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ESTIMATES OF PRIVATE
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UNIFICATION:
HISTORIOGRAPHY AND
STATISTICAL METHOD

Alberto Baffigi

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What we have done is more or less what one would do if he had to measure the height of the dome of St. Peter's without instruments.

Maffeo Pantalonì, *Dell'ammontare probabile della ricchezza privata in Italia*, 1884, p. 220.

1. Introduction

The great development in recent decades of quantitative economic studies of post-unification Italy has made possible more systematic interpretation and more accurate, critical evaluation of the basic data. As Simon Kuznets noted in 1955, "acceptable long-term records of national income and wealth and of their customarily distinguished components constitute indispensable minimum information in the study of economic growth." But between the two aspects, the literature has shown greater interest in flow than in stock variables. Our greatly improved knowledge of the temporal profile of Italian economic cycles in the decades preceding the First World War has come thanks to the studies of econometric historians on such variables as industrial and agricultural production, or more generally on gross domestic product. The methodological and historiographical problems relating to changes in national wealth have not sparked a debate comparable to that conducted from the initial studies of Alexander Gerschenkron through Istat's reconstructions and Rosario Romeo's interpretations down to the most recent works.¹

This said, it nevertheless cannot be maintained that in economic historiography the question of wealth in post-unification Italy has been altogether forgotten. Those who have worked on the topic can be divided into two main lines of inquiry. One group of works uses estimates of wealth as a dimensional variable needed to measure the degree of development of the financial structure, following the approach inaugurated by Raymond Goldsmith (1969). The purpose is to study the role of financial structures in Italian economic development and industrialization by calculating indicators like the Financial Interrelation Ratio (FIR). Goldsmith, together with Salvatore Zecchini, made a major contribution to this field in 1975, although their estimates of Italian wealth referred only to ten separate years between 1861 and 1973, including just four of the 54 years between Italian unification and the outbreak of the First World War (Goldsmith and Zecchini, 1999 [1975]). Further study by Anna Maria Biscaini and Pierluigi Ciocca (1979) on the same subject did not use new or more frequent estimates than the preceding work. More recently the question has been taken up again by Giuseppe Della Torre (Della Torre, 2000; Della Torre *et al.*, 2006), who has highlighted the limitations of working with benchmark years rather than with time series. Della Torre suggests annual estimates of the FIR based on annual estimates of national wealth. In his work, however, the latter is essentially a side issue, with no specific in-depth inquiry.

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¹ Bonelli (1978), Cafagna (1989), Federico (1982) and Fenoaltea (2006).

The second line of inquiry considers wealth in its psychological-social dimension, as a crucial variable underlying the conduct of local elites. This literature certainly does not ignore the quantitative aspect of wealth, but its purpose in studying it is to frame the typical conduct of selected social classes or representative individuals. Thus Alberto Mario Banti (1989) studies the bourgeoisie of Piacenza in the nineteenth-century and Anthony Cardoza (1995) that of Turin in the same period, while Vera Zamagni (1980) focuses on the protagonists – private and public entrepreneurs, bankers – of the structural transformation of the Italian economy in the first half of the twentieth century. While broadly sharing the main features of this line of research, Zamagni adopts the standpoint of national history. Further, she differs from other scholars in the importance that she ascribes to the literature on wealth of the first few decades after unification; in her article that literature serves as an analytical tool for proceeding to produce a rough estimate of trends in total private wealth.

To reconstruct the time series for Italians' private wealth, Zamagni (1980) starts from the annual estimates for 1901-1934 made by Sergio Retti-Marsani (1936; 1937) and extended to 1938 by Agostino De Vita (1941). These estimates are generally agreed to be reliable, given the wide range of sources and the valid method adopted.² Zamagni assumes that the estimates for the nineteenth century, all quite similar, are too low by 20 per cent and accordingly revalues those of Sensini (1904). Finally, she joins the series so obtained to that of Retti-Marsani and De Vita. But if such a simple, uniform revaluation of the older series was sufficient to Zamagni's purpose, getting significant macroeconomic data requires studying the matter in greater depth.

The merit of Zamagni's approach lies in recognizing the importance of the many statistical works produced in Italy between the mid-nineteenth century and the First World War, which sifted the extremely scanty statistical material available at the time for investigating the performance of the Italian economy in the difficult decades in which the national State was being constructed. Those scholars inquired into and estimated the country's wealth chiefly as a variable serving to gauge the growth and the cyclical state of the economy. Data were lacking, and the official statistical institutions failed to accord due importance to measuring the "economic movement", as the business cycle was known.³ So estimating wealth was the work of academics or public functionaries acting at their own personal initiative. The revenue generated by the inheritance tax was the raw material for these studies at least until the first decade of the twentieth century (Coppola D'Anna, 1946, pp. 43-44, note 27). As one scholar noted, "when the direct method led to such great uncertainty owing to the insufficiency of the statistical data and the capitalization method could not ... be generalized to all States, it seemed that there was no better method of calculation than the indirect method based on inheritances, through which presumably all or at least most of every nation's wealth passes" (Maroi, 1918, p. 569).

² Retti-Marsani's estimates are consistent with the critique made by Gini (1909, 1962 [1914]) of the entire group of earlier estimates of wealth, which Gini held were too low. For some categories of wealth (agriculture land in 1914 and 1929), Goldsmith and Zecchini (1999 [1975]) use Retti-Marsani's estimates (1936; 1937). However, the latter refers to wealth held by the private sector (households) and the former to total national wealth.

³ It is interesting to trace the debate within the Statistics Council on 15 December 1879 on Antonio Salandra's proposal for a series of observations to produce reliable estimates of the country's wealth (*Atti della Giunta centrale di statistica*, 1880, pp. 135-154). The opposition of Vittorio Ellena and the support for the proposal offered by Luigi Bodio and Angelo Messedaglia clearly show the distance separating the scholars with more political objectives from those of a more scientific bent. Pantaleoni (1884) commented on Ellena's position with great acumen and diplomacy. It is more complicated to understand Bodio, given his twofold character as expert and high functionary of the official statistical apparatus for nearly three decades starting in 1872. On the backwardness of Italian official statistics in the early unification decades, see Pazzagli (1980) and Baffigi (2006, 2007).

The wealth that these data could estimate, with some margin of error, was thus the wealth in private hands, a definition very close to what nowadays we call “household wealth”. It comprised real assets such as land and buildings, livestock, or valuable, and financial assets such as government securities, bank deposits, shares, credits and debt, and so on.

Methodologically, the main reference for the scholars engaged in estimating “the probable amount of private wealth” – notably Maffeo Pantaleoni, Luigi Bodio, Rodolfo Benini, Guido Sensini and Luigi Einaudi – was the French scholar Alfred de Foville. The logical framework of the methods derived from his work, with the significant differences discussed below, was this:

- 1) take the revenue raised by the inheritance tax and apply to it the tax rates to calculate the tax base, hence the wealth inherited;
- 2) estimate a multiplier to convert the wealth inherited into total wealth. This multiplier must take account of:
 - 2.1) the demographic characteristics of the population, in particular the death rate;
 - 2.2) tax evasion.

The first step is basically mechanical, but as we shall see it may be important to track changes in tax rates in order to evaluate trends in tax evasion. In what follows we examine the way points 2.1) and 2.2) were treated in the succession of studies conducted in the three decades up to the War. Demographic questions are dealt with in Section 2.1, tax evasion in Section 2.2. Section 3 summarizes. The data on the inheritance tax – the data actually used by the authors surveyed in Sections 2.1 and 2.2 – are treated on the basis of observations and conjectures drawn from the studies themselves, exploring their usable information content for the construction of a time series for Italian private wealth.

The estimates indicate that wealth grew rapidly in the first half of the 1870s. Then, after essentially stagnating to the end of that decade, growth resumed and continued until 1887. There ensued another protracted stagnation, which did not end until the turn of the century. This pattern is consistent with a chronology of the Italian economic cycle quite similar to that suggested by such contemporaries as Riccardo Bachi, Rodolfo Benini, Luigi Einaudi (alias “Spectator”), Vilfredo Pareto and Guido Sensini, a periodization to which recent studies have restored empirical robustness and logical plausibility.⁴

Compared with the estimates of contemporaries, the series as we have reconstructed it is higher for the period from the 1870s to the end of the century (Sensini, 1904), and the gap widens progressively in the last years of the century. From 1901 to 1913 the series is close to that estimated by Retti-Marsani.

The time series generated by the present work should be seen as the empirical product of the survey of the literature undertaken. It results from making operative the implications of those studies that had not previously been taken up or utilized. This is the first step, within a broader project that has yielded some encouraging initial results. Section 4 concludes the present work with a discussion of possible lines for future research, such as the use of additional sources to integrate into the analytical framework set out here and the application of complementary methodologies.

⁴ See Fenoaltea (2006); for a critique, see Cerrito (2003) and Pescosolido (2007).

2. Private wealth in the late nineteenth century: methods and data

Maffeo Pantaleoni in his first work on “the probable amount of private wealth in Italy” (1884), observed that “it is not possible, in serious fashion, to choose among the various methods of valuation adopted over time by economists to measure national wealth, and say: these are better than those. Because the problem does not manifest itself on a *tabula rasa* on which the economist can institute whatever premises he likes. Instead, it always takes this form: ‘Given the following statistical materials – for the most part compiled for utterly different purposes – make a rough calculation of the national wealth.’ From country to country and from era to era these materials vary – and with them, so do methods” (Pantaleoni, 1884, pp. 135-136).

In the three decades between the publication of Pantaleoni’s monograph and the First World War, wealth estimates in the various countries were based on “inventory” or “income capitalization” methods. More often the procedure was based on inheritance data (see also Gini, 1962[1914], Chapter 2).

The “inventory method” consisted in first dividing wealth into its components or categories, which were then valued using a variety of sources and conjectures, “arming oneself with the greatest possible number of economic, financial and statistical notions” (Pantaleoni, 1884, p. 148). This method was most systematically applied in the United States starting in 1840 with the ten-year census of wealth.

The “income capitalization method” consisted in establishing categories of private capital “according to what it was invested in: capital invested in the professions, in trade, in transportation, in land, in urban buildings, etc. For each of these categories, using the personal or real method, the total income is determined and a reasonable discount rate is set. The total income for each category is multiplied by the capitalization coefficient corresponding to that rate. The sum of the products gives total private wealth” (Gini, 1962[1914], p. 26). The capitalization method was applied successfully by Robert Giffen (1878) for the United Kingdom based on income tax data.

The lack of adequate sources of statistics for Italy, according to Pantaleoni (1890), ruled these methods out, so the only road left was to use the inheritance tax to estimate total private wealth from the part passed on each year. Pantaleoni held that this approach was acceptable “in desperate cases, when no other method can be expected to help” (Pantaleoni, 1884, p. 186). And that was the state of statistics in Italy. When Pantaleoni was writing, the method was attributed to the French scholar Alfred de Foville (1878 and 1879). And in practice it would be applied to Italy not only by Pantaleoni but by many others in the decades that followed.

The inheritance tax method was debated and variously interpreted in its different applications. The “private wealth”, to which referred those scholars, was the wealth inherited by individuals. It is basically what we nowadays call “household wealth”. Inheritance tax data reported several categories of wealth, very similar to those used in modern classification. First of all, wealth was divided into real property (*beni immobili*) and personal property (*beni mobili*). Then, the first group was made up of land and buildings, while the second included financial wealth (public securities, shares, bonds, deposits, etc.) and other personal property like valuables, commodities, ships, machinery and so on (Table 2).

The general logic of the method was as follows. The key is calculating a multiplier factor to generate aggregate private wealth from the wealth inherited in a year (and declared for tax purposes). The problem is essentially demographic, depending on the mortality of the population. We denote by q_t the probability that an individual belonging to the relevant population will die between time t and time $t+1$. We posit that this

probability is independent of the amount of wealth possessed. In this case the expected ratio of the wealth inherited during that period to total wealth will be q_t . Assuming further that a percentage k_t of the wealth inherited is not declared to the revenue service, then in order to calculate total wealth in year $t+1$, we must multiply the wealth subject to the inheritance tax by the multiplier

$$\mu_t = \frac{(1 + e_t)}{q_t} \quad (1)$$

where $e_t = k_t/(1 - k_t)$ is the evasion coefficient.

So posed, the problem has two logically distinct parts. The first question is the numerical factor by which to multiply the wealth actually inherited in order to get total wealth (Section 2.1). The second, crucial question bears on the information content and completeness of the data. What is the ratio between inherited wealth as assessed by the tax authorities and the amount actually passed on? That is, how much is the amount reduced by tax evasion? This is the subject of Section 2.2.

2.1 Mortality and wealth

The earliest works to deal with the economic-demographic problem of extrapolating the total private wealth of a country from inheritance tax data used de Foville's method, based on the so called "devolutionary interval". It was based on a static view of demographic processes in which the main parameters describing a population, such as death rate and life expectancy, are essentially constants: their variations are deemed to reflect only secular changes. However, this view was in sharp contrast with the fundamentals of the Italian population, which in just those years was beginning the demographic transition, with substantial reductions in the death rate (Belletini, 1987, p. 39 ff.).

Against this backdrop, the first step in the de Foville method was to estimate the duration of the "inheritance generation" (devolutionary interval), i.e. the average number of years elapsing between the time a generation gets its inheritance and death (Coletti, 1907). According to the studies cited by de Foville, which were adopted by virtually all those using his method, this interval was stable at 36 years. A second assumption essential to the method was that the percentage of deaths for each generation was roughly equal to the percentage of total wealth that they held. So framed, the estimation of wealth was amazingly simple. In a stable population with an inheritance generation of 36 years, 1/36 of all wealth owners die each year. So multiplying the amount of legacies each year by 36 gives total private wealth.⁵

In 1907 Francesco Coletti questioned the robustness of this assumption and demonstrated the substantial variability of the "devolutionary interval", using the statistical data of *Movimento dello stato civile o della popolazione* (the official publication reporting demographic data).⁶ But his method would not be widely adopted.

⁵ The ratio between the numerical size of a statistical phenomenon (individual owners, securities in a bank's portfolio, litres of water in a bathtub, and so on) and entry and exit flows in a given period of time (which on the assumption of a stationary parameter are equal) gives the average duration of presence (of the individual, the security, the litre, etc.) within the aggregate. This is the *duration ratio*. According to de Foville, in the case of owners of wealth the ratio was 36. The inverse of duration gives the percentage ratio of owners that enter and leave the aggregate in each unit of time over total owners. To reduce the de Foville method to equation (1) this inverse proportion (1/36) can be interpreted broadly as the probability of an individual's dying and thus exiting from the population of owners.

⁶ Coletti, 1907, p. 55 ff. The essentially demographic nature of the problem was underscored also by Rodolfo Benini (1906), who called for simplifying the question and suggested that the multiplier be the ratio between deaths and population only for those older than 25, as those younger were often propertyless. The multiplier, in this case, could be derived from the mortality tables.

Times had changed, and despite the serious lacunae that still plagued Italian statistics, estimates of wealth could now use richer and more reliable sources of data than twenty years earlier. Soon Corrado Gini, in meticulous works with an abundance of analysis and examples, would show the severe limitations and risks of the devolutionary interval method.⁷

According to Gini, all methods “have their shortcomings”: the inventory and capitalization methods⁸ “can be applied reliably only to a fraction of assets, larger or smaller depending on the state of statistical observation in the country involved. Methods based on inheritance years or devolutionary interval can be extended to all types of asset, but owing to certain circumstances ... they give an excessively low estimate of wealth.” Gini proposed the “multiplier method” to “take advantage of the partial evaluations supplied by the methods of the first group and the general base for evaluation upon which the second group are founded.” (Gini, 1962[1914], p. 122). He suggested the following procedure:

a) Estimate some categories of wealth to which the inventory or capitalization method can be applied.

b) Divide the values of each category, so calculated, by the respective amount inherited in the same period. “In this way for each category of asset of known value, one obtains a certain figure (multiplier) which, multiplied by the amount of assets figuring in ... inheritances should produce the value of such assets present in the country.”

c) “From the multipliers so calculated derive, with appropriate adjustments, the multipliers for the other asset categories into which the yearly inheritance or devolution is divided” (*ibid.*, pp. 122-23).

Gini observed that the most delicate point was the adjustment of the multiplier to adapt it to other categories of wealth. In applications, such adjustment must take precise account of the fact that the various categories of wealth may differ both in the rate of tax evasion and in the mortality of their owners.⁹

A special case in which the method was applicable, according to Gini, was that in which multipliers calculated at time t_0 are used at time t_1 . “This procedure is based on the assumption that the multipliers are the same at the two times. ... It is tantamount to assuming that between t_0 and t_1 the value of the various categories of private wealth has increased in the same proportion as the respective categories of assets inherited.” (*ibid.*, p. 125).

Strangely, in suggesting this possible intertemporal application, Gini did not mention the need for appropriate but complicated adjustments, as he had with respect to application to different categories. Yet it would have been logical to extend the caveat concerning variations in tax evasion and mortality rates to this intertemporal application as well. The effect of death rates on changes in the multiplier over time had already been noted by Benini (1909), who observed that the “assets transferred annually from the deceased to their heirs represent, depending on their type, very different fractions of the

⁷ More than half of the chapter on methods for estimating private wealth in *L'ammontare e la composizione della ricchezza delle nazioni* (Gini, 1962[1914]) concerned the devolutionary interval method.

⁸ For a brief description of the inventory and capitalization methods, see Section 2. For a more thorough discussion, see (Gini, 1962[1914], Chapter 2). Gini also includes methods “based on transfers of property for a consideration” which for simplicity we do not include (*ibid.*, pp 30-34).

⁹ Another circumstance to take account of in applying the multiplier method is that some types of asset that are hard to manage are often transferred as death approaches (*ibid.*, p. 123).

total amount possessed, type by type, by living individuals. This depends above all on the differing age composition between the groups of owners of one sort of asset as opposed to another.”¹⁰ Benini calculated the multipliers for several specific asset categories,¹¹ finding that the multiplier for registered securities had increased very substantially between the first and second halves of the period 1892-1902. He ascribed the change to a fall in mortality rates, owing “to better health conditions in the country, holding the age composition of the owners constant” and/or “greater diffusion of registered securities among younger age-groups” (Benini, 1909, p. 123). His discussion is essentially descriptive, but it made an interesting point, not taken up by Gini: other things being equal, changes in owners’ mortality between one period and another will alter the value of the multiplier. This is taken into account in Section 3, where Gini’s multipliers for 1903 and 1908 are adapted to permit application to the entire period covered by inheritance tax data used in this work (1872-1913). To this aim, we use information from the mortality tables.

Another most significant modification of the multipliers related to trends in tax evasion over time, to which we now turn.

2.2 Tax evasion and the inheritance tax

Unfortunately, this literature offers no thorough, empirical, analytical studies of tax evasion over the entire period from 1872 to 1913. Pantaleoni’s first works, in 1884 and 1890, did not treat the matter and blindly “accepted what others took as truth, namely that evasion concealed about a quarter of the taxable wealth”. But that “evasion coefficient”, like the “duration” of the population, was drawn from de Foville’s work on France, and paradoxically Pantaleoni said he was “not at all disposed to defend this estimate of the amount evaded” (Pantaleoni, 1884, p. 211). Even Luigi Bodio, who in 1891 had put tax evasion at 16 per cent, in the 1896 edition came into line with the 25 per cent figure, which was endorsed by such other scholars as Luigi Einaudi (1902), Francesco Saverio Nitti (1904), Guido Sensini (1904) and Francesco Coletti (1907).

It took a quarter-century from Pantaleoni’s first work for scholars to grasp the crucial importance of measuring evasion in order to use inheritance tax data for statistical purposes. Thus in 1909 Corrado Gini commented polemically on the contrast between the heated debate on what he called the “integration coefficient” (the multiplier, i.e. factor q in equation (1)) and their lack of interest in determining the “evasion coefficient” (factor e): “For the most part, scholars contented themselves with necessarily vague statements by high officials of the Department for State Property and Taxes [*Direzione generale del demanio e delle tasse*], who by virtue of their position were perhaps the least suitable for actually estimating the intensity of evasion” (Gini, 1959[1909], p. 72). Gini proceeded to calculate evasion coefficients that were differentiated by category of asset, estimating an average value of 46 per cent of the amounts determined by the tax assessors and adding that this figure was “if anything, low rather than high” (*ibid.*, p. 80).

The same year, Giorgio Mortara observed that studies of private wealth had not accorded “sufficient importance to the effect of legislative changes on the declared value

¹⁰ He continued: “In fact, if the holders of a certain type of economic asset – mortgage credits, say – were so distributed according to age as to have an average mortality of 40 per mille, which is to say 1 in 25, it is obvious that, all other circumstances being equal, only the 25th part of the mass of mortgage credits held by them would go through inheritance each year” (1909, p. 118).

¹¹ The categories – registered securities, claims backed by lines, post office savings accounts, and real estate – were all drawn from the official inheritance tax classifications and have characteristics, such as registration or recording in official acts, that make tax evasion difficult. Evidently they were selected for study in order to keep the results from being distorted by tax evasion.

of the goods transferred. The tax rates set by the 1874 law, which raised them by two tenths, were raised by another tenth in 1888 (except for inheritances in the direct line of succession). Taxes were increased again by the 1894 law, which also, however, reduced the rate on inheritances or donations worth less than 500 lire by a tenth. Finally, the 1902 law instituted substantial tax breaks for portions and fractions of portions up to 1,000 lire in transmission by direct line of succession and between spouses. For the rest, that law generally retained the rates set in 1894 on portions or fractions of portions up to 50,000 lire and instituted progressive taxation on the part of the inheritance above 50,000 lire” (Mortara, 1909, p. 552). Based on this summary account, Mortara concluded that this series of tax increases had prompted growing evasion.¹² His argument was based on fragmentary evidence and resulted in no quantitative estimate of evasion. Still, the idea of posing the problem in retrospect and performing a qualitative analysis over the thirty-year period was a good one.

A more specific study, with a much larger set of empirical data, was that on “Inheritance tax evasion in Italy” published as Chapter 4 of Corrado Gini’s *L’ammontare e la composizione della ricchezza delle nazioni* (Gini, 1962[1914]). This is the fullest treatment of the subject for our period.¹³ Like Mortara, Gini stressed the changes in the tax rate, especially that of 1902. For instance, for the data on the eight fiscal years from 1901-02 through 1908-09 there was “one real estate [*beni immobili*] legacy for every 35-36 property owners and one legacy of purely personal property [*beni mobili*] for every 350-460 owners of solely personal property. Obviously such a difference cannot be explained by differing mortality between the two classes of owners but must be attributed essentially to the differing frequency with which real and purely personal property legacies escape the tax authorities” (*ibid.*, p. 223). Gini also noted that the number of net positive inheritances – those in which assets are greater than debts – in proportion to the total number of deaths had risen gradually between the 1870s and the end of the century but fell perceptibly after 1902. And considering the categories of wealth inherited in different periods, “while over time the value of inheritances in the categories where evasion is small or negligible rises very significantly, in categories where evasion is easier it diminishes. But it is to be presumed that since 1888 bequest values have increased in the latter as in the former categories, albeit perhaps to differing extent” (*ibid.*, p. 245).

In addition to tracing general tendencies for the entire post-unification period, Gini focuses more analytically on data about 1903 and 1908. His analysis was conducted in large measure as a critique of the works of Luigi Princivalle. A functionary in the Finance Ministry, Princivalle was the butt of invective against the “vague statements of high functionaries of the Department for State Property and Taxes” and the author of a series of works on wealth published under the signature “L.P.” in *Bollettino di statistica e di legislazione comparata*. His detailed 1909 monograph *La ricchezza privata in Italia* (Private wealth in Italy) is always cited in bibliographies on the topic. As far as the

¹² For an interesting brief account of the evolution of inheritance tax law see Parravicini (1958, pp. 273-278). Gini (1962[1914], pp. 208-222) is also most useful. Supplementary information is available in Geisser (1915), Savorgnan (1916) and Contento (1916).

¹³ Gini used a vast set of statistical data and indications to treat the problem from the standpoint of major economic and organizational questions, such as the incentives affecting the anti-evasion action of “tax collection agents”, private parties to whom tax collection was outsourced, who were “on commission, i.e. paid a percentage of the tax proceeds. ...First of all, the agents have a guaranteed minimum income, which was set at 2,000 lire before 1909 and now, under the law of 24 December 1908, varies with the category to which the agent belongs. They now have no incentive whatever for an exact assessment in the many districts where proceeds are ordinarily below the threshold level” Gini (1962[1914], p. 212). The rest of the chapter offers a more detailed analysis of the incentives shaping the anti-evasion conduct of the collection agents. For a summary of Gini’s study, see Geisser (1915). An interesting essay on the origins of the system for collecting direct taxes in Italy is in Frascani (1988), Chapter 1.

estimate of real estate tax evasion was concerned, Gini conducted the debate in highly polemical fashion, but he frankly acknowledged and reworked Princivalle's results on the other category of wealth, personal property, in an interesting application of the multiplier method.

Essentially, the dispute over the valuation of real estate turned on the credibility of the estimates effected by the tax authorities. Based on the official data, which he considered reliable, Princivalle concluded that in the 1903-04 fiscal year evasion did not exceed 12.5 per cent of the assessed value. "Gini," he commented, "instead maintains that evasion in respect of real property is equal to half its effective value, which is to say 100 per cent of the value taxed. Naturally, to explain how such an outcome is possible he accuses tax assessors and local authorities of complicity with the beneficiaries; and while he reports the consensus of the practical men he has interviewed, his roster of such practical men excludes the tax authorities and finance ministry bureaus" (Princivalle, 1909, p. 73).

Several years later, in the further course of the dispute, Gini observed that the estimate of the value of land, 24 billion lire, made by the Department for State Property and Taxes on the basis of an ad hoc study and subsequently published by Princivalle, was lower than the figure that Luigi Bodio and Stefano Jacini had arrived at separately, and this after the passing of "thirty years that had seen a virtually general and in many cases very substantial increase in prices" (Gini, 1962[1914], p. 150). To test the estimates of the Department and of Princivalle, Gini organized an alternative survey, asking the directors of the agricultural improvement service [*cattedre ambulanti di agricoltura*] to evaluate and, where appropriate, adjust the Department's estimates on the basis of the market prices of land in their respective provinces.¹⁴ The data on the 27 provinces for which Gini received replies, most of them in northern and central Italy, indicated on the whole that the Department's estimates were too low, thus confirming his suspicions.¹⁵

The general underestimation of the value of land was due to the fact that the Department merely "applied certain coefficients to the cadastral assessment", which for some provinces, as the Department acknowledged, was simply the "old value of the properties", while for others it was based on the incomes recorded twenty or thirty years earlier (*ibid.*). Now, Gini argued, those incomes were surely lower than the incomes observable in 1908. Furthermore, in a country where the yield on the public debt stood at about 3.5 per cent, those values appeared singularly consistent with the Department's estimate of the market value of land.¹⁶ On the basis of other sources,¹⁷ Gini added his estimates of the agrarian income for the whole country (1,750 million lire), which,

¹⁴ *Cattedre ambulanti di agricoltura* were local institutions founded in many provinces in Italy from the mid-Nineteenth century to the great war. Their aim was to bring updated scientific agrarian culture among peasants.

¹⁵ Gini (1962[1914]), p. 168. The data by province are given in pp. 164-67.

¹⁶ Total gross cadastral income in the provinces in question, which at the time Gini was writing referred to the twelve years 1874-1885, amounted to 240 million lire. The Department's study estimated the market value of the same properties at 6,320 million. "It can be admitted that today, in those provinces, almost all of them in northern Italy, the return on land, net of operating expenses, taxes and the portions for management and administration, is about 3.3 per cent. Corresponding to this should therefore be a net income of 208.5 million. In 1907 the taxes and surtaxes on land in said provinces rose to 58 million. Income before tax but after the other expenses would therefore amount in 1907 to about 266.5 million, not much more than the assessed income (240 million) and probably not more than the actual income of the period 1874-1885" (*ibid.*, p. 174).

¹⁷ "We can derive good elements for the valuation of land from the diligent work of the agrarian cadastral survey now nearing completion. It will tell us, with sufficient exactness, the annual quantity and gross value of the various kinds of product. Meanwhile, we can use a rough estimate of Italian agricultural production carried out by the Agricultural Statistics Office on the occasion of the bill on workplace accidents in agriculture (*Ibid.*, pp. 176-177). Gini derived net income from gross income so estimated by using the technical data found in handbooks such as Niccoli's *Prontuario dell'agricoltore* (1897) and information on the situation in France.

capitalized at the current interest rate, corresponded to a value of land close to 40 billion.¹⁸ Further, Gini estimated the value of buildings at 16 billion lire for 1908 (*ibid.*, pp. 177-80). He was thus able to calculate a multiplier (our μ) for land and buildings in 1908. The average rate of tax evasion on real property, computed taking account of the adjustments by the Finance Ministry's technical offices to what was declared, worked out to 21 per cent (Table 1).

Table 1

Total wealth and multipliers in 1903 and annual amount transferred by inheritance in the five years 1901-02/1905-06

Category	Stock (millions of lire)	Annual amount transferred by inheritance (thousands of lire)	μ_{1903}^a	e_{1903}^a	
Land, rural buildings and livestock ^a	40,500	506,440	80		
Urban buildings ^a	16,000	262,700	61	0.21	
Consols and other public debt securities	bearer	3,094	17,852	17,344	3.0
	registered	1,994	44,590	44	0.0
Bonds, certificates, shares, etc. issued by banks, companies and non-profit entities	bearer	2,927	21,017	139	3.5
	registered	846	27,458	30	0.0
Savings deposits, security deposits and current accounts	bearer	1,141	5,552	204	1.2
	registered	2,124	24,446	94	0.0
Cash deposits with Cassa Depositi e Prestiti	153	1,789	86	-	
Cash	1,322	10,725	123	-	
Credits secured by liens	2,300	90,040	25	-	
Debts secured by liens	3,000	73,000	41	-	

^aFor land and buildings, stocks refer to 1908 while annual amount transmitted by inheritance is the average for the two years 1907-08/1908-09. For land and buildings, the table gives the average, non-disaggregated evasion coefficient calculated by Gini (1962[1914], p. 233). The coefficient is computed on the basis of the assessments by the Finance Ministry's technical offices adjusting the amounts declared. The other coefficients are calculated assuming that evasion only concerned bearer (*al portatore*) assets and that the higher value of μ for bearer assets with respect to similar registered (*nominativi*) assets was totally ascribable to tax evasion.

Sources: The amounts are taken from Princivalle (1909, pp. 79, 121-128) and Gini (1962[1914], pp. 181-186, 231-237). All the figures in the third column are also derivable from Table 2 in this paper.

¹⁸ "In a State where the yield on the public debt is 3.50 per cent, one cannot admit that the net profit of landed property exceeds 4 per cent, even considering the special conditions of a large part of the South and the 'industrial' nature that agriculture has taken on in other parts of Italy" (*ibid.* p. 177).

Gini's was a major contribution to a discussion that had arisen some years earlier on the actual amount of Italian wealth, which some scholars contended was being increasingly underestimated in the most recent studies.¹⁹ Francesco Saverio Nitti (1904), for example, writing five years before Gini's first study, had criticized estimates, notably those of "Spectator" (Einaudi, 1902), that showed wealth in Italy to be about the same as it had been between 1881 and 1885-86 and lower than in the previous decade. The "reawakening of the national economy in the past decade is undeniable", wrote Nitti. With "the population having grown so much since 1881 and with the industries that have been established, it is utterly improbable that wealth has remained stationary" (Nitti, 1904, p. 16). Nitti ascribed the errors of estimation to the unreliability of the data on inheritances.

Carlo Angelo Conigliani (1901) was another who argued back then that the estimates of private wealth in Italy were overly pessimistic. In addition to raising doubts of a general nature about the reliability of de Foville's method, Conigliani stressed two points indicating that evasion of inheritance tax had been increasing. First, the composition of wealth "in the contemporary economic environment" (Conigliani, 1901, p. 612) had increasingly taken the form of anonymous personal property, which lends itself to being concealed from the tax authorities. Since 1883 the paid-up capital of industrial companies limited by shares (*società per azioni*) had grown by nearly 1 billion lire. This increase had been accompanied by the repatriation of more than 1 billion of government bonds. "Now, the inheritance tax offers no reflection of this increase in domestic capital and elimination of external liabilities because most of the securities are bearer securities" (*ibid.*, p. 613). The second point Conigliani raised concerned the widespread and "official" practice for "at least the past twenty years" of capitalizing at 5 per cent the monetary incomes of "most of the wealth subject to inheritance tax. . . . Now, it is undeniable that in recent years monetary incomes from many personal sources have also been decreasing in Italy, and that the real-estate crisis has considerably diminished the monetary incomes from real property. . . . Thus, a great mass of wealth that goes to make up national assets (land, buildings, shares and bonds, registered securities) is shown in the balance sheet at a lower figure, thereby eliminating from the balance sheet the significant increases deriving from new accumulation, from the acquisition of new income-producing sources" (*ibid.*).

The diminutions in wealth reported by some authors were therefore only apparent, Conigliani argued. "In order to eliminate at least part of the effect of those apparent diminutions, it is necessary to take into account the actual variations in the interest rate for all those portions of the nation's wealth that are valued by capitalizing their monetary income. And since the normal average interest rate has certainly been falling in recent years, it is necessary either to lower the capitalization rate for the past few years or to raise it for the earlier years" (*ibid.*). The application of the method of multipliers, set out in the following section, takes its cue from Conigliani's suggestion.

3. The empirical implications of the historical survey

We will now exploit the empirical implications of our survey of the literature. Section 3.1 describes the methodology employed, while Section 3.2 presents and comments on the estimated time series of private wealth.

¹⁹ For an overview of the discussion from a "Ginian" perspective, see Maroi (1918, second part).

3.1 The methodology

A two-stage approach is adopted.

Stage 1

We apply the multipliers calculated by Gini (1962[1914]), reported in Table 1,²⁰ to the amounts of the respective categories of wealth assessed for purposes of inheritance tax (Table 2) for all the years for which disaggregated data are available. The multipliers refer to 1903 (land and buildings) and to 1908 (all categories of personal property). In symbols, we have:

$$\mu^i_{1903} \ (i = 1, 2, \dots, 12) \text{ and } \mu^j_{1908} \ (j = 1, 2) \quad (2)$$

where the multipliers μ^i_{1903} are applied to the twelve categories of personal property and μ^j_{1908} to the two categories of real property.²¹

Stage 2

Stage 1 is preliminary and serves to rebalance the distribution of wealth which in the tax data is tilted towards the categories for which evasion is harder. To take account of the possible variations of the multipliers over time, stage 2 calculates the values of μ^i_t for the years other than 1903 and 1908. Using mortality tables for the years considered, quantitative hypotheses are formulated on q_t of equation (1), based on the discussion in Section 2.1. In addition, the discussion in Section 2.2 enables us to bring in hypotheses on tax evasion in the period 1872-1913 (coefficient e^i_t).

We therefore have:²²

$$\begin{aligned} \mu^i_t &= \mu^i_{1903} \cdot q_{1903}/q_t \cdot (1 + e^i_t)/(1 + e^i_{1903}) \quad (i = 1, 2, \dots, 10) \\ \mu^i_t &= \mu^i_{1908} \cdot q_{1908}/q_t \cdot (1 + e^i_t)/(1 + e^i_{1908}) \quad (i = 1, 2) \end{aligned} \quad (3)$$

Before presenting the estimated time series, it is worth dwelling on the import of the operations described above. The estimation of Italian private wealth performed in the two stages rests on some assumptions that must be kept in mind when evaluating the results. To begin with, it is assumed that inheritance tax evasion in the period considered took mainly two forms: 1) "concealment" of bearer assets, and 2) "diminution in value" owing to the excessively high interest rate used in capitalizing incomes.

Evasion by concealment is dealt with in the first stage by assuming that the factors and reasons that prompted heirs to hide part of the wealth inherited were constant over the forty years. No doubt this is a strong hypothesis, but pending further inquiry it is worth

²⁰ In order to obtain a multiplier for "furnishings" (*mobilia*) and "other personal property", not calculated in table 1, we followed Gini's (1962[1914], p. 186) guess which set it at 150.

²¹ For the years for which disaggregated data are not available, we proceeded as follows. From 1885 to 1891 the total value of real property is available but not the breakdown between land and buildings; we obtained it by using the two categories' observed shares for 1892. For the years from 1872 to 1884 only the data on total inheritances, without disaggregation, are available; for those years we multiplied the tax data by the weighted average of the Gini-Princivale multipliers for the different categories of wealth, with weights given by the amount assessed for each category in 1885.

²² In order to interpret (3), recall that, for (1) we have, for example, $\mu^i_{1903} = (1 + e^i_{1903})/q_{1903}$, from which, multiplying by q_{1903} and dividing by q_t , we get $\mu^i_{1903} q_{1903}/q_t = (1 + e^i_{1903})/q_t$. Multiplying then by $(1 + e^i_t)$ and dividing by $(1 + e^i_{1903})$, we get $\mu^i_{1903} (q_{1903}/q_t) (1 + e^i_t)/(1 + e^i_{1903}) = (1 + e^i_t)/q_t = \mu^i_t$, that is to say the first expression in (3) (the same holds for the second expression). The coefficient q_t represents the average probability that an individual aged 25 or more, belonging to the Italian population in year t , will die within one year. We derived it from computations on the mortality tables of the *Human Mortality Database* (Glei, 2006). The coefficient e^i_{1903} represents tax evasion for wealth category i , expressed as a ratio to the amount of such wealth assessed for purposes of inheritance tax in 1903. On the basis of the assumptions adopted in the text, $(1 + e^i_t) = 5/r_t$, where r_t is the market yield on 5% government bonds (Bianchi, 1979, Table 1, p. 150). It follows that, in (3), $(1 + e^i_t)/(1 + e^i_{1903}) = (5/r_t)/(5/r_{1903}) = r_{1903}/r_t$.

verifying its empirical implications. Note, however, that its plausibility cannot be easily assessed without further information. Carlo Conigliani emphasized, for example, that personal assets were the form in which “private wealth initially accumulates”. “Provisionally, newly accumulated capital takes the form of monetary reserves, of deposits in savings banks, or is invested in bearer bonds as the easiest, most convenient employment. Only later, in the search for more income, is it definitively placed in other investments that tie it to a direct source of production” (Conigliani, 1902, p. 612).

Evasion by “diminution in value” is dealt with in the second stage, when, again following Conigliani, we assume that from the start of the 1880s onwards the discount rate for capitalization was 5 per cent, whereas the actual yield on government debt fluctuated downwards from about 5 per cent initially to 4 per cent at the end of the century. We correct for this by adjusting the discount rate to the market yield and assuming that the phenomenon was similar for all categories of wealth. This too is a strong hypothesis. But if for the time being we go along with Conigliani in assuming that the discount rate used for capitalization was constant at least from 1880 onwards,²³ we should add that the property assessment procedures of the time may well not have paid any great attention to market developments in defining the reference rate. For example, *Economia ed estimo dei miglioramenti fondiarii*, a text by the agronomist and engineer Leopoldo Di Muro, suggests that the assessor must determine the “rate of capitalization” by referring to a “rate known by word of mouth among experts, buyers, sellers, notaries, tax agents and, above all, known to the tax collection agent through whose hands all contracts of sale pass”.²⁴

Lastly, there is the demographic question. We have assumed that the changes in mortality on average followed the same pattern observed for individuals older than 25, independently of age and of wealth category they owned. The calculations were performed taking into account the relation between the probability of death observed for those people in each year and that observed in 1903 (or 1908, for real estate and buildings). This hypothesis does not take into account that, in general, wealth distribution by age is not homogeneous and that its features can change over time, according to variations occurring in the life-cycle patterns of accumulation.²⁵ In fact, during a period of demographic transition, of which post-unification Italy is an example, the size of such changes can be relevant and permanent.²⁶ The question will need further treatment in future research.

3.2 Private wealth in Italy from 1872 to 1913

The time series obtained with the methodology described above is depicted in Figure 1, together with two reference series. For the period 1872-1900 the series estimated by Sensini (1904) was selected both for its span and because in its temporal profile and levels it is very close, indeed sometimes identical, to those found in other contemporary studies. This comes as no surprise, seeing that all these studies followed de Foville’s method, sometimes to the letter. Retti-Marsani (1936; 1937) instead belongs in

²³ There is no need to formulate hypotheses on the level of the rate applied; the crucial assumption is that the rate held constant, against the backdrop of a falling market rate (see the final part of note 22).

²⁴ Di Muro (1902, p. 238). His book was well received in international academic circles (Sanger, 1903).

²⁵ Scholars of the day were aware of the statistical relation between age and wealth. Gini (1962[1914], pp. 39 ss.) focuses on this stylised fact following Mallet (1908) who elaborated on a suggestion by the statistician Timothy Coghlan and estimated a multiplier to be applied to inheritance tax data.

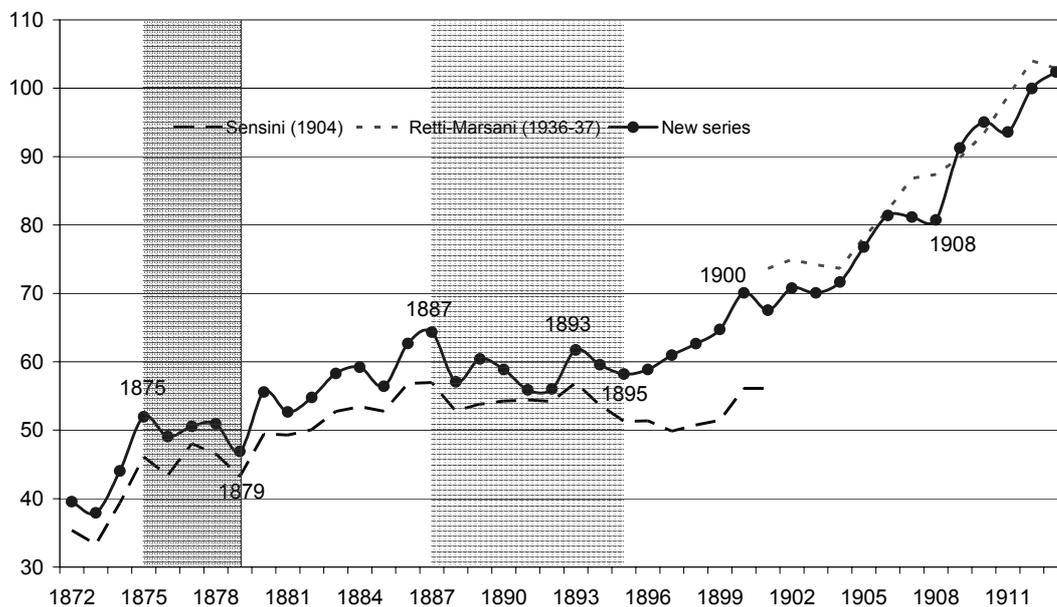
²⁶ For a general discussion on this topic, see Blackburn and Cipriani (2004).

every respect to the new generation of estimates, based on a multiplicity of methods all different from de Foville's.

Interestingly (and fortuitously), one series ends where the other begins. This brings out the contrast and quantitatively clarifies the object of the dispute over Italy's "impecuniosity".²⁷ Our results permit us to appraise the difference and to identify its roots in the rigidity of de Foville's coefficients (36 for the duration of the generation, $\frac{1}{4}$ for evasion; see Sections 2.1 and 2.2). These factors provided a rather realistic multiplier on the whole for several decades, but intensifying economic and demographic development starting in the 1890s bared the method's excessive rigidity.

Figure 1

Estimates of private wealth in Italy (1872-1913) (*)
(billions of lire)



(*) The shaded zones indicate periods of stagnating or declining wealth as emerging from visual inspection of the graph.

In Figure 1 we identify some turning points in order to delineate a periodization that can be used to check the historiographic plausibility of the temporal profile that emerges from our estimates. The forty years 1872-1913 can be divided into five periods, corresponding more or less to the periodization that contemporaries had in mind and to the behaviour of the time series that historians have made available in recent years (Fenoaltea, 2006).

²⁷ Nitti (1904) recalled de Foville's judgment that in Italy there reigned "ce que le bon Rabelais appelait 'l'impecuniosité'". Impecuniosity, said Nitti, should be taken as meaning above all "shortage of money, shortage of capital" (Nitti, 1904, p. 7). Nonetheless, as we have seen, Nitti considered the previous estimates of wealth too low.

- 1872-1875: Strong growth of private wealth. Sensini (1904), noting this result in his estimates, observed that it “probably indicates the very slight influence of the crisis of 1873” (Sensini, 1904, p. 299). This may be partly true (Luzzatto, 1968, p. 80). In any event, the poor quality of the data for this initial period, which Sensini himself suspected, must be recognized.²⁸
- 1875-1879: Stagnation, with private wealth affected by the international economic contraction.
- 1879-1887: Rapidly growing wealth. Riccardo Bachi called this a period “of decided economic upswing, of active speculation in an environment reinvigorated by the gold imported with the loan contracted abroad in order to end the inconvertibility of the currency” (Bachi, 1914, p. 298). According to recent estimates, industrial production grew by about 4 per cent per year (De Rosa, 1985, pp. 18-24; Fenoaltea, 2006, p. 47; Pescosolido, 2007, p. 204).
- 1887-1895: The level of private wealth fluctuated, but trended downwards. The year 1887 was a watershed: “The first signs of decline appear. The threat, which became a reality, of the breaking off of trade relations with France produced violent oscillations in securities. The nadir of the crisis came in late 1893 and early 1894. This was truly the black year of the Italian economy. . . . If the economy had fared poorly in the preceding years, now it precipitated” (Einaudi, 1902, p. 118). There were failures of important banks, touched off by the building crisis. “But as if that were not enough, the pickaxe drove into the most vital part of the credit system, the institutes of issue, and in 1893 Banca Roma crashed after the famous inquiry, with a shortfall of 95 million lire” (*ibid.*). Bachi maintained that “between 1893 and 1894 the Italian economy reached its low for the contemporary era” (Bachi, 1914, p. 299).
- 1895-1913: The long expansion of the so-called age of Giolitti. “Between the end of the nineteenth century and the start of the twentieth the Italian economy embarked on a definite, increasingly evident upswing, one not marked by the passing depression that some countries experienced around 1900. . . . This phase of economic wellbeing, which characterized the dawn of the new reign [of King Vittorio Emanuele III], lasted until 1908-09; it had only a few features in common with the corresponding phase that had developed two decades earlier, after 1881. The foundations of the expansion were more solid now: the fabric of the nation’s economy had grown more robust in the long years of preparation, and economic life had taken on a new consistency and new form” (Bachi, 1914, pp. 299-300).

The business cycle dating which emerges from our estimate of private wealth time series is also validated by comparison with the most recent GDP estimates (Fenoaltea, 2006) over the same period (Figure 2).

²⁸ Sensini cautions about the quality of these data, remarking that “Bodio, for example, in his *Indici*, did not report the figures from 1876 on” (Sensini, 1904, p. 299).

Table 2

Value of assets transferred assessed for purposes of inheritance tax by type of asset, 1872-1913

Fiscal year ¹	Real property			Personal property ²													Gross inheritance value (col. 4+ col. 18)	Inherited liabilities	Net inheritance value (col. 19 minus col. 20)				
				Public security		Bonds, certificates, shares		Deposits		Cash deposits with Cassa Depositi e Prestiti	Claims other than from long-term leases ⁴		Cash ³	Furnishings	Other personal property	Sum cols. 14, 15, 16				Total personal property			
	Bearer	Registered	Bearer	Registered	Bearer	Registered	With lien	Without lien															
	Land	Buildings	Total	5	6	7	8	9	10	11	12	13	14	15	16	17				18	19	20	21
1872																				634,828			
1873																				608,822			
1874																				707,145			
1875																				834,250			
1876																				787,799			
1877																				811,650			
1878																				818,128			
1879																				753,155			
1880																				892,372			
1881																				845,574			
1882																				879,922			
1883																				936,084			
1884																				950,689			
1885			723,906														305,903	1,029,809	123,833	905,976			
1886			804,177														330,972	1,135,149	124,375	1,010,774			
1887			797,603														358,552	1,156,155	127,163	1,028,992			
1888			706,236	14,444	34,788	13,090	16,237	4,224	10,369	2,201	121,069						331,322	1,037,558	122,060	915,498			
1889			709,066	17,359	41,533	16,047	19,722	10,945	16,878	3,653	138,708					97,687	362,532	1,071,598	123,368	948,230			
1890			739,634	15,015	43,187	11,561	22,788	4,361	16,250	2,050	144,828					54,469	98,488	358,528	1,098,162	128,786	969,376		
1891			741,910	15,839	43,881	10,465	30,771	5,942	15,223	2,981	141,507						85,807	352,416	1,094,326	130,691	963,635		
1892	496,947	253,974	750,921	15,215	43,454	18,399	18,988	4,679	15,640		147,983						85,807	352,416	1,094,326	130,691	963,635		
1893	524,342	239,832	764,174	13,544	54,039	22,838	26,612	4,741	17,016	2,449	84,268	59,732					96,506	381,745	1,145,919	125,460	1,020,459		
1894	485,580	222,956	708,536	15,441	58,753	26,488	18,802	3,422	15,259	1,827	88,169	44,459					83,890	356,510	1,065,046	119,941	945,105		
1895	460,807	202,851	663,658	16,224	48,764	16,000	19,301	3,418	19,047	3,103	79,559	41,443					85,292	332,151	995,809	108,993	886,816		
1896	467,901	204,549	672,450	13,112	38,707	13,615	22,365	4,660	17,942	4,500	84,420	51,972					84,858	336,151	1,008,601	108,428	900,173		
1897	446,195	203,009	649,204	17,914	47,838	22,415	20,155	3,908	13,616	2,253	82,091	43,266					79,875	333,331	982,535	151,562	830,973		
1898	461,127	196,407	657,534	15,996	43,153	17,985	35,083	3,418	16,932	1,935	77,441	38,398					78,546	328,887	986,421	112,910	873,511		
1899	448,238	224,336	672,574	12,618	45,078	19,499	26,047	4,469	15,998	2,452	80,758	38,818					81,270	327,007	999,581	108,585	890,996		
1900	476,121	230,960	707,081	47,533	49,166	25,602	23,010	4,620	20,034	2,696	85,052	46,972	39,454	33,672			86,540	391,135	1,098,216	126,431	971,785		
1901	435,221	215,895	651,116	22,738	40,081	22,596	32,631	3,846	20,690	2,593	84,830	39,766					35,281	35,152	80,646	350,417	1,001,533	116,093	885,440
1902	469,556	216,923	686,479	15,762	45,151	18,610	26,876	4,942	20,598	1,736	88,062	37,924					33,774	31,690	77,479	337,140	1,023,619	112,615	911,004
1903	476,436	215,867	692,303	15,987	44,852	18,416	22,338	5,328	25,326	2,225	96,036	39,963					34,346	29,911	75,028	345,499	1,037,802	111,165	926,637
1904	454,084	217,200	671,284	14,360	55,440	24,230	24,774	6,560	21,956	1,022	89,852	60,829					33,566	30,138	73,851	372,874	1,044,158	111,734	932,424
1905	486,344	234,377	720,721	20,411	57,428	21,235	30,669	7,082	23,659	1,371	91,420	46,389					35,774	30,455	76,703	376,367	1,097,088	116,387	980,701
1906	498,601	247,583	746,184	13,688	45,748	38,232	42,195	5,716	21,575		73,372	43,025					35,131	28,774	74,926	359,803	1,105,987	124,949	981,038
1907	506,075	259,506	765,581	14,602	48,990	14,449	41,113	4,405	21,711	2,047	78,948	42,276					36,530	31,236	79,773	348,314	1,113,895	113,325	1,000,570
1908	506,805	263,035	769,840	13,838	49,146	15,816	30,935	5,527	24,937	1,756	81,245	43,935					36,227	32,814	79,902	347,037	1,116,877	114,078	1,002,799
1909	546,674	285,605	832,279	13,938	66,187	21,026	46,488	3,872	36,046	1,807	84,607	40,686					40,887	32,319	86,703	401,360	1,233,639	112,061	1,121,578
1910	567,849	294,327	862,176	15,194	68,685	16,351	40,162	5,954	30,203	2,232	81,544	45,100					39,949	32,267	84,059	389,484	1,251,660	113,197	1,138,463
1911	581,851	313,912	895,763	13,561	64,577	14,301	51,854	4,254	35,057	3,358	94,196	43,124					42,086	31,918	87,804	412,086	1,307,849	121,058	1,186,791
1912	593,795	319,751	913,546	9,411	56,156	11,667	64,115	4,761	34,738	5,377	86,890	43,816					40,824	33,533	85,470	402,401	1,315,947	126,364	1,189,583
1913	592,237	323,422	915,659	15,335	57,948	12,546	84,710	5,396	31,030	3,131	95,309	44,879					41,536	30,601	86,699	436,983	1,352,642	134,059	1,218,583

Sources: All the data come from publications of the Department of State Property and Business Taxes (*Direzione generale del Demanio e delle Tasse sugli Affari*).

1) **1872-1884** These data are not taken directly from the above-mentioned publications but from Sensini (1904, p. 295) and coincide with those used in earlier works (Bodio, 1896, p. 152, and Pantaleoni, 1890[1938., p. 181]). They were calculated by applying the tax rates to receipts and thus are partially dissimilar to those for the subsequent years, which were derived by the Department from direct examination of the tax returns filed by heirs (see Bodio, 1896, p. 152, and Sensini, 1904, p. 285). Disaggregated data are not available for this period.

2) **1885-1900** The Department retrospectively calculated the disaggregated values for the fiscal years from 1885-86 to 1900-01 (*Bollettino di statistica e legislazione comparata*, 1900-01, pp. 780-795). These data were used to construct our table.

3) **1901-1913** The data for the years from 1901-02 to 1913-14 are taken from the annual reports published in *Bollettino di statistica e legislazione comparata*.

Notes: ¹ From 1872 to 1883 the fiscal year coincides with the calendar year. From 1884 on it runs from 1 July to 30 June of the following year.

² For 1885 and 1886 disaggregated data on personal property are not available.

³ The figures for 1888 and from 1891 to 1899 also include the item “furnishings” (column. 15).

⁴ The figure for 1892 is the sum of columns 11, 12 and 13.

Legend. Following are the complete descriptions of the column headings for personal property (columns 5-18):

“5, 4.50, 4 and 3 per cent consols and other public debt securities of the State” (bearer, column 5; registered and mixed, column 6).

“Bonds, certificates, shares and other negotiable instruments issued by credit institutions, companies, municipalities, provinces and other non-profit entities” (bearer, column 7; registered, column 8).

“Deposits of cash, security deposits and interest-bearing current accounts with ordinary and post-office savings banks, non-profit entities, credit institutions, companies, banks, private bankers and merchants in general” (bearer, column 9; registered, column 10).

“Deposits of cash with Cassa dei depositi e prestiti” (column 11).

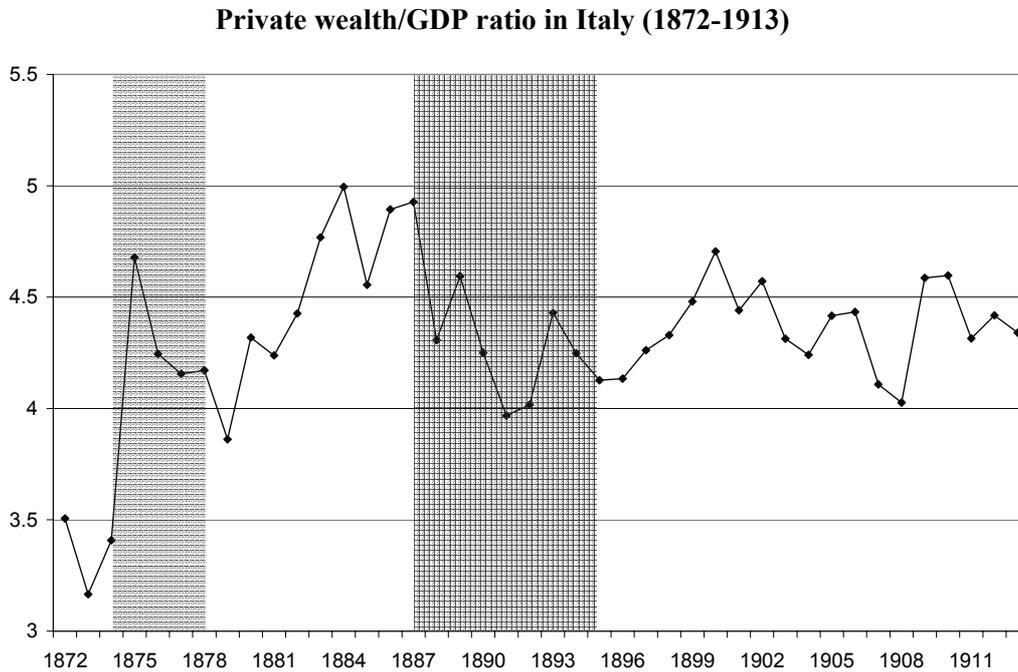
“Claims other than from long-term leases and associated credits” (secured by a lien, column 12; not secured by a lien, column 13).

“Cash and other personal property in general” (column 14).

““Presumed or actual furnishing, as per Article 52 of the Register Law” (column 15).

“Other personal property in general” (column 16).

Figure 2



Sources: Our estimates (for private wealth) and Fenoaltea (2006) GDP at 1911 prices, inflated with Istat coefficients.

The estimated amount of private wealth is between 4 and 5 times as big as GDP over the period studied in this paper, taking off the first years of the Seventies because of their limited reliability. The ratio peaked in the years just preceding 1887, when the housing bubbles exploded. For a general assessment of this ratio it can be remembered that in the Sixties of the last century it was more than 3, too; it grew gradually in the following decades up to a little more than 5, which is the most recent figure (Cannari and D'Alessio, 2006, p. 31).

4. Conclusions

Our inquiry into private wealth in Italy from 1872 to 1913 has produced some interesting results and indicates several possible lines of further research.

The periodization of the Italian business cycle based on the time series of wealth we have constructed is consistent with an old, though somewhat forgotten, interpretation of the performance of the Italian economy in the decades after national unification, for which recent empirical studies have provided additional evidence. Our analysis, albeit preliminary, thus corroborates the view that the 1880s set the stage for the fuller modernization of the economy in the first decade of the twentieth century, the so-called Giolittian era.²⁹

²⁹ Einaudi (1902), Sensini (1904), Bachi (1914), Fenoaltea (2006) and Pescosolido (2007).

From the standpoint of the sources, if we exclude the first half of the 1870s, this result shows the (not necessarily expected) importance of the informational content of inheritance tax data, at least as regards the cyclical sensitivity of their changes. As for the measurement of wealth level, our estimate stands as a useful link between the two statistical worlds made up by the nineteenth-century time series (Sensini, 1904) and that for the twentieth century (Retti-Marsani, 1936; 1937), especially as regards the level estimated: it provides some explanations for the pronounced divergence in the measurement of Italian's private wealth. However, it should be borne in mind that we performed our analysis on a single reference year, for which we had more detailed and abundant data compared with the rest of the period. These data were then projected, so to speak, onto all forty years of the period studied. The use of new sources, for example statistics on the tax on personal wealth or the reports of the Department for the Public Debt, would make it possible to construct new temporal reference points to which to anchor our estimates, making them more robust above all with regard to the crucial years of Italian industrialization.

The regional distribution of wealth, to which the literature of the day devoted ample attention, will also be the focus of future research work.

REFERENCES

- Bachi, R.(1914a), “I lineamenti della recente evoluzione dell’economia italiana”, in R. Bachi, *L’Italia economica nell’anno 1913. Annuario della vita commerciale, industriale, agraria, bancaria, finanziaria e della politica economica*, anno V, Appendix, pp. 298-313 (publication sponsored by the review *La Riforma sociale*).
- Baffigi, A. (2006), “Rodolfo Benini e la semiologia economica nell’Italia post-unitaria”, paper presented at the conference “Rodolfo Benini a cinquant’anni dalla morte”, Roma, Accademia dei Lincei, 12 December 2006.
- Baffigi, A. (2007), “Cultura statistica e cultura politica: l’Italia nei primi decenni unitari”, Banca d’Italia, Quaderni dell’Ufficio ricerche storiche, No. 15, (www.bancaditalia.it/pubblicazioni/pubbsto/quaristo/qrs15).
- Banti, A.M. (1989), *Terra e denaro. Una borghesia padana dell’Ottocento*, Venezia, Marsilio.
- Belletтини, A. (1987), *La popolazione italiana. Un profilo storico*, Torino, Einaudi.
- Benini, R. (1906), *Principii di statistica metodologica*, Torino, UTET.
- Benini, R. (1909), *Quote successorie di alcune specie di ricchezze*, in “Rendiconti della reale accademia dei Lincei”, Classe di scienze morali, storiche e filologiche, 5th Series, Vol. XVIII, fasc. 1°-3°.
- Bianchi, B. (1979), “Appendice statistica: il rendimento del consolidato dal 1862 al 1946”, in Vicarelli (1979), pp. 139-167.
- Biscaini, A.M. and P. Ciocca (1979), “Le strutture finanziarie: aspetti quantitativi di lungo periodo (1870-1970)”, in Vicarelli (1979), pp. 61-149.
- Blackburn, K. and G.P. Cipriani (2004), “Intergenerational Transfers and Demographic Transition”, *Journal of Development Economics*, Vol. 78, pp. 191-214.
- Bodio, L. (1896), *Di alcuni indici misuratori del movimento economico in Italia*, Roma, Tipografia Nazionale di G. Bertero (first edition: 1891).
- Bonelli, F. (1978), *Il capitalismo italiano. Linee generali di interpretazione*, in Romano and Vivanti (1978), pp. 1193-1255.
- Cafagna, L. (1989), *Dualismo e sviluppo nella storia d’Italia*, Venezia, Marsilio.
- Cannari, L. and G. D’Alessio (2006), *La ricchezza degli italiani*, Bologna, Il Mulino.
- Cardoza, A.L. (1995), “La ricchezza e i ricchi a Torino, 1862-1912”, *Società e storia*, No. 68, pp. 297-340.
- Cerrito, E. (2003), “Depressioni. Caratteri e genesi della depressione di fine XIX secolo, più altre tre (e un’altra ancora)”, *Studi storici*, Vol. 44, No. 3-4, pp. 927-1005.
- Coletti, F. (1907), “La determinazione della durata della generazione e il calcolo della ricchezza privata di un paese. Teoria e applicazione all’Italia”, *La riforma sociale*, anno XIV, Vol. XVII, fascicoli, 3, 4 e 6.
- Conigliani, C.A. (1901), “Sul preteso decremento del patrimonio nazionale italiano”, *Giornale degli economisti*, anno XII, Vol. XXIII, July.
- Contento, A. (1916), “Sull’evasione nelle trasmissioni a titolo gratuito”, *Giornale degli economisti*, anno XXVII, Vol. LIII, II semestre.
- Conti, G. and S. La Francesca (2000), *Banche e reti di banche nell’Italia postunitaria* (2 volumes), Bologna, Il Mulino.

- Coppola D'Anna, F. (1946), *Popolazione reddito e finanze pubbliche in Italia dal 1860 ad oggi*, Roma, Tipografia Ugo Quintily.
- de Foville, A. (1878; 1879), "De quelques évaluations récentes du capital national", *Economiste français*, 7 and 14 December 1878; 4 and 18 January, 15 February 1879.
- De Rosa, L. (1985), *La rivoluzione industriale in Italia*, Roma-Bari, Laterza.
- Della Torre, G. (2000), *Strutture finanziarie e crescita economica in Italia (1861-1981)*, in Conti and La Francesca (2000), Vol. I, pp. 141-181.
- Della Torre, G., Coccia, M., De Leonardis, V. and M.C. Schisani (2006), "La crescita del sistema finanziario italiano dopo l'unificazione politica, 1861-1914: financial deepening e/o errori statistici e metodologici?", mimeo.
- De Vita, A. (1941), "Nota sulle relazioni nel tempo tra ricchezza privata e delitti contro il patrimonio", Proceedings of the 3rd scientific meeting of the "Società Italiana di Statistica", Roma, June-July.
- Di Muro, L. (1902), *Economia ed estimo dei miglioramenti fondiari*, Palermo, Alberto Reber.
- Einaudi, L. (*alias* Spectator) (1902), "Rivista economico-finanziaria dell'Italia nel periodo 1885-1901", *La riforma sociale*, anno IX, Vol. XII.
- Federico, G. (1982), "Per una valutazione critica delle statistiche della produzione agricola italiana dopo l'Unità (1860-1913)", *Società e storia*, Vol. V, No. 15, pp. 87-130.
- Fenoaltea, S. (2006), *L'economia italiana dall'Unità alla Grande guerra*, Bari-Roma, Laterza.
- Frascani, P. (1988), *Finanza, economia ed intervento pubblico dall'unificazione agli anni settanta*, Milano, Guerini e associati.
- Geisser, A. (1915), "Progressività di aliquote e progrediente evasione nelle imposte", *La Riforma Sociale*, anno XXII, Vol. XXVI, pp. 150.
- Giffen, R. (1878), "Recent Accumulations of Capital in the United Kingdom", *Journal of the Statistical Society*, Vol. XLI, Part I, pp. 1-39.
- Gini, C. (1909), "Il calcolo della ricchezza di un paese in base alle statistiche delle successioni e delle donazioni", in *Atti dell'Ateneo di Treviso dell'anno 1908* (also in Gini, 1959, pp. 27-97).
- Gini, C. (1959), *Ricchezza e reddito*, Torino, UTET.
- Gini, C. (1962), *L'ammontare e la composizione della ricchezza delle nazioni*, 2nd updated edition prepared by A. Giannone (first edition: 1914).
- Giunta Centrale di statistica (1880), "Seduta del 15 dicembre 1879", *Annali di Statistica*, Series 2, Vol. 15, pp. 135-187.
- Glei, D.A. (2006), *About Mortality Data for Italy*, Human Mortality Database, University of California, Berkeley (USA) and Max Planck Institute for Demographic Research (Germany) (www.mortality.org)
- Goldsmith, R.W. (1969), *Financial Structure and Economic Development*, New Haven and London, Yale University Press.

- Goldsmith, R. and S. Zecchini (1999), "The National Balance Sheet of Italy (1861-1973)", *Rivista di storia economica*, anno XV, fasc. 1 (paper written in June 1975 not published before).
- Kuznets, S. (1955), "Introduction", *The Review of Income and Wealth*, Series 5, (www.roiw.org).
- Luzzatto, G. (1968), *L'economia italiana dal 1861 al 1894*, Torino, Einaudi (first edition, Milano, Banca commerciale italiana, 1963).
- Mallet, B. (1908), "A Method of Estimating Capital Wealth from the Estate Duty Statistics", *Journal of the Royal Statistical Society*, Vol. 71, No. 1, March, pp. 65-101.
- Maroi, L. (1918), "Come si calcola e a quanto ammonta la ricchezza d'Italia e delle altre principali nazioni", *Rivista delle società commerciali*, anno VIII, fasc. VIII-IX, 31 August - 30 September 1918; fasc. X, 31 October 1918.
- Mortara, G. (1909), "Intorno al calcolo della ricchezza privata dell'Italia", *Giornale degli economisti*, Vol. XXXVIII, May, pp. 551-576.
- Niccoli, V. (1897), *Prontuario dell'agricoltore*, Milano, Hoepli.
- Nitti, F.S. (1904), *La ricchezza dell'Italia*, Torino-Roma, Roux e Viarengo.
- Pantaleoni, M. (1884), *Dell'ammontare probabile della ricchezza privata in Italia*, Roma, Tipografia E. Befani.
- Pantaleoni, M. (1890), "Dell'ammontare probabile della ricchezza privata in Italia dal 1872 al 1889", *Giornale degli economisti*, August (also in Pantaleoni, 1938, pp. 167-213).
- Pantaleoni, M. (1938), *Studi di finanza e di statistica*, Bologna, Nicola Zanichelli editore.
- Parravicini, G. (1958), *La politica fiscale e le entrate effettive del regno d'Italia*, Torino, Industria Libreria Tipografica Editrice.
- Pazzagli, C. (1980), "Statistica «investigatrice» e scienze «positive» nell'Italia dei primi decenni unitari", in Romanelli (1980), pp. 779-822.
- Pescosolido, G. (2007), *Unità nazionale e sviluppo economico*, Roma-Bari, Laterza.
- Princivalle, L. (1909), "La ricchezza privata in Italia", Reale istituto d'incoraggiamento di Napoli, Cooperativa tipografica.
- Princivalle, L. (alias L.P.) (1909), *Alcune indagini sui passaggi della proprietà fondiaria per causa di morte*, in "Bollettino di statistica e legislazione comparata", Ministero delle Finanze, Direzione generale del Demanio e delle Tasse sugli Affari, anno IX, fasc. 1, esercizio 1908-09.
- Retti-Marsani, S. (1936), "Variazioni annuali della ricchezza italiana dal 1901 ai giorni nostri", *La vita economica italiana*, IV trimestre, pp. 19-29.
- Retti-Marsani, S. (1937), "Variazioni annuali della ricchezza italiana dal 1901 ai giorni nostri", in *La vita economica italiana*, II trimestre, pp. 35-45; III trimestre, pp. 33-55.
- Romanelli, R. (ed.) (1980), *L'indagine sociale nell'unificazione italiana*", monographic issue of *Quaderni storici*, anno XV, No. 45, December.
- Romano, R. and C. Vivanti (eds.) (1978), *Storia d'Italia. Annali 1. Dal feudalesimo al capitalismo*, Torino, Einaudi.

- Rubinstein, W.D. (ed.) (1980), *Wealth and the Wealthy in the Modern World*, New York, St. Martin's Press.
- Sanger, C.P. (1903), Review of *Economia ed estimo dei miglioramenti fondiarii* (by Leopoldo Di Muro), *Economic Journal*, Vol. 13, No. 49, March, pp. 92-95.
- Savorgnan, F. (1916), "L'ammontare e la composizione della ricchezza in Italia e nelle sue regioni", *Rivista italiana di sociologia*, anno XX, May-August, pp. 381-398.
- Sensini, G. (1904), *Le variazioni dello stato economico d'Italia nell'ultimo trentennio del secolo XIX*, Roma, Ermanno Loescher & C. librai-editori.
- Vicarelli, F. (1979), *Capitale industriale e capitale finanziario: il caso italiano*, Bologna, Il Mulino.
- Zamagni, V. (1980), "The Rich in a Late Industrialiser: the Case of Italy, 1800-1945", in Rubinstein (1980), pp. 122-166.