was defeated.

Figure 2 plots the growth rate of broad money and the monetary base. As seen, changes in the monetary base largely dominated changes in money balances. This implies that the money multiplier, which reflects the behaviour of the banks and the public, had a minimum impact on the determination of the money stock. It is found that monetary base changes could explain more than 86% of money supply changes while the money multiplier could explain only 14%. This finding demonstrates that, for most of the time, the convertibility rule was suspended and money creation primarily determined the money stock. Further, the underdeveloped nature of the country's economy and the low degree of financial integration were mirrored in the weak impact of both the banking sector and the public, in favour of a larger contribution from the monetary base. However, in the years of convertibility (1910-1914; 1928-1939)¹⁶ this association did not hold. It seems that the money multiplier was the driving force of money supply movements.¹⁷ This was because adherence to the convertibility rule largely determined the stance of the monetary policy pursued. As a result, public confidence in the domestic banking system was promoted.

Figure 2
Monetary aggregates, 1846-1939



Notes: annual percentage changes of averages based on a 5-year rolling time span. End-of-year data.
Source: see the data appendix.

¹⁶ Greece joined the classical gold standard in 1910 and the interwar gold exchange standard in 1928.

¹⁷ This is a common feature of every peripheral country. For national stories see, Fratianni and Spinelli (2001) on Italy and Martín-Aceña on Spain and Portugal (2007). For Greece see, Lazaretou (2008).

4. Conclusions

This is the first systematic attempt to measure money and build monetary aggregates based on standard definitions for earlier periods of the Greek state. We draw data from official data sources as they appeared in the balance sheets and the annual reports of the commercial and issuing banks as well as the central bank. We carefully discussed the issues of data reporting and collecting as well as the standard definitions used. The end product is presented in a data appendix.

However, some caveats are in order. First, to quote Andersen and Kavajecz (1994), ‘...ideal historical data would be computed at similar frequencies under consistent definitions’ (p.4). This is not, of course, the case for Greek historical data. The gradual expansion of the Greek state, the co-existence of many issuing banks, even for short intervals and in restricted geographical areas, the lack of data for key variables and the different number of operating commercial banks at various years cause many problems in computation that affect the strict comparability of the published data.

Second, due to data constraints regarding the de-composition of total private bank deposits for a considerable number of years, we can only construct a broad definition of money. Narrow aggregates such as M1 and M2 cannot be built.

Third, since the call dates for many key series only refer to the end of the year, monetary aggregates can only be shown at annual frequency. In addition, the series were based on banks’ financial statements on the last day of the month (or year). Unfortunately, daily observations do not exist and thus a monetary aggregate derived from averages of the daily data could not be built. From a statistical point of view, building aggregates from daily data would be the ‘ideal’ procedure ‘...because seasonal patterns within a month may cause data for individual days to be unrepresentative of both the month’s average level and the aggregate’s trend growth rate’ (Andersen and Kavajecz 1994, p.4).¹⁸

¹⁸ See also Abott (1962).

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Appendix

Table A: Monetary statistics for Greece, 1842-1939

<i>Year</i>	<i>Broad Money (M3) (1)</i>	<i>Monetary Base (M0) (2)</i>	<i>Money Multiplier (M3)/(M0) (3)</i>	<i>Reserve- Banknote Ratio (4)</i>
1842	323.5	535.4	0.604	1.45*
1843	624.5	839.3	0.744	0.57
1844	1033.2	982.2	1.052	0.67
1845	1820.7	2252.8	0.808	0.50
1846	2692.7	3121.4	0.863	0.37
1847	2490.5	2299.0	1.083	0.36
1848	2002.8	2297.3	0.872	0.87
1849	2803.3	1797.5	1.560	0.86
1850	3471.4	2443.0	1.421	0.56
1851	3254.8	2618.5	1.243	0.78
1852	3529.8	2224.8	1.587	0.80
1853	4136.0	3286.3	1.259	0.94
1854	5409.4	4386.8	1.233	1.33
1855	7004.1	4863.1	1.440	1.14
1856	9752.0	6378.5	1.529	0.97
1857	12829.7	8822.5	1.454	0.65
1858	12312.8	9471.8	1.300	0.68
1859	13690.8	10828.5	1.264	0.52
1860	16967.0	9958.9	1.704	0.59
1861	19211.9	12671.2	1.516	0.50
1862	20836.6	12305.9	1.693	0.54
1863	23256.3	14962.5	1.554	0.50
1864	24853.2	16349.4	1.520	0.41
1865	26490.8	16684.8	1.588	0.40
1866	24231.9	16514.3	1.467	0.40
1867	28993.1	23376.4	1.240	0.47
1868	32609.5	31637.1	1.031	0.36
1869	37329.1	32348.9	1.154	0.46**
1870	39863.9	40341.8	0.988	0.61
1871	41209.2	46939.9	0.878	0.56
1872	48127.3	56263.7	0.855	0.64
1873	52776.7	44632.8	1.182	0.55
1874	57130.1	55349.8	1.032	0.48
1875	54427.0	56099.9	0.970	0.56
1876	55287.3	59504.8	0.929	0.51
1877	65226.1	70674.8	0.923	0.34
1878	83653.9	79016.9	1.059	0.14

Table A: continued

<i>Year</i>	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
1879	78386.4	77127.7	1.016	0.40
1880	105655.5	83134.3	1.271	0.32
1881	147200.9	118996.8	1.237	0.18
1882	167958.6	127320.3	1.319	0.17
1883	189208.1	139405.8	1.357	0.16
1884	178474.3	127741.3	1.397	0.69
1885	189299.5	124349.2	1.522	0.18
1886	224960.3	175422.3	1.282	0.09
1887	224073.3	168376.6	1.331	0.09
1888	216641.7	176768.0	1.226	0.13
1889	217774.4	168762.1	1.290	0.15
1890	236361.3	154826.9	1.527	0.10
1891	246425.2	159606.2	1.544	0.09
1892	241998.6	189887.0	1.274	0.10
1893	242841.7	169296.9	1.434	0.09
1894	220990.6	161096.0	1.372	0.09
1895	218368.7	159832.3	1.366	0.09
1896	222291.4	158975.5	1.398	0.10
1897	227191.8	161606.3	1.406	0.10
1898	240013.1	182828.8	1.313	0.10
1899	248776.5	211128.2	1.178	0.12
1900	242360.9	198798.2	1.219	0.14
1901	253506.6	223449.5	1.135	0.15
1902	258134.6	243416.9	1.060	0.13
1903	269524.1	257974.7	1.045	0.14
1904	292906.9	245211.1	1.195	0.17
1905	289701.1	237093.6	1.222	0.22
1906	315082.8	236481.3	1.332	0.29
1907	329427.5	236406.4	1.393	0.27
1908	394388.3	237219.6	1.663	0.35
1909	408833.8	220521.0	1.854	0.33
1910	416411.8	219655.7	1.896	0.55
1911	454854.4	160812.8	2.828	0.81
1912	633191.4	230635.2	2.745	0.88
1913	730022.8	297748.5	2.452	1.08
1914	727807.5	294431.5	2.472	0.84
1915	930819.2	395345.2	2.354	0.82
1916	1249487.3	571723.5	2.185	0.99
1917	1812870.6	890493.6	2.036	1.13
1918	2542432.6	1402051.6	1.813	1.37
1919	2973115.9	1401744.0	2.121	1.14
1920	3798776.0	2019385.8	1.881	0.95
1921	5273189.0	2508553.8	2.102	0.64

Table A: continued

<i>Year</i>	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
1922	6830899.0	3698465.4	1.847	0.44
1923	9268719.0	5406933.9	1.714	0.30
1924	10014923.7	5292613.8	1.892	0.27
1925	10719249.0	5547900.5	1.932	0.25
1926	11262640.3	5716500.9	1.970	0.30
1927	10175903.3	5690844.5	1.788	0.29
1928	17053400.0	6346700.0	2.687	0.54***
1929	17499300.0	5741200.0	3.048	0.46
1930	22343600.0	5596500.0	3.992	0.46
1931	21775500.0	4743300.0	4.591	0.41
1932	20716800.0	5494100.0	3.771	0.30
1933	23296200.0	6904500.0	3.374	0.42
1934	24499400.0	7602400.0	3.223	0.41
1935	24685700.0	6813400.0	3.623	0.30
1936	25665400.0	7461500.0	3.440	0.27
1937	29167600.0	7657700.0	3.809	0.26
1938	31387500.0	8106800.0	3.872	0.21
1939	34066000.0	10060300.0	3.386	0.30

Notes: (*) metallic holdings only; (**) total reserves (metallic and foreign exchange holdings); (***) ratio of total reserves and 'potential' circulation. 'Potential' money in circulation was defined as the sum of the banknotes in the hands of the public plus reserves and commercial bank balances with the central bank (see the statute of the BoG, article 61). The data refer to the end of the year and the values are in thousands of LMU drachmas. For variables' definitions and data sources see Table 1.

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