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ON THE RICARDIAN THEORY OF TAXATION AND NEUTRALITY OF MONEY

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Abstract

This article critically evaluates Ricardo's contributions to the theory of taxation. It begins with an analysis of taxes on income flows, where the main focus is on the incidence of taxation on profits. We examine two circumstances of taxation on profits, when gold (the money commodity) is produced inside a country, and when it is imported. Contrary to Ricardo, the analysis shows that money continues to be neutral in the presence of taxation on profits. The article continues with an investigation of the effects of taxation on commodity flows. We conclude that although some results of Ricardo's analysis are questionable, nevertheless, his bold method of analysis together with his conceptualization of taxation as an integral part of long run prices sheds new light on current tax problems. (JEL B12)

1. Introduction

Taxation occupies a prominent position in David Ricardo's writings. Nevertheless, this part of Ricardo's analysis has been viewed as secondary as commentators have focused on the theory of value and distribution. Modern public finance theorists, largely, dismiss Ricardo's tax analyses as outdated or simply mistaken, for they are based on the subsistence theory of wages and a peculiar theory of rent. Both theories are considered —by the majority of economists— as inconsistent with the realities of modern societies. We show that a closer examination of Ricardo's writings on taxation reveals that there are many important lessons to be learned. The simultaneous treatment of micro and macroeconomic effects of taxation on key economic variables —such as relative prices, price level, employment level, and capital accumulation— is the most important of all.

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It is striking that this salient feature of Ricardo's approach is missing from the contemporary theories of taxation. These theories, using the tools of partial and (recently) general equilibrium analyses, are mainly concerned with the post-tax changes in relative prices, and the minimization of welfare loss. The theoretical framework is essentially pre-Keynesian, which means that perfect competition and full employment prevail in all markets. The macroeconomic effects of taxation, that is inflation, growth, and employment, are necessarily analyzed separately. The dichotomy between the micro and macroeconomic effects of taxation and the existing inconsistency is widely recognized among specialists in the public finance theory. For example Atkinson and Stiglitz (1980) note: "The general equilibrium analysis of tax incidence has to date been undertaken largely independently of the literature on macroeconomics. Thus, competitive equilibrium models, with all markets clearing, have been used to investigate the incidence of different taxes, whereas a quite separate literature, using aggregate demand models, has examined the implications of taxes for the level of employment and the rate of inflation" (Atkinson and Stiglitz, 1980, p. 222). This deficiency in the structure of the theory has been criticized by Asimakopoulos and Burbidge (1974), Burbidge (1976) and more recently by Mair and Damania (1989), who have developed an alternative theoretical framework of taxation inspired by the post-Keynesian paradigm.

In this article, we grapple with some of important aspects of Ricardo's analysis of taxation. In so doing, we critically evaluate his contributions to this important area of public finance and at the same time we show the usefulness of his analysis to today's economies. The paper is organized as follows: in the second section we examine the effects of income (direct) taxes —on wages, profits and rents— on the key economic variables. We especially focus on the effects of profit taxation examining two different circumstances: when gold is produced inside a country, and when it is imported. We show that Ricardo's principle of the non-neutrality of money, in the presence of profit taxation, is unfounded. Similarly, in the third section, we discuss the effects of commodity (indirect) taxes, and in the final section we make some concluding observations.

2. Income Taxes

2.1. On wages

Ricardo's theory of the incidence of a tax on wages is based, for the most part, on his distinction between natural and money wages, which are related to each other in a way similar to the natural and market prices[1]. The theory of natural wages led Ricardo to the proposition that a tax on wages is equivalent to a tax on the workers' socially "given" necessaries.

This conclusion accords —although for different reasons— with Smith's proposition that wages cannot be taxed, since workers always recoup the tax by proportionally increasing their money wages. Beyond this, however, their opinions are markedly different, since for Smith a tax on wages increases not only the money wage but also the price of the product, which in turn leads to another increment of money wages, and so on. Following Smith's argument, this wage-tax-price spiral process eventually dies out because landlords and rich consumers bear the final burden of taxation.

Ricardo confronted Smith's (1776) argument on its own grounds and characterized it as "absurd", since "this rise in the price of goods will again operate on wages, and the action and re-action first of wages on goods, and then of goods on wages, will be extended without any assignable limits" (ibid., p. 225). Moreover, he rejected the possibility of such a spiral process in the first place; since any increase in wages reduces profits, and thereby, changes relative prices without necessarily affecting the general price level[2]. He notes that a "tax on wages will raise wages, and therefore will diminish the rate of the profits of stock... The ultimate effects which would result from such taxes then, are precisely the same as those which result from a direct tax on profits" (ibid., p. 215).

Ricardo's analysis of a wage tax incidence depends on the principle of "equal profitability" between industries and to the manner in which this principle is modified to account for different capital labor ratios[3]. If these ratios are the same across industries, and if, by extension, the owners of capital suffer equally from an increase in wages, it follows that the new rate of profit will be the same (although lower) for all industries. Therefore, relative prices will remain the same. Eagly (1983) takes this special case as the general, and he notes that "in the case of a tax on wages, relative prices remain unchanged. The general rate of profit declines, thereby occasioning all capitalists to share in the tax burden" (Eagly, 1983, p. 224).

If, however, we consider the general case, where industries employ capital and labor in different proportions, the increase in wages will initially result in differential rates of profit among industries. Labor intensive industries will experience a proportionally higher reduction in their rate of profit; whereas, the converse will be true for the capital intensive industries. Ricardo argued that the persistence of unequal rates of profit is inconsistent with the nature of capitalism. Consequently, the relative prices of labor intensive industries have to rise to compensate for the proportionally greater reduction in profits, whereas the opposite process takes place in capital intensive industries. The resulting equalization of the rate of profit does not, necessarily, imply either an increase in the price level or a Smithian wage-tax-price spiral.

Ricardo supported his view of a real wage given at its subsistence level not axiomatically, as is often attributed to him, but rather by advancing a short-run argument that hinged on the resulting new conditions in the labor market. Specifically, he argued that if the tax revenues collected from direct taxation on wages are spent on public works, the demand for labor will rise, and with a given supply of labor money wages will increase. The mechanism for this increase in money wage is based on ensuing competition between private employers and the government in the labor market. Thus Ricardo argues that "if labour were not to rise when wages are taxed, there would be a great increase in the competition for labour, because the owners of capital, who would have nothing to pay towards such a tax, would have the same funds for employing labour, whilst the Government who received the tax would have an additional fund for the same purpose. Government and the people thus become competitors, and the consequence of their competition is a rise in the price of labour. The same number of men only will be employed at additional wages" (Ricardo, 1951a, p. 220-221). Hence, it is important to note that this mechanism is not applicable to all forms of taxation. For example, a tax on profits would not lead to an increase in the demand for labor, since the owners of capital "would (not) have the same funds, for employing labour". This point is missed by John Stuart Mill (1848) who criticized Ricardo's argument as follows: "the more a government takes in taxes, the greater will be the demand for labor, and the more opulent the condition of the labourers. A proposition the absurdity of which no one can fail to see" (Mill, 1848, p. 180).

It is important to note that in the longer run Ricardo argued it is possible that higher money wages will reduce the rate of profit, and thereby diminish capitalists' "passion to accumulate". Consequently, in the next rounds, the demand for labor, as well as money wages will decline, and society as a whole, not only workers, will suffer from the tax. Ricardo notes that "taxes, then, generally as far as they impair the real capital of the country, diminish the demand for labour and therefore it is probable, but not a necessary nor a peculiar consequence of a tax on wages, that though wages would rise, they would not rise by a sum precisely equal to the tax" (Ricardo, 1951a, p. 222).

There are also some other possibilities that real wages can, indeed, be taxed. For instance, if the supply of labor is not fixed, the additional employment in public works might come from the unemployed, and therefore the above process might not work itself out. Moreover, if the government revenues derived from the taxes imposed directly on wages are not spent on public works within the country, but are paid "as a subsidy to a foreign state, and if therefore these funds were devoted to the maintenance of foreign, and not of English labourers,... then indeed, there would be a diminished demand for labour, and wages might not increase, although they were taxed" (ibid., p. 222).

Thus, taking into account the historical conditions surrounding Ricardo, one is impressed by his analysis, since it is not confined to the micro or macroeconomic effects of the tax but rather integrates them both by accounting for the resulting macroeconomic consequences from the government's activities. This simultaneous treatment of micro and macroeconomic effects is absent in modern approaches of tax incidence, since neither the differential nor the balanced budget incidence truly addresses the complexities associated with the demand emanating from public expenditures. Another important characteristic of Ricardo's analysis of wage taxation is an early version of what today is known as the "balanced budget multiplier", which unlike its modern versions, in the *Principles* is, at most, zero[4].

The majority of modern economists are uncomfortable with Ricardo's and classical economists' idea for the flexibility of money wage that leads to a real wage fixed at the customary standard of living of workers. However, on closer examination, this idea becomes stronger than is usually thought. The following considerations can be used in favor of a fixed real wage. First, it is certain that employers are knowledgeable of the level of this rigid real wage needed in order for workers to perform well in their jobs. It is often in the self-interest of employers to offer money wages that enable workers to acquire a socially determined standard of living. Second, there is no doubt that trade unionists are also familiar with the level of their standard of living in their negotiations with employers over wages. Although bargaining between employers and workers takes place for money wages, workers are really bargaining for the maintenance, if not improvement, of their standard of living, if their standard of living is reduced because of higher taxes they will demand higher money wages in an attempt to recoup the losses in their purchasing power. The research undertaken by economists Tarling and Wilkinson (1980) for the United Kingdom shows that attempts to suppress the target real wages, such as big tax increases, price of oil and the like set off an inflationary process where workers demand and successfully get higher money wages to maintain their suctomary standard of living. Thus, if the idea of a fixed real wage was applicable to Ricardo's time —it was accepted by the majority of economists— there are additional reasons for this idea to be more applicable to modern economies.

Ricardo demonstrates the real wage on inflexibility under the least favorable circumstances by assuming a completely passive working class. However, the reality of modern economies is different, the presence of strong trade unions together with legislation favorable to wage indexation enhances the relevance of Ricardo's argument today. Moreover, given the rapid dissemination of information through mass media, workers become much faster acquainted with the changes in the goods and services that constitute the habitual standard of living and the need to emulate becomes stronger today than in Ricardo's time.

2.2. On Profits

In chapter XV of the *Principles,* Ricardo addresses the question of a partial, as well as of a general, profit tax. Analyzing these two types of taxation, he discusses two circumstances that lead to different outcomes regarding the rate of profit and the relative prices of industries.

The first refers to the case where gold —the commodity used as money— is produced within the country. Here, Ricardo argued that a tax on profits of one industry will increase the price of the commodity, "for the trader will either quit his employment, or remunerate himself for the tax" (Ricardo, 1951a, p. 206). Ricardo's reasoning is that the partial rax will, other things constant, drive the after-tax rate of profit of the industry to a level lower than the average. However, this is not possible Ricardo argued, because capitalists, in order, to have the same rate of profit, would charge a price higher by the amount of tax[5]. Summarizing his position, he notes: "Every new tax becomes a new charge on production and raises natural price. A portion of the labour of the country which was before at the disposal of the contributor to the tax, is placed at the disposal of the State, and cannot therefore be employed productively" (ibid., p. 185).

According to Ricardo, a uniform tax on profits of all industries but gold will raise all prices disproportionally. This is equivalent to the proposition that gold produced inside the country remains untaxed and its effects on relative prices are not neutral. The mechanism that leads to higher prices is discussed in Ricardo' correspondence to his colleague Hutches Trower, in which he argues that it hinges on the changes taking place in the gold industry: "The miner business would be more profitable than any other, and consequently would draw capital to that concern" (Ricardo, 1951b, p. 153). As a result of the increased supply, the price of gold would be reduced to the level where the gold industry would make the average rate of profit. Consequently, by using gold as the numeraire commodity, all other prices would be higher than in the pre-tax situation[6].

By contrast, if the value of money is altered in the same proportion as all other commodities, that is to say, gold mines are also taxed by the same rate, the above process of price adjustments does not work itself out, since there is no reason for capital to flow into the gold industry and therefore the, otherwise, higher price level is not supported by an additional supply of money. Ricardo summarizes his views by noting that "If a tax in proportion to profits were laid on all trades, every commodity will be raised in price. But if the mine which supplied us with the standard of our money, were in this country, and the profit of miner were also taxed, the price of no commodity would rise, each man would give an equal proportion of his income and everything would be as before" (Ricardo, 1951a, p. 205-206).

Ricardo used the following arithmetical example to illustrate his proposition that when money is produced inside the country and remains untaxed, the rise in prices would be disproportionate in the different industries, i.e., relative prices would change. As it is usual to his approach Ricardo constructs a numerical example where he assumes two industries, I and II, that employ the same capital advanced equal to 10,000 pounds, but in different proportions of fixed, Cf, and circulating, Cc, capital[7]. Let R be the profits and r be the given rate of profit equal to twenty per cent. Similarly, let T be the tax receipts and t the given tax rate on profits equal to ten per cent. Furthermore, let P and Pn be the actual and the normalized price of a product before taxes. Finally, let P' be the post-tax price of an industry[8]. In symbolic terms the pre-tax absolute price for each trade can be expressed as

$$P = Cc + r\,(Cf+Cc)$$

and the post-tax price as

$$P' = Cc + (1+t)\,r\,(Cf+Cc)$$

The above illustration can be summarized by refering to the Table 1 (See the Appendix). The absolute, as well as the relative prices change as a result of a uniform profit tax that is imposed on the profits of industries I and II at the rate of 10%. Table 2 (See the Appendix) summarizes these developments. It is important to emphasize that the absolute and relative prices of columns (6) and (7) are not the final equilibrium post-tax prices. These are only transitory or first step prices, which Ricardo treated as the final equilibrium prices. In doing so he was led "to the understanding of a very important principle, which, I [Ricardo] believe, has never been adverted to" (ibid., p. 208). This principle is summarized as follows: "if a country were not taxed, and money should fall in value, its abundance in every market would produce similar effects in each... But this is no longer true when any of these commodities is taxed; if in that case they should all rise in proportion to the fall in the value of money, profits would be raised above the general level, and capital would be removed from one employment to another, till an equilibrium of profits was restored, which could only be, after the relative prices were altered" (ibid., p. 208-209). We observe that Ricardo in the case of taxation of pofits ruled out the possibility of the "neutrality of money".

However, Ricardo's analysis cannot be accepted since the effects of a profit tax are examined only for the first round. It is also unclear whether the resulting higher prices will persist, or the whole numerical model leads to an endless profit-tax-price spiral. Although Ricardo knew about the concomitant feedback effects, he did not trace the final solution of his numerical illustration. It seems that he anticipated a favorable outcome for his "principle". This becomes evident through a study of his correspondence to his colleague Trower, who expressed skepticism about the validity of the "principle". In a letter to Trower, Ricardo sought to clarify his position by offering the following explanation: "This is the opinion which I wished to express, whether it be a correct one is another question. On the hasty consideration which I can now give it I see no reason to doubt it" (Ricardo, 1951b, p. 154). This quotation reveals that Ricardo was not confident of the validity of his principle. His wording shows caution and openess for suggestive criticisms. If Ricardo had inquired in detail into the equilibrium prices of his model, he would have discovered that in the next rounds, the owners of capital in trades I and II, assuming a given technology, would have the same funds to employ the same but appreciated capital advanced .

In what follows, we show that by taking feedback effects into account, the "very important principle, which,... has never been adverted to" (Ricardo, 1951a, p. 208) does not necessarily hold. Referring to the above example, let us suppose that the tax rate remains ten percent, whereas the fixed capital and wages vary proportionally to the average price level because the owners of capital, in order to produce a unit of product, employ fixed and circulating capital evaluated at the new price level. It is worth noting that the mechanism for the increase in wages is similar to that which is described in the tax on wages. Its operation is ascertained by the fact that the owners of capital —by initially charging a price that establishes a uniform rate of profit— have the same funds to compete with the government over the same pool of laborers. As a result, in the next rounds, profits fall by the same amount that wages increase, which is consistent with Ricardo's views on income distribution, Table 3 (see the Appendix). Indeed, if profits and the rate of profit did not vary inversely with wages, the whole system would be trapped in a profit-tax-price spiral process. The resulting rates of profit of the two "concerns" are unequal; the first makes a rate of profit of 18.89%; the second, a rate of profit 17.22%. Because this inequality in the rates of profit is inconsistent with the nature of capitalism, the necessary re-establishment of the new average rate of profit requires a change in relative prices[10]. The price of the first "concern" must fall slightly, whereas the price of the second "concern" must increase slightly, until both again make the same average rate of profit[11].

The newly obtained price level is lower than that of the previous round, and when it is again fed back to the capital advanced, we arrive at Table 4 (see the Appendix). By iterating the previously outlined procedure, i.e., by reevaluating the capital advanced in terms of the resulting lower or higher price level, and by taking into account the difference in the rates of profit, we arrive at the final Table 5 (see the Appendix).

Therefore, we finish with the pre-tax relative prices, 0.2857 ans 0.7142 for trades I and II, respectively[12]. That absolute prices are higher in the after tax situation is totally immaterial to the owners of capital, who must lay out more money to set in motion the same productive forces and thereby, to produce the same amount of output. Hence, Ricardo is correct when he writes to Trower that "as a political economist I say that there is no tax which has not a tendency to diminish production" (Ricardo, 1951b, p. 154) because a lower rate of profit will eventually lead to a lower accumulation rate. His principle, however, that a uniform tax on profits will change the relative prices of commodities when gold is produced inside the country and remains untaxed is untenable even in his own arithmetical example. Our analysis rejects the interpretation given by Carr and Ahiakpor (1982) who like Ricardo, limit their analysis to the first round effects of profit taxation and accept Ricardo's principle of the non-neutrality of money in a world with taxes.

Thus far, we considered taxes on profits when the money commodity is produced within the country. However, when gold is imported from outside, Ricardo argues that any rise in prices could only be ephemeral, since it would lead to a trade deficit, and the outflow of money would reduce the price level to the pretax one. He notes that "a well regulated tax on profits, would ultimately restore commodities both of home and foreign manufacture, to the same money price which they bore before the tax was imposed" (Ricardo, 1951a, p. 214). Consequently, a tax on profits will not be borne by the consumers but by the producers. Hence, Ricardo clearly demonstrates that although a general tax on profits is not monetarily neutral, money is neutral in the context of its effects on the structure of prices.

2.3. On Rent

Ricardo's fundamental idea concerning land rent is that the natural price of agricultural products is formed on marginal land, that is land "last cultivated". Contrary, to Smith (1776), Ricardo excludes rent as a constituent element of the natural price of agricultural products. The rising prices of agricultural products are responsible for the emergence of rent and not the other way around. Consequently, if rent income is taxed, all prices will remain the same and the entire burden of taxation will fall on the recipients of this "non-functional" income. With this in mind, Ricardo notes that a "tax on rent affects rent only: it would fall wholly on landlords and could not be shifted to the class of consumers. The landlord could not raise his rent" (Ricardo, 1951a, p. 73). Furthermore, he argues that the economy's growth rate remains the same because "the annual produce of land and labour of the society, the real wealth and revenus of the great body of people, might be the same after such a tax as before" (ibid., p. 203-204).

Taking recourse to his theory of value and distribution, Ricardo argued that rent income, in so far as it is spent on unproductive expenditures, is a deduction from profits which constitute the sole source of accumulation. This analysis led him to the conclusion that rent income is the best object of taxation, or in his words: "Ground rents, and the ordinary rent of land are, therefore, perhaps, the species of revenue, which can best bear to have a peculiar tax imposed upon them" (ibid., p. 203).

The logical conclusion of the above is that Ricardo, like the Physiocrats, is a fervent supporter of a single tax on rent incomes. A closer examination of his writings reveals that unlike his predecessors, he hesitates to recommend the replacement of the existing tax structure with a single tax on rent. This hesitation is based not on pure economic arguments but rather on considerations concerned with the feasibility and desirability of such a tax. We have three chief reservations regarding the imposition of such a tax.

(i) Pure rent is difficult in a practical sense to distinguish from profits, and therefore the effects of a tax on rent might be similar to those of a profit tax. For example, the improvements made by landlords receive additional payments which, although are profits, easily can be confused with rent. A tax on this type of income, of course, will discourage improvements and this leads to the deterioration of land or buildings. These considerations of pragmatic nature made Ricardo to note that "in taxing rent, as no distinction would be made between that part paid for the use of the landlord's stock, a portion of the tax would fall on landlord's profits, and, would, therefore, discourage cultivation, unless the price of raw produce rose" (ibid., p. 174).

(ii) Such a tax is "unfair" on equity considerations. Here, he used Smith's fourth maxim of taxation that "the burdens of the state should be borne by all in proportion of their means" (ibid., p. 204). A single tax on rent certainly targets a specific social class and it would be unfair, Ricardo would argue, for a single class to carry the entire tax burden.

(iii) He also is concerned with some of the indirect effects of such a tax. As a result of a tax on rent, he argues, speculations on land could arise which would encourage those "who possess the qualities of a gambler, than the qualities of the soberminded proprietor, who is likely to employ his land to the greatest advantage" (ibid., p. 204).

3. Indirent Taxes

Ricardo discusses extensively the effect of indirect taxes and pays particular attention to those imposed on agricultural products. He initially accepts Smith's proposition that a specific or an *ad Valorem* tax on agricultural products will increase their prices. However, his opinion on the possible distribution effects of such a tax is a dramatic departure from Smith; and his reasoning is analogous to that discussed in the case of a profit tax.

Ricardo's central idea is that a specific or an *ad valorem* tax on agricultural products, are costs imposed on the farmers, or in his wording, "any tax which may be imposed on the cultivator, ... will increase the cost of production, and will therefore raise the price of raw produce" (ibid., p. 156) to the level that incorporates the invariable average rate of profit. Ricardo further notes that "a rise in price is the only means by which he could pay the tax, and continue to derive the usual and general profits from this employment of his capital" (ibid., p. 157).

But costs will increase in the other branches of production which use agricultural products as inputs. Since they cannot afford a rate of profit lower than the average, they must increase their selling prices. Thus "a tax on corn, then, would fall on the consumers of corn, and would raise its value as compared with all other commodities, in a degree proportioned to the tax. In proportion as raw produce entered into the composition of other commodities, would their value also be raised, unless the tax were countervailed by other causes. They would in fact be indirectly taxed and their value would rise in proportion to the tax" (ibid., p. 159).

Does this process lead to an endless indirect tax-price spiral? This possibility is not addressed by Ricardo for his analysis is limited to its first round effects. It is not difficult, however, to see that this process must die out in a few rounds. The initial increase in the price of agricultural products affects the industrial products only by a fraction of this increase, which in turn impart a smaller fractional rise to agricultural costs, etc. Ricardo, in analyzing the effects of indirect taxation, examines two distinct cases regarding the production of gold: Firstly, if gold is produced inside the country and remains untaxed. In this case, a tax on raw produce does not affect the cost conditions of the gold industry, since it does not need corn for its operation. The other commodities, because of their higher prices, will require more gold for their circulation, and primarily, since gold is in shortage, its price will increase above its normal level. The super-normal profits in the production of gold, however, will increase its supply until the selling price of gold will return to the natural level. Thus, the additional money will exist to support the higher price level. Despite this, in the third edition of *Principles,* Ricardo seems to argue that there is no need for more gold in order to have higher prices. In a footnote added in the third edition, he comments that "it may doubted whether commodities raised in price, merely by taxation, would require any more money for their circulation. I believe they would not" (ibid., p. 169).

Secondly, if gold is an imported commodity: in this case the higher domestic price level discourages exports, since expensive domestic goods cannot compete cheap foreign ones. This fall in exports with the same amount of imports results in a trade deficit which is balanced by the export of gold. The domestic quantity of gold diminishes and its price increases. Thereby, the prices of all goods return to their pretax level, and profits fall.

Ricardo's main concern, however, is with the repercussions of this type of tax on wages. In a similar fashion as in the chapter of taxes on wages, he argued that workers, who are also the consumers of agricultural products, increase their money wages to purchase the same bundle of goods necessary for their normal functioning as workers[13]. It is important to note at this juncture that his argument is equally germane to the issue of taxation of industrial necessaries: "a tax on the manufactured necessaries of the labourer would have the same effect on wages as a tax on corn, which differs from other necessaries only by being the first and the most important on the list; and it would produce precisely the same effects on the profit of stock" (ibid., p. 243). In other words, the rise in their price would change in unequal proportions the cost conditions in the different branches of social reproduction. Simultaneously, the resulting increase in wages would diminish profits unequally, and thereby, would change relative prices so long as to incorporate the lower average rate of profit.

Although indirect taxation to a large extent causes final effects similar to those of a profit tax, one should not treat them as interchangeable forms of taxation. The reason is that indirect taxation operates differently on prices and affects relative prices and profits in unequal degrees since it applies either to production, or consumption, or both. The same is not true, however, with a profit tax. There is no doubt that Ricardo is knowledgeable of the differential effects when he states that "as taxes on raw produce, thither, taxes on wages, and on the necessaries of the labourer, will by raising wages lower profits they will all, though not in an equal degree, be attended with the same effects" (ibid., p. 214). However, there cannot be any rigorous statement made regarding these effects, without full knowledge of the structure of direct and indirect taxation, namely, turn-over, sales or excise taxes, and of the structure of the economy.

In analyzing the effects of indirect taxation, Ricardo makes occasional remarks concerning a special class of commodities whose taxation does not affect the fundamental economic variables. Specifically, he argued that "a tax on luxuries would have no other effect than to raise their price" (ibid., p. 243-244), since they are not being used as inputs for the production of other goods. Therefore, a tax on them rests with those that consume them, i.e., the landlords and the capitalists.

4. Conclusions

Ricardo considers taxes on wages and basic commodities as a cause for the diminution of the rate of profit. Both increase the money wage directly or indirectly and, therefore, lower the rate of profit. Similarly, a profit tax — through the wage adjustment mechanism— diminishes the economy's average rate of profit; whereas taxes on rent and luxuries have no such impact.

It is now important to stress that Ricardo's principles of taxation are directly derived from his theory of value and distribution. More specifically from: first, the idea of a real wage fixed at a level that allows for the normal reproduction of the working class; second, the notion of tendential equalization of the rate of profit caused by the free mobility of resources; third, his rather peculiar theory of rent; and finally, from the quantity theory of money. As a result his tax principles rely on the acceptance or rejection of his theory of value and distribution. Although Ricardo's conclusions may be questioned on the basis of alternative theories, however, his bold method of analysis and the conceptualization of taxation as an integral part of a system of long-rum prices can only be admired. Ricardo's approach contains a number of interesting ideas, such as the employment and the accumulation effects of government expenditures. There is no doubt that for Ricardo taxation and government spending, in the long-run, exert a negative effect on capital accumulation. The current slowdown in the growth rate of output and productivity in most economies is attributed, to a great extend, to the growth of taxation and the concomitant rise in government spending.

Appendix

Table 1
Pre-tax Absolute and Relative Equilibrium Prices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	C_f	C_c	R	P	T	P′	P_n
I.	8,000	2,000	2,000	4,000	0	4,000	0.2857
II.	2,000	8,000	2,000	10,000	0	10,000	0.7100

Table 2
Changes in Absolute and Relative Prices due to a Uniform Profit Tax
First Round effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	C_f	C_c	R	P	T	P′	P_n
I.	8,000	2,000	2,000	4,000	200	4,200	0.291
II.	2,000	8,000	2,000	10,000	200	10,200	0.708

Table 3
Changes in Absolute and Relative Prices due to a Uniform Profit Tax
Second Round effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	C_f	C_c	R	P	T	P′	P_n
I.	8,228.6	2,057.2	1,942.8	4,000	194.3	4,194.3	0.2918
II.	2,057.2	8,228.6	1,771.4	10,000	177.1	10,177.1	0.7082

Table 4
Changes in Absolute and Relative Prices due to a Uniform Profit Tax
Third Round effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	C_f	C_c	R	P	T	P′	P_n
I.	8,228.6	2,057.1	1,857.1	3,914.3	185.7	4,100	0.2852
II.	2,057.2	8,228.6	1,857.1	10,085.7	185.7	10,271.4	0.7147

Table 5
Changes in Absolute and Relative Prices due to a Uniform Profit Tax
Final Round effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	C_f	C_c	R	P	T	P′	P_n
I.	8,213.3	2,053.3	1,866.6	3,920.3	186.6	4,106.6	0.2857
II.	2,053.3	8,213.3	1,866.6	10,079.9	186.6	10,255.7	0.7142

Footnotes

1. In this context, natural wages are conceived as the center of gravitation of money wages.

2. There is no doubt that if workers increase their money wage by the amount of the tax and capitalists raise their price to make the pre-tax rate of profit, landlords and rich consumers pay for the wage-tax, and Smith is absolutely right. If however, we assume, like Ricardo, that rent is not a constituent element of price it follows that a wage-tax, sets-off an explosive spiral process. Hence, it seems that Ricardo attributed to Smith the idea that rent is not a constituent element of price. Shoup (1956) gives a detailed account of their differences on the wage-tax-price spiral. However, he misses the most important difference that is Ricardo would have denied such a process in the first place, since any increase in wages comes out of profits and the general price level might remain the same.

3. Ricardo's argument is described in detail in the first chapter (Ricardo, 1951a, p. 46), whereas in the chapter "Taxes on Wages" he only makes a very short reference (ibid., p. 239).

4. Since government's activities are considered unproductive it follows that its expenditures, financed out of taxes, reduce the power to accumulate, and therefore the economy's growth rate falls.

5. Ricardo assumes that the demand for the taxed product remains the same, regardless of its higher price ("unabated demand").

6. Gold production is treated as luxury production and therefore in a Sraffian sense nonbasic. Thus, like any other tax on non-basic commodity, it does not affect the equilibrium variables of the system. Specifically, Ricardo notes that "Upon that portion which was used for money, though a large tax might be received, wholly would pay it. This is a quality peculiar to money" (ibid., p. 241). Similar interpretations have been advanced by Shoup (1960, p. 214).

7. Notice that by circulating capital Ricardo refers exclusively to wages. In addition, although he mentions depreciation, in most of his examples including the present, for simplicity's sake the fixed capital does not depreciate.

8. We compute relative prices by normalizing them in the unit simplex, i.e., the sum of prices always adds up to one.

9. Shoup (1960, pp. 103 and 127) refers also to the feedback effects which are left out in Ricardo's analysis. However, Shpup's discussion is not in the spirit of Ricardo's *Principles,* for he does not consider the mechanism of reduction in the profits and the concomitant price twisting effect. Other important commentators, such as Gonner (1925) in his edition of the *Principles* and St. Clair (1965, ch. 16) concentrate on the effects of taxation if money rose in value. In so doing, however, these authors do not confront Ricardo's example that refers to a general profit tax imposed on all trades — except those producing the monetary metal. In this case, Ricardo argued, not only the level but the structure of prices changes.

10. This price twisting effect is outlined in the discussion of taxes on wages.

11. We assume that the capital advanced reevaluates upward or downward uniformly in both trades.

12. The last table gives the results. Hence, the price level does not change with respect to the previous price level and the rates of profit are equal, meaning that there cannot be additional feedback effects.

13. The mechanism, which leads to the increase in the money wages, is the same as in the section on the wage tax.

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