THE ITALIAN SCHOOL OF PUBLIC FINANCE AT THE TURN OF THE TWENTIETH CENTURY AND THE RICARDIAN EQUIVALENCE THEOREM

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Abstract

In this paper we re-examine the contribution of the Italian tradition of public finance to the issue of differential incidence of tax and debt financing. The protracted controversy, now restated as whether government bonds are considered as net wealth, goes back to Ricardo's proposition that the method of financing any particular level of government expenditure is irrelevant. As a matter of fact, it is only at the turn of this century that we get a critical evaluation of that proposition and its assumptions, which remained implicit in Ricardo's work. This was accomplished by the Italian school of public finance. That remarkable contribution has largely been neglected by the subsequent Anglo-Saxon literature and even the current views seem to be essentially anticipated by those earlier studies.

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"In conclusion, it seems to us that even M. de la Palisse could summarise with short and precise arguments the issue of whether, and when, public debts burden present or future generations."

M. Pantaleoni (1891, 50)

1. *Introduction*

The increasing influence of the "new classical macroeconomics", along with the growth and persistence of fiscal deficits over the last decades, has determined a renewed interest in the Ricardian equivalence theorem.[1] According to this view, which is associated with the name of David Ricardo, the method of financing any particular level of government expenditure is irrelevant. More precisely, the choice between levying taxes and issuing public debt to finance a given amount of government expenditure does not affect households' consumption nor does it affect capital accumulation.

The argument that the two alternative methods of financing are perfectly equivalent may be stated simply. While public debt represents an asset to the bondholders, it represents a liability to the taxpayers who must pay the interest and, eventually, redeem the principal. These assets and liabilities exactly offset each other. Apart from any distributional effect, the existence of public debt does not affect consumption-investment decisions of rational agents.

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(1) The term "Ricardian Equivalence Theorem" was first used by Buchanan (1976) in a comment to Barro (1974).

Indeed, the issue that Ricardo (1817, 1820) addressed was whether government borrowing would have shifted the burden of extraordinary public spending on future generations. In this respect his theoretical reasoning postulates that taxation and public debt have an equivalent effect on the economy. Moreover, the burden of current government expenditure cannot be shifted upon the future, regardless the mode of financing.

Since Ricardo the debate about the differential incidence of tax and debt financing has resurfaced a number of times. The modern debate, restated as whether government bonds are net wealth, has pointed out that the central issue is an empirical one, since the Ricardian equivalence theorem is perfectly consistent within the framework of its assumptions, namely, rational agents with infinite horizons, perfect capital markets and lump-sum taxation. Therefore, the inquiry should focus on the nature of the main departures from it (lifetime uncertainty with no bequest motive, imperfections in capital markets, distortionary taxation) and their empirical relevance.[2]

The policy issues involved in the discussion can partially explain the resurgence of the debate: by denying that government bonds are net wealth, the "new classical macroeconomics" postulates both the short run ineffectiveness of deficit spending policies and its irrelevance for the long run growth of the private capital stock.

Apart from its relevance for policy-making, the frequent resurgence of the controversy is also due to the fact that a number of authors have paid scarce attention to its methodological

(2) An exhaustive account of the theoretical and empirical literature can be found in Tobin (1980), Bernheim (1987), Leiderman and Blejer (1988), Barro (1989) and Abel (1989).

aspects. The discussion has often suffered from the failure to clearly state the assumptions of the issue that Ricardo addressed. This has frequently sustained the debate in a rather artificial way.

In fact, as far as the economic theory of public debt is concerned, much of the current contesting views can be traced back to old strands of the literature. In particular, an original contribution was given, at the turn of this century, by the Italian tradition in public finance. Spelling out the key assumptions of the equivalence theorem, which remained implicit in Ricardo's analysis, some Italian writers made evident the logic inherent in the theorem. The theoretical clearness in tackling the issue did not prevent them from questioning its empirical relevance. In this way the Italian school of public finance laid down a basis for a definite settlement of the controversy.

In spite of that, it has substantially been neglected by the subsequent Anglo-Saxon literature: not only did the controversy resurface a number of times, but even the current views appeared essentially anticipated by those earlier works.

The aim of this paper is to reconsider the contribution of the Italian school of public finance. Needless to say that it is hard to summarise or discuss adequately an intense debate, extending over some decades and including several works. We shall simply attempt to isolate a few of the most important authors, notably M. Pantaleoni, A. De Viti de Marco, A. Puviani, B. Griziotti and G. Borgatta. Their analysis does not display the analytical elegance of modern studies, nevertheless it seems essential for understanding the basic logic of the equivalence theorem. Furthermore, a reading of the above-mentioned Italian scholars,

having in mind some of the most influential ones in the current debate, will allow one to grasp interesting analogies between the formers and the latters.

The outline of the paper is as follows. Section 2 presents in some detail Ricardo's contribution to the economic theory of public debt. Apart from any historical interest, it is worth reviewing his analysis since it was more complex than that merely summarized under the label of Ricardian equivalence. Sections 3-6 reconsider the contribution of the Italian school of public finance, at the turn of this century. Section 7 offers some conclusions.

2. *Was Ricardo a Ricardian?*

Since the study of war finance originated before Ricardo's contribution, it is not surprising that the "no-shifting view", i.e. the argument that the burden of public debt was not shifted forward, found approval even in the second half of the eighteenth century.[3] However, the prevailing position, deeply rooted in popular opinion and supported by most prominent economists such as Hume, Smith, Say and Sismondi, was the opposite one.[4] The argument was that, far from representing a mere redistribution of resources from one part of the community to another, debt creation placed the burden of taxation for interest charges and debt repayment on future generations. This view was also supplemented by the

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(3) Melon, Pintus, Voltaire and Condorcet shared this position. Among the British authors, one of the few supporters of the "no-shifting view" was James Steuart. On Steuart's thought, see Stettner (1945).

(4) On the Classical economists' view, see O'Brien (1975).

contention that government borrowing involved diversion of savings from productive private investment to wasteful public expenditure.

As a matter of fact, both these positions were not well established on theoretical grounds. In particular, focusing on the nature of government spending came to obscure the basic issue of the differential incidence of tax and debt financing in favour of a sort of cost-benefit analysis of debt-financed public expenditure.

In this respect, Ricardo's contribution was quite unique. It substituted a clear theoretical framework for the doctrinal weakness of the previous debate. In particular, two main reasons make Ricardo's view worthwhile to be looked at in some detail. First of all, his analysis allows one to keep separate the issue concerning the shifting of the burden of public debt on future generations from that one concerning the desirability of fiscal deficits, the latter problem depending on the relative productivity of public expenditure as opposed to the private sector's one. The second reason is that Ricardo's view contains, more or less explicitly, most of the subsequent developments of the controversy, his contribution being more articulated than that simply summarized under the label of Ricardian equivalence.

Ricardo's contribution is contained in the 17th chapter of the *Principles of Political Economy and Taxation* and in the essay on the *Funding System*. In both of these works his theoretical reasoning is clear-cut: debt and taxes are perfectly equivalent and the burden of public expenditure, regardless the mode of financing, cannot be shifted upon future generations. However, Ricardo adds to his analysis some other seemingly minor remarks,

which afterwards laid more than one author to give an opposite interpretation of his view.

The equivalence proposition, referred to the whole economy, is stated in the *Principles* as follows: "when for the expenses of a year's war, twenty millions are raised by means of a loan, it is the twenty millions which are withdrawn from the productive capital of the nation. The million per annum which is raised by taxes to pay the interest of this loan, is merely transferred from those who pay it to those who receive it, from the contributor to the tax, to the national creditor. The real expense is the twenty millions, and not the interest which must be payed for it... Government might at once have required the twenty millions in the shape of taxes; in which case it would not have been necessary to raise annual taxes to the amount of a million. This, however, would not have changed the nature of the transaction" (1817, 244-45).

In other words, debt creation implies a present transfer of resources from the subscribers of the public loan to the government. For the economy as a whole, interest payments are only a redistribution of income within future generations, between taxpayers and bondholders. To use the suggestive expression by F. Melon in his *Essai Politique sur le Commerce*, the debt service is a mere income redistribution "from the right hand to the left one". The burden of public debt, defined as a real transfer of resources, occurs once for all at the moment of the bond subscription, just what would happen if the government levied an extraordinary tax.

However, after stating the equivalence proposition, Ricardo adds an important remark to it: "From what I have said, it must

not be inferred that I consider the system of borrowing as the best calculated to defray the extraordinary expenses of the State. It is a system which tends to make us less thrifty - to blind us to our real situation" (1817, 247).

Ricardo strongly questions the empirical validity of the equivalence thesis on the grounds of what is now called 'fiscal illusion', i.e. the fact that the future tax liabilities associated with the debt creation will be partially ignored by the current consumer-taxpayer. In other words, public debt can deceive the consumer-taxpayer into believing that he was richer than he was in fact. The incomplete discount of the future tax liabilities for the debt service weakens the saving incentive, and therefore capital formation is likely to be reduced as tax finance is replaced by debt finance.[5]

The apparent dicotomy of Ricardo's view, along with the concise style of his arguments, has puzzled the subsequent literature as long as it has tried to classify his contribution.

In contrast to the widespread interpretation which credited him with the idea that debt and taxes are equivalent, some authors had already stressed the complexity of Ricardo's analysis.[6] They actually approved of the part where he admits the case of fiscal illusion. A more extreme position has also stated that "Ricardo in fact denied that taxation and public debt are equivalent. The

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(5) It is well known that, during his term of office in Parliament, Ricardo proposed a capital-levy scheme to pay off the national debt. This proposal appears consistent with that part of his analysis which underlines the empirical relevance of fiscal illusion and,thereby, the shifting of debt burden on the future in the form of a reduced capital accumulation. On the relation between Ricardo's theoretical framework and his policy approach to the issue of public debt, see Anderson and Tullison (1986) and Asso and Barucci (1988).

(6) See Roberts (1942), Shoup (1960, 1962) and Neisser (1961).

'Ricardian Equivalence Theorem' is, consequently, a misnomer, largerly because Ricardo was not a Ricardian on this issue. Rather, Ricardo enunciated a nonequivalence theorem" (O'Driscoll 1977, 207).[7]

As regards this most recent reinterpretation of Ricardo, let us make two brief remarks. Firstly, what is surprising is not so much the rediscovery of fiscal illusion in Ricardo, rather the fact that his undoubted originality in theorising the case of equivalence is pushed into the background. It would appear that Ricardo's contribution is not that one traditionally ascribed to him but the opposite one. Secondly, and quite apart from any problem in interpreting who has no chance of replying, it seems to us that this rereading of Ricardo mainly aims at depriving the modern reproposal of the equivalence thesis of its most noble source. In fact, as far as it is contended that Ricardo solved the controversy in favour of the opposite view, the possibility of adducing the authority of his thought to uphold the equivalence proposition, and its economic policy implications, tends to vanish.

It could be argued, however, that this counterinterpretation is not necessary: nothing forbids one crediting Ricardo with the originality of having predicted the theoretical case of equivalence and, at the same time, pointing out his attention to the concrete case of fiscal illusion. A passage of his *Funding System*, in particular, is indicative of his intriguing contribution. He notes: "It would be difficult to convince a man possessed of 20,000 l., or any other sum, that a perpetual payment

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(7) This view has also been supported, for example, by Buiter and Tobin (1979), Blaug (1985) and Musgrave (1985).

of 50 l. per annum was equally burdensome with a single tax of 1,000 l.. He would have some vague notion that the 50 l. per annum would be paid by posterity, and would not be paid by him; but if he leaves his fortune to his son, and leaves it charged with this perpetual tax, where is the difference whether he leaves him 20,000 l., with the tax, or 19,000 l. without it?" (1820, 187). Ricardo seems to distinguish rational behaviour, embodied in the equivalence theorem, from the behaviour of the layman, who is affected by some form of fiscal illusion. The awareness of the divergent conclusions which derive depending on whether one assumes perfect foresight or a social behaviour that is influenced by some form of myopia is remarkable.

3. *The assumptions of the equivalence theorem*

As the quotations of the previous paragraph clearly show, Ricardo's exposition was particularly concise. For this reason the following literature has tried to make explicit the assumptions of the equivalence thesis in order to clarify its internal consistency. In spite of that, the controversy has resurfaced a number of times. In effect, linguistic misunderstandings on some terms like 'debt burden', 'present generation' and 'future generation', which require precise definitions, have often sustained the debate in a rather artificial way.[8]

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(8) In a comment to Buchanan (1958), who reopened the controversy in the 1960s, Alvin Hansen stated: "I cannot help feeling that no inconsiderable part of the disagreement on these issues springs from the fact that the contestants are talking about different things. Was this not the case it is not probable that competent economists could battle over these relatively simple issues over a period of 200 years or so, without coming to definite conclusions" (1959, 377).

If one considers that the classical contribution most frequently referred to is Ricardo's, one may be tempted to blame Ricardo for that. But laying the blame at his door would be wrong since the equivalence proposition is perfectly coherent in itself.

Nevertheless, it is not till the end of the nineteenth and the early years of the twentieth century that we get a critical evaluation of that proposition and its hypotheses, which remained implicit in Ricardo's work. This was accomplished by the Italian school of public finance.

The analysis of some Italian scholars, among whom M. Pantaleoni, A. De Viti de Marco and B. Griziotti, concentrated on the role played by the assumptions of the theoretical case envisaged by Ricardo. Focusing on them is important for a number of reasons. First, it allows one to understand the basic logic of Ricardian equivalence. Indeed, its consistency is unquestionable if referred to the set of particular conditions which sustain it. Second, it clears up the terminological ambiguities which led some authors, especially of the debate in the 1960s, to reject the equivalence thesis, though without realising that the argument turned on its assumptions rather than on its presumed inconsistency. Third, it makes evident the extent of validity of the theorem, whose empirical relevance is strongly limited by the assumptions themselves.

Thus, in the light of these remarks, it seems fair to say that any return to Ricardo for the purpose of settling the controversy could be actually understood as a reference to the Italian tradition of public finance. The work of the above-mentioned Italian scholars, at the turn of this century, bridges the gap between Ricardo's analysis and the modern debate, including the

most recent one dealing with the wealth effect of public debt. Despite that remarkable contribution, the Italian school of public finance has essentially been overlooked by the subsequent Anglo-Saxon literature.[9]

The subject of public debt received lively attention among the Italian fiscal theorists in the second half of the nineteenth century. Similarly to the issue facing Ricardo, public debt is viewed as a problem of extraordinary finance: the required amount of government spending is so high that it cannot be met by disposable income but requires a reduction of capital assets. The government has two basic modes of financing: either to levy taxes or to borrow an equal monetary amount. In the latter case, the annual payment of interest requires a corresponding tax charge. Therefore, the alternative means of financing can be thought of as two types of taxes, either an extraordinary tax, once-and-for-all, or a perpetual tax, whose present discounted value is equal to the extraordinary one. The question arises as to whether debt finance, as opposed to tax finance, shifts the burden of public expenditure on future generations.

Before the 1890s, the prevailing view in the Italian literature argued for the differential incidence of the two alternative means of financing. Whereas levying an extraordinary tax, once-and-for-all, placed the burden of providing for the government expenditure on the present generation, debt finance

(9) An exception is Buchanan (1958, 1960), according to whom "the basic Ricardian proposition concerning the fundamental equivalence between extraordinary taxes and public loans... has been discussed at such greater length in Italian works that it may be properly said to belong to the Italian Tradition rather than to the English Tradition" (1958, 114). For an overview of the Italian debate on public debt, at the turn of the century, see also Chiancone (1985) and Matteuzzi and Simonazzi (1988).

shifted the burden on the future ones. Most authoritative scholars either supported the "shifting view" (Messedaglia 1850) or, more often, stated contradictory arguments which appeared to reject it as much as to approve it (Ricca Salerno 1879). In effect, although it had been stated by Ricardo since the beginning of the century and had thereafter been accepted by several German writers like Soetber, Wagner and Dietzel, the equivalence proposition found scarce approval. Thus it can be argued that when it was supported by Achille Loria (1884), this was something new in the Italian fiscal doctrine. In spite of that, the "no-shifting view" failed to receive large approval. Only a decade later it gained enough credibility to replace the opposing position.

The author generally viewed as reflecting the doctrinal turning-point is Antonio De Viti de Marco. Along with him, some of the other most influential contributors to the debate, extending over some decades and including several works, are Maffeo Pantaleoni and Benvenuto Griziotti.[10]

De Viti de Marco's fundamental contribution is contained in his essay *La Pressione Tributaria dell'Imposta e del Prestito*, which was written in 1893 and published in the *Giornale degli Economisti*, one of the leading Italian journals of economic theory. His aim was to show the basic logic of Ricardian equivalence, analysing in detail its hypotheses and pointing out

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(10) Between the end of the nineteenth and the beginning of the twentieth century, public debt was also a subject of deep concern for economic policy. The delayed development of Italy into industrial society, which was sustained by large government spending programmes, and the fiscal emergency due to the World War I entailed the accumulation of a high national debt. The debate on Ricardian equivalence had some influence on debt management policies which were put forward after the War. For an overview of the Italian historical experience, see Alesina (1988) and Ganugi (1988).

the consequences which derive from relieving some of them. In this way the equivalence proposition, which had been stated by Ricardo in opposition to the previous ambiguities in tackling the issue, became a real theorem.

The assumptions of the equivalence thesis are set out by De Viti de Marco (1893, 1898) as follows: a) the economy is at full employment level; b) the nature and the level of government expenditure is taken as given; c) each generation is linked to the subsequent one by an intertemporal continuity of interests; d) there are neither emigration and immigration of population nor capital inflows and outflows; e) capital markets are perfect, i.e. everyone can lend or borrow at the same interest rate as the government, f) the fiscal legislation of the nation does not change over time, nor does the wealth and income distribution.

As this set of conditions clearly shows, there are many potential sources of departure from Ricardian equivalence. The debate among the Italian scholars focuses, in particular, on two assumptions, namely that each generation is linked to the subsequent one by an intertemporal continuity of interests and capital markets are perfect.

4. *Intergenerational continuity of interests*

The role played by the assumption of intergenerational continuity of interests is emphasised by De Viti de Marco (1893) and, before him, by Pantaleoni (1891, 1916). Pantaleoni's starting point is to reject the often used way of proving the equivalence proposition by a simple truism, i.e. by stating that the burden of debt-financed government expenditure cannot be shifted forward since resources are used up only in periods when public spending

programmes take place. In fact, this statement does not exclude by itself the possibility of the shifting of debt burden.

What really matters is that the present generation owns a private capital stock sufficient to provide for the extraordinary expenditure. In this way, given what is better known in modern debate as an "altruistic bequest motive", the two alternative means of financing reduce private wealth by the same amount since it is perfectly equivalent for future generations to inherit either a capital stock diminished by the extraordinary tax, once-and-for-all, or a greater capital stock along with the annual tax liability for the debt service.

While he remarks the role of intergenerational transfers for the internal consistency of the equivalence theorem, Pantaleoni points out a first departure from the theorem itself. This occurs when the current generation owns capital assets which are less than the required financing. In this case, it will be impossible to levy an extraordinary tax and the only feasible mean of financing is the external debt. Therefore, the debt burden will be shifted on future generations since they "inherit" the tax liabilities but not an asset to meet them.[11] The non-equivalence

(11) An interesting analogy can be noticed between Pantaleoni's analysis and the "shifting view" by Bowen, Davis and Kopf (1960), one of the most influential works in the 1960s along with Buchanan (1958) and Modigliani (1961). BDK (1960) assume that, while present generation passes the tax liabilities for the debt service on to the future by the simple expedient of dying, government bonds are acquired by future generations by purchase rather than bequest. This actually amounts to remove the basic assumption of Ricardian equivalence that each generation is linked to the subsequent one by an intertemporal continuity of interests. For a survey of the debate in the 1960s, see Ferguson (1964) and Tobin (1965). Let us also notice that Pantaleoni's emphasis on the device that makes equivalent debt and tax financing (i.e. the son receives, along with the tax liability for the debt service, also an asset to meet the liability itself) anticipates Barro (1974)'s view that public debt is simply perceived as a stimulus to increase intergenerational income transfers.

case, due to the fact that the bequest motive is not operative, is stated as follows: "if the generation that incurred the debt only had an amount of capital that was *less than the debt, or had no capital*, the fact that it obtained credit may be a source of marvel, but there can be no doubt as to the fact that the perpetual interest payments, which will burden future generations, will be paid in part, or totally, with their own work and toil" (1891, 48; writer's italics). In fact, "the *crucial point* is whether posterity received, along with the burden of interest payments, also the amount of capital to which they correspond" (1891, 49; writer's italics).

Two years after Pantaleoni's work, the same argument is reconsidered and elaborated by De Viti de Marco (1893). In effect, the equivalence theorem would seem to apply only to those individuals who inherit enough capital assets to meet the future tax liabilities for the interest payments. De Viti de Marco generalises this result by extending it to those individuals like professionals, salaried employees and workers, who may be considered as lacking in capital assets.

The key element of his analysis is to assume, firstly, that also the latter individuals are endowed with capital assets at least in the form of human capital, and secondly, that generations are linked together by an intertemporal continuity of interests. Given this double hypothesis, the father fully discounts to the present any future tax liability on his son, whether he has some capital assets or only labour income. In the latter case the son "inherits", similarly to the individual receiving a real capital stock, a human capital (in terms of his father's ability,

knowledge, etc.) to meet the future tax liabilities for the debt service.

De Viti de Marco underlines the fundamental importance for the equivalence result which derives by assuming an intergenerational continuity of interests. He notes:" As far as we assume the principle of social continuity as true, such that the son is somewhat the living extension of his father, then it appears that the obligation of the latter to pay a tax for the interest charges on a loan has actually endured throughout his son, as if father's life has been continuing. There would not be any discontinuity, and thereby the issue of sharing the cost of public expenditures among present and future generations would vanish in itself, and it would belong to a more general problem, which could be defined as 'value over time'. In other words, given the assumption of social continuity, it becomes clear that the issue concerning different generations can be raised again during the life of any generation or at any time following that one when public spending and borrowing occurred" (1893, 58-59).

Indeed, the assumption of an intertemporal continuity of interests among generations in De Viti's analysis follows from his theory of public finance, and it would go beyond the aim of this paper to consider it in detail.[12] For our purposes it is relevant to note that De Viti's logical extension of the "altruistic bequest motive" to individuals who do not own real capital assets

(12) Ve Viti de Marco develops his analysis of the fiscal process in terms of the contrasting models of the "cooperative" and the "monopolistic" State. In the first one all individuals are assumed to participate in the policy-making process, while in the second one the fiscal activity of the State has to be explained only in terms of the behaviour of the social group exerting political power. See De Viti de Marco (1934). For a comprehensive survey of the Italian fiscal thought at the turn of this century see Fasiani (1932).

anticipates the modern idea that economic agents act as if they have infinite horizons.[13]

After De Viti de Marco's (1893) work, which clearly established the "no-shifting view" on theoretical grounds, the assumption of an intergenerational continuity of interests was largerly accepted among the Italian fiscal theorists.[14] The first author to question De Viti de Marco's elaboration on the issue of agents' horizon was Benvenuto Griziotti, whose essay on *La Diversa Pressione Tributaria del Prestito e dell'Imposta* was published in the *Giornale degli Economisti* in 1917.

Griziotti is fully aware of the opposite conclusions which can be reached depending on whether one assumes infinite or finite horizons. He argues: "Before discussing whether the extraordinary tax and public debt have the same effect on present and future generations, we must settle the doubt whether one can assume that different generations might have divergent interests or, as a logic and real premise, one has to assume the principle of continuity among generations. Indeed, if we admit that the son takes the place of his father without discontinuity and if, within the society as a whole, the moment one generation dies and the other comes into existence cannot be distinguished, then we could

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(13) Within an overlapping-generation model, Barro (1974) assumes that each finite-lived generation is linked to the subsequent one by a series of voluntary transfers (bequests, gifts, etc.). In this intergenerational altruism model, the process of bequests make finite-lived individuals act like infinite-lived ones. Therefore any government's attempt to redistribuite resources across generations by a switch from tax to debt financing is frustrated by rational economic agents. They fully discount the taxes that will be levied for interest payments and increase their bequests so as to meet the future tax liabilities. The equivalence theorem is thus established.

(14) See, for example, Graziani (1897), Montemartini (1902), Tenerelli (1913), Einaudi (1914) and Tangorra (1915).

agree with De Viti de Marco that 'the issue of sharing the cost of public expenditures among present and future generations would vanish in itself, and it would belong to a more general problem, which could be defined as value over time'" (1917, 218).

Having stated that, Griziotti takes exactly the opposite stance with respect to De Viti de Marco. He rejects the idea of an intertemporal fiscal solidarity by arguing that a number of demographic, economic and political reasons strongly limit its empirical relevance. Since individuals do not act as if they live forever, different generations cannot be considered as a unique generation with infinite horizons.

The implications for the question of the differential incidence of debt and tax financing are straightforward. The alternative burden to the extraordinary tax the taxpayer faces is no longer a perpetual tax liability of equal discounted value but an annual tax to be paid only as long as he lives. Each individual does not evaluate the infinite stream of annual taxes, which are required to carry the interest charges, but a stream that is limited by his own life expectation. Therefore, the mode of financing is no longer irrelevant: the generation who has to provide for the government expenditure will prefer the creation of public debt since the present discounted value of future taxes for the interest payments is less than the value of the extraordinary tax.

Griziotti's critique is surprisingly modern in this respect. It represents a substantial anticipation of modern studies which have denied Ricardian equivalence by assuming finite horizons with

no bequest motive.[15]

Griziotti's claim that an important departure from the equivalence theorem deals with the case of finite horizons, such that people do not care about taxes that are levied after their death, was not successfull in overcoming De Viti de Marco's analysis.[16]

An interesting comment to Griziotti was made by Gino Borgatta. According to the latter the assumption of finite horizons is inconsistent with the argument that, even in absence of any extraordinary government expenditure, each generation accumulates a capital stock that will survive him. This behaviour satisfies an "intimate need" to pass what has been saved during the life on to the future. Borgatta states that this is the case of the Ricardian representative taxpayer, who faces the problem of providing for the extraordinary spending. In other words, the assumption of an operative altruistic bequest motive is implicitly contained in Ricardo's analysis. Therefore the question of debt vs. taxes has to be referred to a context of intertemporal utility maximisation, where individuals discount to the present not only the future taxes to be paid during their life-span but also those charged on their sons. Borgatta remarks: "In this debate about the economic *continuity* of several generations - in itself a somewhat vague notion - it seems to me that an essential concept has been

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(15) Macroeconomic models with agents having uncertain lifetime and no bequest motive were first established by Blanchard (1984, 1985). In these models the horizon of economic agents is summarized by a parameter, a positive constant over time probability of death, which can be chosen arbitrarily. As far as that probability goes to zero, Ricardian equivalence is obtained as a special case.

(16) Very few authors supported Griziotti's view on the issue of agents' horizon. See Sensini (1920) and Flora (1921).

neglected from the economic viewpoint. On the whole, the premise of economic continuity, if any, among generations is of secondary importance. It seems to me more important to evaluate the system of *utilities* and the *tastes* of each individual of the first and subsequent generations. What place have future needs in this system? In order to evaluate the *sacrifice* which the first generation undertakes with the two modes of financing, to evaluate how many assets it would leave and how much would not as a result of the mode adopted, it is essential to know the system of *needs* over time of the first and subsequent generations" (1918, 29; writer's italics).

5. *Perfect capital markets*

A second key assumption of the equivalence theorem which drew large attention in the Italian debate at the turn of the century is that capital markets are perfect, i.e. everyone can lend and borrow at the same interest rate as the government. Although it remains implicit in Ricardo's analysis, the equivalence proposition holds only if the representative taxpayer has liquid capital assets that can be invested at the same interest rate offered on government bonds.

De Viti de Marco (1893) extends that result to those individuals who are not endowed with capital assets. At the same time, he questions its empirical relevance by arguing for the existence of imperfections in capital markets.

Let us consider first, the extension of the theorem. De Viti de Marco assumes society is made by three different types of individuals: a capitalist who owns his capital assets in liquid form, a landowner who cannot easily convert his property into

cash, and a worker having only labour income. Each of them has a taxable income of 60.000 l.. Let us suppose an extraordinary government expenditure of 1.200.000 l. has to be financed.

In the case of tax finance, both the landowner and the worker cannot provide the sum of 400.000 l. since they do not have that amount in liquid form. Therefore, they will borrow it from the first individual. The capitalist pays 400.000 l. in taxes and lends 400.000 l. each to the other two individuals, who commit themselves to pay the interest at, say, 5% per year. As a result, after-tax income of all three individuals has decreased from 60.000 l. to 40.000 l..

In the case of debt finance, the whole amount is necessarily provided by a capitalist, the only one who owns the required sum. As bondholder, he will receive, (at the rate of 5%) 60.000 l. per year from the government. Of this sum, 40.000 l. correspond to the taxes levied on the landowner and the worker for the debt service, and 20.000 l. are nothing but the taxes paid by the capitalist himself. As in the case of tax finance, net income of each individual is diminished from 60.000 to 40.000 l.. The ultimate effect of a switch from tax to debt financing is merely of replacing the network of private loans with a single public loan.

Despite the generalization of the equivalence theorem to those individuals who do not own capital assets, which is based on the assumption of perfect capital markets, De Viti de Marco casts doubts on its empirical relevance. He remarks the government superiority in the intermediation process, that comes from its ability to tax and, accordingly, from its lower risk of default than private agents' one. As far as capital market imperfections are concerned, the third representative individual of the previous

example (the worker) "not being able to give any tangible security, either may not be able to obtain credit or may obtain it only on terms that are too burdensome as compared with those available to the landowner" (1936, 387).

Thus the creation of public debt can be viewed as the government borrowing on behalf of private agents. It enables those having poor collaterals to borrow at the lower interest rate enjoyed by the government. Indeed, De Viti de Marco ascribes the main economic rationale of public debt to capital markets imperfections. He notes that if it "was not more economical while it is so complicated, then there would not be any reason to prefer it to the extraordinary tax" (1893, 222-23).

After De Viti's contribution, the potential source of departure from the equivalence theorem that financial markets may not be perfect was stressed by several authors.[17] Also in this case it could be argued that they essentially anticipate modern studies which focus on factors like liquidity constraints in order to test whether that violation of Ricardian equivalence is quantitatively substantial.[18]

Within the set of conditions underlying the equivalence theorem, the assumptions of intergenerational continuity of interests and perfect capital markets were by far the most discussed ones in the Italian debate at the turn of the century.

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(17) See, for example, Einaudi (1914), Tangorra (1915), Barone (1920) and Flora (1921).

(18) As far as the large fraction of liquidity-constrained households is concerned, "they will not be indifferent to the opportunity to defer tax payments. Even they themselves must pay the taxes later, they will increase their consumption now. In effect the government lends to them at its borrowing rate of interest, an option not otherwise available in the credit market" (Tobin 1980, 57).

Pointing out the internal consistency of the theorem did not prevent the above-mentioned Italian scholars from questioning it on the grounds of its misrepresentation of real world. The awareness of the trade-off existing between the logic inherent in the theorem and its empirical relevance is remarkable. This holds even if it is compared to the more sophisticated arguments of the modern debate. Let us recall, for example, Griziotti's view concerning the problem of economic agents' horizon or De Viti de Marco's emphasis on the case of imperfect capital markets. The empirical relevance of the equivalence theorem was also strongly questioned by Borgatta. Notwithstanding his criticism to Griziotti, Borgatta supports the non-equivalence theorem. He argues that the differential incidence of either of the two financing methods depends on the variability of several factors, such as fiscal legislation, income and wealth distribution, and the rate of interest. Finally, it is interesting to notice Vilfredo Pareto's opinion. Pareto does not insert his view in a complete and articulated analysis, nevertheless, in a letter sent to Griziotti, he writes: "I never found a taxpayer who made Ricardo's calculations or similar ones. I must conclude that his existence is like the Phoenix's one" (1917, 133).

6. *Finite horizons without bequest motive and fiscal illusion*

So far, we have not distinguished between the case of finite horizons without bequest motive and the idea of imperfect foresight. Therefore, one could be induced to consider finite horizons' agents, i.e. agents who do not care about taxes that are levied after their death, as somewhat irrational. As a matter of

fact, this conclusion would be misleading. The distinction between the assumptions of finite horizons with no bequest motive and imperfect foresight can be properly pointed out with respect to the case of fiscal illusion.

Some clarification of the terms is now needed. Following normal usage, let us define 'fiscal illusion' as a situation under which a fraction of current taxpayers fail to fully discount future tax liabilities for the debt service. However, such a definition implies two quite different situations. First, a state where the taxpayers discount to the present only the taxes that they expect to face before dying since the bequest motive may not be operative. Second, a situation where the current taxpayers are not only devoid of an altruistic bequest motive but are also affected by some form of myopia in the sense that they fail to discount properly future tax liabilities during their life-span.

Despite the fact that both situations display a certain amount of 'fiscal illusion', the difference between them is relevant. In the first case, although the taxpayers are self-interested, they appear to be forward-looking, at least with respect to their lifetime expectation. In contrast to the second case, the first one could then be defined as a situation of perfect rationality within finite horizons. Indeed, this was the example envisaged by Griziotti (1917), where each individual does not evaluate the infinite stream of annual taxes for the debt service but a stream that is limited by his own life expectancy. As far as this situation is concerned, the question arises as to whether it is appropriate to speak of fiscal illusion, which embodies a notion of irrationality. A negative answer was put forward by James Buchanan, according to whom: "Individuals do not expect to live

forever, and they may not treat their heirs as linear extensions of themselves for economic decisions" (1964, 152). This led Buchanan to argue that it is not appropriate to define as illusory behaviour that arising from mere limitations in time horizons.

Whatever the answer may be, let us notice the distinction between the assumptions of finite horizons without bequest motive, on the one hand, and imperfect foresight, on the other one. The first one refers to a state where the taxpayers discount only the taxes that they expect to face before dying, while the second one refers to a state of real fiscal illusion where individuals, as current and potential future taxpayers, not only behave in terms of finite planning horizons, but are also affected by some form of myopia with respect to the future tax liabilities to be paid during lifetime.

Both the situations are inconsistent with the equivalence theorem but they should be kept logically separate. The difference is clearly stated in modern debate, while it has widely been overlooked in the controversy of the 1960s.[19] On the other hand, it appears to be already clear in some authors of the Italian school of public finance, like Griziotti and, especially, Amilcare Puviani.

Puviani takes into account the case of fiscal illusion concerning the question of debt vs. taxes in his work *Teoria della Illusione nelle Entrate Pubbliche*, published in 1897, where he anticipates the more general treatment of the issue of fiscal illusion contained six years later in his *Teoria della Illusione Finanziaria*.

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(19) Two notable exceptions were Buchanan (1964) and Modigliani (1964).

Following a different theoretical approach to public finance with respect to De Viti de Marco, Puviani analyses the ruling class' behaviour in getting political consensus on actions which are aimed to fulfil its own vested interests. The basic idea is that the State attempts to conceal its activity through the creation of fiscal illusion, both on the side of taxation and government expenditure. The State succeds in his job so far as it gets to hide the burden of taxes and to magnify the benefits of public spending. Indeed, Puviani's articulated analysis of fiscal illusion goes beyond the single illusory phenomenon which can be due to public debt issue and would need a much more careful treatment.[20] For our purposes, we shall limit to consider his contribution to the question of debt vs. taxes.

In both his works, Puviani (1897, 1903) points out some important departures from the equivalence theorem, such as the case of finite horizons or the absence of perfect capital markets. However, he keeps these 'objective' violations of the theorem separate from the case of fiscal illusion due to a misperception of future tax liabilities to be met during taxpayers' lifetime. It looks as if Puviani distinguishes the assumption of finite horizons with no bequest motive from the illusory behaviour, which embodies an idea of irrationality and myopia, on the part of current taxpayers. To convey some of the flavour of his contribution, we take the liberty of quoting Puviani in some detail. He argues: "...for a certain amount of elderly and heirless individuals it is much more convenient to pay 5 l. per

(20) In his time, Puviani's analysis of fiscal illusion was largerly ignored. Its rediscovery had been accomplished by Mauro Fasiani (1932, 1941). A stimulating overview of Puviani's theory of public finance is contained in Volpi's (1973) introduction to the reprint of the *Teoria della Illusione Finanziaria*.

year to the State than 100 l. once for all, ... besides it has to be added that a considerable amount of taxpayers, above all those living in poor economic conditions, would get the sum to pay the State once for all on more burdensome terms than those enjoyed by the State itself through a public loan.

But apart from all these arguments showing that from the viewpoint of private borrowers-taxpayers public loan is *really* preferable to the tax, it must be taken into account another argument which leads to the same result, although it is *totally illusory*. Given the ordinary level of taxpayers' culture and foresight, most of them do not view the intimate link between the annual payment for the interest charges and the corresponding value reduction of their capital assets. Most of them believe that the burden of the debt will bear on posterity and that this device is less troublesome than the tax paid once for all... More than on right calculations, made by certain groups of taxpayers, the fundamental reason why the politician prefers public loan to the extraordinary tax actually rests on wrong estimations, and masses' illusion." (1897, 52-53; writer's italics).

7. *Conclusions*

The aim of this paper has been to re-examine the contribution of the Italian tradition of public finance to the issue of the differential incidence of tax and debt financing.

The protracted controversy can be traced to Ricardo's (1817, 1820) classical contribution, according to whom debt and taxes are perfectly equivalent: substitution of debt for taxes has no impact on private sector wealth and consumption. Moreover, the burden of

current government expenditure cannot be shifted upon future generations, regardless the mode of financing.

Since Ricardo, whose view was actually more complex than that simply summarised under the label of Ricardian equivalence, the dispute has resurfaced a number of times. The modern debate, following the influential article by Barro (1974), has pointed out that the controversy can be settled only on empirical grounds: the Ricardian equivalence theorem is perfectly consistent within the strict set of its assumptions, namely infinite horizon's agents, perfect capital markets, and lump-sum taxation. Therefore, the inquiry should focus on the nature of its main violations (finite horizons with no bequest motive, imperfections in capital markets and distortionary taxation) and their empirical relevance.

The present resurgence of the debate, however, has offered a further reason of interest, namely the possibility of rediscovering the original contribution of the Italian school of public finance, at the turn of this century. Although the equivalence theorem is associated with the name of David Ricardo, the first setting out of its hypotheses was achieved by the work of some Italian writers, notably M. Pantaleoni, A. De Viti de Marco, A. Puviani, B. Griziotti and G. Borgatta. Their analysis focuses on some of the key assumptions of the equivalence proposition, namely that each generation is linked to the subsequent one by an intertemporal continuity of interests and capital markets are perfect. Thus the equivalence proposition, which had been stated by Ricardo in opposition to the previous ambiguities in tackling the issue, became a real theorem.

Focusing on its assumptions is important for a number of reasons: firstly, to make evident the logic of the equivalence

theorem, secondly, to show that the contesting views about it merely depend on the implicit rejection of some of its assumptions, and thirdly, to bring out the limited extent of validity of the theorem on empirical grounds.

The remarkable contribution of the above-mentioned authors has largerly been neglected by the subsequent Anglo-Saxon literature. Not only did the question of debt vs. taxes resurface a number of times, but even the most recent views seem to be essentially anticipated by those earlier studies. Quite apart from any difference of analytical elegance in tackling the issue, their re-examination has also allowed us to highlight interesting analogies between the formers and the latters.

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