

Samuelsonian legends about Ricardo's finances lack historical evidence

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1. Introduction

Many histories of economics enjoy telling colourful stories about David Ricardo's financial wealth. For example, Mark Skousen (2016, pp. 98-99), in his chapter on Ricardo, presents sections entitled *How Ricardo Became The Richest Economist In History* and *The Day Ricardo Made £1 Million Sterling*.² Ricardo's success on the London Stock Exchange also inspired both simple business case studies for students (Duchatelet 2006) and more specialised papers on finance (Zeckhauser 2006, 2010). All authors mentioned above are especially fascinated by Ricardo's investment behaviour just before and after the Battle of Waterloo (18 June 1815).

The same fascination for Ricardo and the Waterloo story is apparent in the work of Paul Samuelson. I pay special attention to Samuelson's narratives on Ricardo's personal finance, because of Samuelson's authoritative position in the history of economics, and because Ricardo was one of Samuelson's favourite research subjects. For example, Samuelson's only contribution to the twenty-six volumes of the *International Encyclopedia of the Social and Behavioral Sciences* was an article on Ricardo (Samuelson 2001), and the recent *Elgar Companion to David Ricardo*, published six years after Samuelson's death, even includes an entry that is entitled "Samuelson, Paul Anthony, on Ricardo" (Kurz and Salvadori 2015).

My paper tries to present detailed historical material related to Ricardo's finances during his business career, when he was both a jobber at the Stock Exchange and a Loan contractor for the British government. I cast doubt on Samuelson's stories about Ricardo's finances, and I call them "Samuelsonian legends", for two reasons. First, besides Samuelson, numerous other authors presented similar tales on Ricardo. Second, and most importantly, many of such widespread stories are contradicted by historical documents and statistics.

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I am grateful to Jonathan Smith, archivist of Trinity College, University of Cambridge, and his colleagues, for their help and advice when I used the files on Ricardo in the Sraffa Papers in the Wren Library. I also thank the staff of the British Library of Political and Economic Science.

² Readers who want to compare the prices of 1815 and today, can use the following rule, which is only a very rough approximation, but easy to remember: *multiply most prices in my text by 100*. For example, when I mention in Section 3 that Malthus received a salary of £500 per year as a professor at the East India College, consider this as roughly equivalent to £50 000 today.

To support his legends, Samuelson refers rather vaguely to Sraffa, but neither the eleven volumes of Sraffa's edition of *The Works and Correspondence of David Ricardo*, nor the more than two hundred Ricardo files in the Sraffa archives in Cambridge, seem to provide evidence for Samuelson's legends.³ After looking at the available Sraffa material, at the historical statistics of British bond prices, and at the historical origin of various legends about Ricardo and Waterloo, I conclude that the Samuelsonian legends lack historical evidence, and that many statements by Samuelson on Ricardo's investments are very misleading.

To develop my criticism of several widespread narratives, it is first necessary to describe the specific position of Ricardo in the world of finance, especially with respect to the typical characteristics of the British government bonds in the early nineteenth century (Section 2). Here the concepts of Omnium, Scrip, Consols and Reduced annuities play a central role. I also describe how Ricardo acted as one of the Loan contractors for several large British government Loans, as a partner in the Barnes-Steers-Ricardo consortium, and I reveal the identity of the mysterious "unknown fourth man" in this consortium. Then I concentrate on three different topics related to Samuelson's comments on Ricardo's finances: the relation between Ricardo's investments and those of his friend Thomas Robert Malthus (Section 3), Samuelson's strong critique of Ricardo's insider trading and market manipulation (Section 4), and the crucial causes of Ricardo's wealth (Section 5).

My paper claims that in all three cases the Samuelsonian narratives are unreliable. Sometimes they even seem to confuse the activities of Ricardo and those of an even more legendary Mr. R., namely Nathan Mayer Rothschild, but even the more frequently told Waterloo legends about Rothschild are often not supported by historical material.

In the Appendix of my paper I present various relevant statistical tables. These statistics form an essential part of my study, because the data are often ignored or sometimes misrepresented. For example, several writers reproduce the same wrong numbers for the critical years 1814-1815-1816, often due to errors in the statistical tables of the standard works by Mitchell (1988) and Homer and Sylla (2005), ultimately originating from errors in the Nash edition of Fenn (1883).

³ My paper needs many references to Sraffa's edition of Ricardo (1951-1973). In these cases I will usually give only the number of the volume and the page number. For example, *The Works and Correspondence of David Ricardo*, edited by Piero Sraffa with the collaboration of Maurice Herbert Dobb, volume 6, page 233, will simply be referred to as 6: 233.

2. The sophisticated world of British Loans

2.1. Ricardo and the London Stock Exchange

David Ricardo, born 18 April 1772, started his business career at the early age of 14, as an assistant to his father Abraham Israel Ricardo at the London Stock Exchange. In December 1793 David married, against the will of his Jewish parents, to Priscilla Ann Wilkinson, a Quaker. The marriage caused a rupture with his parents, and David had to continue on the Stock Exchange on his own. With a little initial help from some City friends, David quickly became highly successful at the Stock Exchange, retiring very rich from business in 1815, then publishing his famous *On the Principles of Political Economy, and Taxation* (Ricardo 1817), and entering British Parliament in 1819. He died on 11 September 1823, aged only 51, due to an ear infection that today would easily be cured by antibiotics.⁴

A few months after war broke out between France and Britain in 1793, Ricardo started his own business at the Stock Exchange. When Napoleon suffered his decisive defeat in the Battle of Waterloo in 1815, Ricardo had already decided he would soon retire. Hence, during nearly the whole of Ricardo's business career, Britain was at war with France. The cost of the war created a huge increase in the British public debt. Thanks to the long stability of its political regime and its financial credibility, Britain was able to fund a large part of its immense war expenses by means of Loans. The bonds issued by the British government dominated most of the transactions on the London Stock Exchange. Other securities, like shares of private firms, formed only a very small part of the financial market. Hence, both the professionals (like Ricardo) and the occasional investors (like Malthus) concentrated on government bonds, often referred to as *the funds* or *stock*.

The most popular funds were the *three percent Consols*. Such Consols, with a nominal value of £100, for example, generated a yearly interest of £3 (often called a dividend), paid half in January and half in July.⁵ The term "Consols" was an abbreviation for "consolidated annuities". The name came into use after a consolidating act in 1751. The 3% Consols formed about half of the British National Debt. The second most important bonds were the *three percent Reduced annuities*. These commenced in 1746 out of various articles which formerly had a higher rate of interest, but in the 19th century the term *Reduced* was of purely historical meaning. Many additional quantities of such *Reduced* annuities were created, which always bore a 3% interest rate, without any real problem of "reduction". Half of the interest was paid in April, half in October. In this way many rentiers who invested both in 3% Reduced annuities and 3% Consols could receive interest payments every three months.

These Consols and Reduced annuities had no fixed date of maturity. In principle the government could redeem them when their quotation was at 100. However, after the start of

⁴ For more background information on Ricardo, see Sraffa (1955a, 1955b), Heertje (1974), Weatherall (1976), de Vivo (1987), Henderson and Davis (1997), Samuelson (2001), Peach (2008), King (2013) and Kurz (2016).

⁵ Remember that before 1971 Britain operated the following non-decimal system: 1 pound = 20 shillings, 1 shilling = 12 pence (hence 240 pence in a pound), and that the traditional symbols were £ = pound sterling, s = shilling, d = pence. My above example of a one and a half pound dividend, could be written as 1£ 10 s. 0 d., or more shortly as £1.10.0

the war, the increasing national debt drove up the market interest rates far above 3%, and therefore the quotation of 3% bonds was always far below 100 (see Table 1 in the Appendix of my paper). For example, on 10 January 1816, half a year after the Battle of Waterloo, the market price of £100 three percent Consols was only £60, because the market interest rate was 5% (the Consols give £3 interest per year; if you buy them for £60 you get exactly the market interest rate of 5%).⁶ Hence in Ricardo's time, the 3% Reduced annuities and Consols were treated as a sort of perpetual annuities, with a simple inverse relation between their market price and the market (long-term) rate of interest.

Many other bonds existed, for example, 4% Consols and 5% Navy annuities. The latter were originally used for funding the Navy. Most investors preferred 3% bonds because their lower market prices gave more scope for a large rise and because they ran a smaller risk of obligatory redemption. If no further details are added, in the rest of my paper the single words *Consols* and *Reduced* always refer to three percent annuities.

Ricardo acted as a stock jobber, which means that he bought and sold securities, mostly Consols and Reduced. For example, at a certain moment a jobber announced that he was willing to buy Consols at 60 and to sell at $60\frac{1}{8}$. Note that the difference here is $\frac{1}{8}$, which was the traditional spread for jobbers according to the rules of the Stock Exchange. A price equal to 60 was a realistic example on some days in 1815, and in such an example the spread is $0.125/60 = 0.002$, thus 0.2%. This seems to be a small percentage, but some jobbers earned a considerable income thanks to the magnitude of their transactions and by their arbitrage skills. In principle, in Ricardo's time, the old Barnard's Act (passed in Parliament in 1734) forbade buying and selling of stock without delivery. In other words, time bargains were not approved by law. However, the brokers and jobbers ignored it and used their own self-regulating methods so that time bargains were still possible and actually very frequent (Hamilton 1818: 313-317; Duguid 1901: 48-51; Kynaston 1995: 16).

Ricardo's correspondence clearly shows that already in 1795, only two years after starting on his own, he could afford a wealthy life-style, and in the next years he easily helped solving the financial problems of his brother-in-law (10: 109-115). Ricardo quickly became one of the most important stock jobbers in London.

When the government launched a new Loan, it used a system of competitive bidding. Given the enormous financial operations involved, usually only a few consortia of rich merchants or bankers entered the competition. Every consortium formed a list of subscribers, often containing a few hundreds of persons or firms that wanted to buy a share of the Loan. A consortium that had entered a winning bid, could then allocate a part of the Loan to the subscribers of its list. If a consortium did not obtain the Loan, its subscribers had to try to obtain a part of the Loan elsewhere, either by trying to have their name on two or more different lists, or by buying after the opening of the Loan at the Stock Exchange (normally at a higher price).

⁶ The 3% Reduced gave the same interest as the 3% Consols, and were transacted at similar prices. In practice, an investor had to pay slightly different prices for them, depending on the different timing of their half yearly interest payments.

At the beginning of the 19th century, Ricardo and his colleagues of the Stock Exchange were often unhappy when a new Loan was organised, because the market for such Loans was dominated by a few big bankers and merchants. When these obtained the right to distribute the shares in the Loan, the distribution was often unfair against ordinary members of the Stock Exchange and other ordinary subscribers, because of power abuse and favouritism (Sraffa 1955b: 79-80). In 1806 the members of the Stock Exchange tried to improve the situation. A few prestigious members formed their own consortium that would make a bid for the contract of the March 1806 Loan. One of them was David Ricardo. In this way his career entered a higher phase, and it revealed his already exceptional financial wealth, because being a Loan contractor was possible only if the government recognised someone's excellent financial standing. In 1806 the big names like the Goldsmids and the Barings were still the successful bidders, but in 1807 the newspapers reported for the first time that the new Loan contract went to the consortium of "Barnes-Steers-Ricardo".

2.2. *The unknown fourth man in the Barnes-Steers-Ricardo consortium*

Sraffa enjoyed researching detective-like problems, and he solved several cases in his Ricardo edition. Unlike Edwin Cannan (1919: xlii), Sraffa was able to find the correct identity of the important anonymous witness, denoted 'Mr. —', before the Bullion Committee in 1810: it was not Nathan Mayer Rothschild, but John Parish, junior (Sraffa 1951a: 427-434). Unlike James Bonar (1923), Sraffa found the correct identity of the "Ingenious Calculator" who was able to compute the "secret" quantities of cash and bullion of the Bank of England in 1797: the calculator was not Thomas Tooke, but William Morgan (Sraffa 1951b: 415-418).⁷

Another detective problem remained unsolved. Many historians have described how Ricardo, in consortium with John Barnes and James Steers, put in a winning bid for the Loan contract in 1807, and for all Loans from 1811 to 1815.⁸ The first time, in March 1807, more than two hundred subscribers on the Barnes-Steers-Ricardo list were positively surprised by the unusually competent, just and equitable way the Loan was distributed among the subscribers. They organised a special meeting, and unanimously decided to thank Ricardo and his co-contractors, by presenting them with a precious Silver Vase. The corresponding letter of thanks enclosed a "List of Subscribers to the Four Vases Voted to The Contractors". Many details can be found in Sraffa's edition of the Ricardo correspondence (Sraffa 1955c: 125-128). However, an unsolved problem remains: why FOUR vases instead of three? Who was the unknown fourth man in the Barnes-Steers-Ricardo consortium? Sraffa does not solve this problem. He mentions:

Of the four, only John Barnes and James Steers, besides Ricardo, are named in the contemporary newspapers. (Sraffa 1955c, 125n1)

In their classic history of the London Stock Exchange, Morgan and Thomas (1962: 49) signal the same open problem, and conclude that "only three of the names survive". The expression

⁷ See some other examples in Gehrke (2010).

⁸ Both John Barnes and James Steers regularly appear in Sraffa's Ricardo edition (6: 112n; 10: 79-82, 123-125).

“Barnes-Steers-Ricardo” also reappears often in the newspapers for Loans after 1807. Ricardo loyally seemed to choose always the same partners when bidding for future Loans, until John Barnes died on 24 January 1815.⁹ This explains why the Waterloo Loan of 1815 was taken by Steers-Ricardo only. Then James Steers died on 31 July 1817.¹⁰ Hence in 1819 Ricardo’s rather surprising once-only return to bidding for a Loan used a family list, under the name of “David Ricardo and Brothers”. In 1819 none of the competitors could challenge the very risky bid of Nathan Mayer Rothschild, who clearly wanted his first bid for a British Government Loan to be the winning one, even though it probably was not adding to his already large fortune.

To find the identity of the mysterious fourth member of Barnes-Steers-Ricardo, I go back to the end of February 1807, when several newspapers provided a few details about a meeting in Downing Street, where Lord Grenville (Prime Minister) and Lord Henry Petty (Chancellor of the Exchequer) met the representatives of the candidates for the new Loan that would be launched in the beginning of March 1807. In this context most newspapers use the standard expression “Barnes-Steers-Ricardo”, but the *Morning Chronicle* of 28 February 1807 (p. 3) mentions “C. and J. Steers” instead of simply “Steers”.¹¹ Apparently not one, but two members of the Steers family seem to be involved!

The complete first name of C. Steers, and his exact relation with James Steers, can then be identified by combining the partial information given by several publications. *The Gentleman’s Magazine* of August 1817, p. 185, mentions the death of James Steers on 31 July 1817, and locates him in Bloomsbury (Bernard Street). The *Genealogist* (1878, pp. 186-187) also mentions a James Steers of Bloomsbury, who died on the same day; here the context is an unsigned entry “A Pedigree of the Family of Kent, and their Descendants”, in which *The Genealogist* provides a list of the twelve children of a certain Susannah Kent and William Steers: their fourth child was called John William Steers, the sixth was Charles Steers (of Bloomsbury) and the eleventh was James Steers (of Bloomsbury). More evidence about Charles and James can then be obtained from the diaries of the English painter Joseph Farington. He died in 1821, and hundred years later his diaries were auctioned off. The diaries received wide attention because of their interesting descriptions of the London world of art, upper class society news, and British politics, the Napoleonic wars, etc., The diaries were published in book form under the editorship of James Greig (see Farington 1922-1928). Like nearly all wealthy men, Farington too invested in Consols and related securities. To this end, he used *the Steers* (note the plural!) as his brokers (Farington, vol. VI, p. 57, editorial note). A diary entry of 2 May 1810 mentions:

⁹ See *The Gentleman’s Magazine* February 1815, p. 185; *The Monthly Magazine*, March 1815, p. 176.

¹⁰ See *The Gentleman’s Magazine*, August 1817, p. 185.

¹¹ See also *The Star* of 28 February 1807 (p. 3). Magazines and regional newspapers often copied earlier reports of London newspapers. In 1807 a reference to “C. and J. Steers” can also be found in the *Hull Packet* (10 March 1807, p. 4). In the context of the unsuccessful bid for the Loan of the next year, a reference to “C. and J. Steers” appears in the *St. James Chronicle* (26 May 1808, p. 4), *Bell’s Weekly Messenger* (29 May 1808, p. 9), *National Register* (29 May 1808, p. 350), *London National Register* (30 May 1808, p. 13), *Kentish Weekly Post* (31 May 1808, p. 3).

Steers I met today. He told me His Brother Charles who died lately after having been sometime in a state of insanity, had He lived never cd. have recovered.— James Steers returned to the Brokery business abt. a month ago (Farington, vol . VI, p. 54)

Note that most Steers references in the Farington diary refer to John William Steers, because of their joint interest in art. The above quotation seems to describe a conversation with John William Steers about his brothers James and Charles, and it suggests that Charles died in April. This is confirmed in *The Gentleman's Magazine* of April 1810, p. 397. In its traditional long chronological section of “obituaries, with anecdotes, of remarkable persons” (pp. 384-398), the magazine has an extremely short notice, in the list for 8 April, on the death of *Charles Steers, esq. of London, stock-broker*. Unlike for tens of other deaths, no anecdotes about Charles Steers are given, but the information is sufficient to establish that Charles Steers is the unknown fourth man.¹² Ironically, then the standard expression “Barnes-Steers-Ricardo” is less incomplete than readers of Sraffa's Ricardo edition might think.

2.3. Ricardo's first Loan contract in 1807

Compared to modern standards, it is not only the old British pound-shilling-pence system that looks rather complicated. The British way of launching Loans too was surprisingly sophisticated. Usually a new Loan consisted of a package of three different items. For example, on 27 February 1807, the Chancellor of the Exchequer (Lord Henry Petty) announced a Loan of £14,200,000, starting on 3 March 1807. The Chancellor proposed to give, for every £100 advanced, the following three items:

- £70 Reduced (three percent annuities), commencing interest from April 5, 1807
- £70 Consols (three percent annuities), commencing interest January 5, 1807
- £ B of Navy annuities (five percent), commencing interest January 5, 1807, *the value of B to be specified by bidding*

At first sight it might look strange that, for every 100 paid, the government offered a basket of bonds with a total nominal value of much more than 100, but the Consols and the Reduced were perpetual annuities with only 3% nominal interest. Due to the war they were quoted much below par (around 62) in March 1807, because the ruling market rate of interest for such perpetual annuities was around 5%.

Submitting a bid required some complex calculations. Of course, the current and expected future market price of the three items in the Loan package played a crucial role, but other factors were important too. The Loan could be paid in ten monthly instalments, the first on 6 March 1807, and the final one not in December 1807 but on 15 January 1808. Those who paid in the whole on or before 12 November 1807 obtained a discount at the rate of 5 percent per

¹² There are numerous Steers families on genealogy websites, but now we know the complete names and exact dates of death, we can be sure that the relevant stock-brokers are Charles Steers (19 June 1748 - 8 April 1810) and James Steers (3 September 1756 - 31 July 1817). See <http://familytree.chasegray.co.uk/3318> .

annum from the day of full payment to 15 January 1808. Note also that the Consols and the Navy annuities started generating interest already from 5 January (hence two months extra), and the Reduced from 5 April, even if an investor still had to pay several monthly instalments. Moreover, the first half year's interest was free of tax.¹³

Taking into account all the above subtle details and other considerations, the would-be contractors went to Downing Street on the morning of 3 March 1807, and delivered their value of B in a sealed envelope. When the envelopes of four competing consortia were opened, the results were as follows:

| | |
|--|-------------------|
| - Barnes, Steers and Ricardo | B = £ 10 12s. 0d. |
| - Goldsmid and Co. | B = £ 11 3s. 0d. |
| - Baring and Co. | B = £ 11 8s. 0d. |
| - Robarts and Co. | B = £ 11 17s. 6d. |

The government selected its cheapest possibility, i.e., the lowest value of B. Hence Barnes-Steers-Ricardo, for the first time, obtained the contract with the government. The package of the £70 Consols, £70 Reduced and 10 £ 12 s Navy annuities, was called the Omnium (“all together”). The average price of the Omnium on the first day (3 March 1807) was £101, which means a premium of 1 per cent (see Table 2 in the Appendix). In March-April-May-June it stayed at 1 to 2 premium, then fluctuated several months around par, and finally in its last months was around 2 per cent premium again. Hence, Ricardo's first Loan contract most probably generated a small, but positive *rate* of profit for him. His *total* profits are unknown, because many of his transactions were not registered.

The Loan of 1807 confirmed his reputation as a trustworthy member of the Stock Exchange, because of the fair distribution of the Loan among the subscribers. In earlier years, the members of the Stock Exchange were often disappointed about their treatment by the consortia of bankers or merchants. Sometimes they had been told by them that their subscription (at 100) was not available. Often the real reason was that the Omnium had opened above par at the Stock Exchange, and that some contractors then preferred to keep a large share of the Loan for themselves. Such unfair behaviour was not illegal. Another controversial point was that some transactions were registered, but many others were not, which often creates problems for historical studies.

2.4. *The problem of unregistered transactions*

Suppose an investor in the 1807 Loan paid £1,000 Omnium in full. Then he became the registered owner of three different bonds: £700 Consols, £700 Reduced and £106 Navy annuities. This was registered in the Stock Ledgers of the Bank of England and can still be

¹³ I take the details of the terms of the Loan, and the values of the bids of the competing consortia, from Grellier and Wade (1812, Appendix, p. 3). See also the *Morning Chronicle* of 4 March 1807.

checked in its archives today. For example, in this way Ricardo in 1807 “purchased by subscription” £540,000 of Consols. Of course, he could also acquire identical Consols by “purchasing them from an existing holder”, and again this was registered by the Bank of England. By the latter method Ricardo in 1807 purchased no less than £2,023,000. Note that Ricardo usually sold rather quickly. For example, on 31 December 1807 the registered balance of Consols in his hand was only £45,000.¹⁴

Many investors did not pay the Omnium in full immediately. When investors paid the 10% of the first monthly instalment, they received a sort of temporary certificates, called *Scripts*. These were receipts that indicated how many instalments still had to be paid.¹⁵ Scripts could be bought and sold without registration in the Stock Ledgers of the Bank of England. *In this way millions of sterling of a new Loan were bought and sold on the Stock Exchange without leaving any trace in the official archives.*

Transactions in Scripts were not only unregistered; they also provided opportunities for huge speculative profits (or losses). If, for example, a Loan contractor had paid the first instalment of £10, he obtained Scripts mentioning that he still had to pay £90 to obtain £100 of the Omnium. Suppose now that the Omnium after one or two weeks rose to 7% premium, and thus had a market value of £107. In that case the equilibrium value of the above Scripts was £17 instead of £10 (if one could buy them at £16, and then paid the remaining instalments of £90, one obtained the Omnium for a total cost of only £106, thus lower than the market price of £107). In this context, the fewer instalments had been paid, the more suitable the Scripts were for speculation. In my example above, if the premium on the Omnium was 10%, and only one instalment had been paid, the Scripts would be worth £20 instead of £10, hence doubling their value. Such rules of the game led many risk taking speculators to big gains or huge losses.

Many legends on Ricardo’s Waterloo profits fail to emphasise that a large part of the transactions on the Stock Exchange involved the not fully paid up Omnium and Scrip, and that such transactions were not subject to a sort of official registration. The absence of registration implies an important lack of direct information on the government Loans in which Ricardo was involved. The Ricardo papers (now in the University Library at Cambridge) provide details on Ricardo’s purchases of land, of his loans on mortgage, and of transactions in French stocks after 1817. However, as emphasised by Sraffa (1955b: 71-72), Ricardo’s transactions in Omnium and many speculative dealings in Consols and other bonds, are not visible in the Ricardo archives, and were not registered in the archives of the Bank of England. Hence, when discussing Ricardo’s profits and the credibility of the Waterloo legends, we may not create the impression of having 100% direct evidence, but we must try to

¹⁴ In this paragraph, I concentrate on three percent Consols. Ricardo also traded in several other securities. Note that the £540,000 Consols “purchased by subscription” mentioned above, could have been obtained in three ways: via the Loan of 3 March 1807, or via a small Irish Loan of 23 March 1807, or via paying up in full the 1806 Loan only in the year 1807; the latter was possible, because the last instalment of the 1806 Loan was fixed at 16 January 1807 (Grellier and Wade 1812, Appendix, p. 2). Ricardo’s purchases mentioned above were computed by Sraffa (1955b: 72).

¹⁵ Robert Hamilton (1818: 311-313) provides a very detailed explanation of the concepts of Omnium and Scripts, using the data of the June 1813 Loan. Note that Ricardo was one of the contractors for this Loan.

use indirect evidence, based upon common sense, hints in letters, newspapers, official price statistics, private documents in archives of some of Ricardo's contemporaries, etc.

In Tables 3a and 3b in the Appendix, I consider all the Loans in which Ricardo was involved as one of the co-contractors. Then I compute how much percent of the Consols and the Reduced in the total package of that Loan, were purchased by Ricardo by subscription. Alas, the percentage is rather different for Consols and for Reduced, and also different per year. If all these known percentages had been nearly equal to x percent, I could have guessed that the unknown personal share of Ricardo in every Loan was also around x percent. However, such an indirect method seems to produce rather imperfect results. We still do not know how much Ricardo subscribed to every Loan in his own name, how much all his co-contractors subscribed in their own name, and how much was taken by the hundreds of "ordinary" investors who were on the lists of the different winning consortia. There is one exception: thanks to Anthony Twist (2002: 173), we know that in another consortium, one of the co-contractors, John Julius Angerstein, was a "very large subscriber in his own name, averaging some £1¼ million per issue; though he may in part have been acting as a nominee." This information was contained in Angerstein's private notebook, but no such documents on Ricardo seem to be extant.

2.5. A bad 1810 Loan for Baring-Angerstein-Goldsmid

For several years, Barnes-Steers-Ricardo failed to repeat their bidding success of 1807. Just like in 1806, they were unsuccessful in 1808, 1809 and 1810. In the early 19th century, the competition was tough and included some of the biggest names in the history of finance, like the Barings (first Francis Baring, later his son Alexander), and the brothers Benjamin and Abraham Goldsmid.¹⁶ In 1808 Benjamin Goldsmid was in poor health, and often depressed, and hanged himself at his house. Abraham tried to overcome this blow, continued business, took the May 1809 Loan on his own, and the May 1810 Loan together with the consortium of the Barings and Angerstein. However, Abraham's situation became more problematic in September. His old consortium partner Francis Baring died of natural causes on 11 September, Abraham himself was beaten down by an over-driven ox in Lombard Street, and the 1810 Loan performed badly. It fell below par, to more than 6 percent discount. All these misfortunes increased Abraham's depression, and on Friday morning 28 September 1810, Abraham shot himself. When the news became known in the City, Omnium immediately fell to 10 percent discount, and both the government and the Bank of England resorted to extraordinary measures to overcome the panic at the Stock Exchange.

In his *Economica* article, Cope (1942) provides many additional details on the career of the Goldsmids. In this context, Cope also supports the criticisms against Ricardo that were expounded most explicitly in the *Quarterly Journal of Economics* (QJE), by Norman Silberling (1924). For example, Silberling, and later Cope, and many of their contemporaries,

¹⁶ The Barings were often called "the sixth great power in Europe", besides England, France, Prussia, Austria and Russia. See the book with this title by Ziegler (1988).

claimed that Ricardo's public pleas for a resumption of convertibility of bank notes, were driven by personal interests, and would have forced the Bank of England to restrict its discounts, and thereby would have increased Goldsmid's problems. Clapham (1944), in his history of the Bank of England, supported Silberling, but the review of his book by Jacob Viner (1945: 66-67) refuted him.¹⁷

Note that Viner wrote many letters to Sraffa, from the 1930s on, during Sraffa's long production process of his Ricardo edition. Sraffa greatly respected Viner's deep knowledge of Ricardo, and vice versa. Sraffa's esteem for some other writings on Ricardo, like those of Jacob Hollander and Norman Silberling, was much lower.¹⁸ Silberling accused Ricardo of leading a bearish clique, i.e. a faction of the Stock Exchange that systematically tried to depress stock prices and derived extra profits from it. Silberling seemed to neglect that Ricardo himself competed for several Loans, and in his years of a winning bid hoped the Omnium to rise. Already in 1933 the Viner-Sraffa correspondence questions Silberling's QJE article (see Sraffa D3/11/74:15). More than twenty years later, an editorial note in the Ricardo edition by Sraffa (1955b: 91-94) destroyed Silberling's criticism of Ricardo. If Sraffa's well-documented note had been submitted as a QJE comment, it could have obtained the same status as his earlier QJE comment about Einaudi on Ricardo (Sraffa 1930). However, Sraffa's comment on Silberling, and many other new insights on Ricardo, remained unknown for decades, until their publication in the Ricardo edition finally made them available to historians of economic thought in the 1950s.

2.6. Ricardo's clever handling of a mediocre Loan in 1811

After their losses of 1810, Baring and Angerstein made a risk averse offer for the 1811 Loan, and were outbid by Barnes-Steers-Ricardo and by the consortium of Abraham Robarts and William Curtis. The Loan opened on 20 May 1811 at a small premium (see Table 2 in the Appendix), but went slightly below par after one month. Ricardo's friends James Mill and Jeremy Bentham were worried about Ricardo's investment, but he reassured them:

there is one security which I always take on these occasions, and which I consider by far the most important. - I play for small stakes, and therefore if I am a loser, I have little to regret. (6: 52; Ricardo to James Mill, 26 September 1811)

Further evidence on Ricardo's caution will be given in later Sections, where I suggest that he was a quick seller, contented with small profit rates, and he perhaps sold a large part in 1811 at a small premium in the first days after the opening (like he did in 1815). The 1811 Loan surely did not endanger Ricardo's wealth: in the same letter of 26 September 1811 he also informed Mill that he would soon move to a better house (Upper Brook Street, Grosvenor Square) and that "the price was enormous".

¹⁷ Samuel Hollander (1979:499) also refutes Silberling.

¹⁸ On Sraffa's editorial difficulties with Jacob Hollander, see Gehrke and Kurz (2002).

2.7. Ricardo's profitable involvement in five big British Loans between 1812 and 1815

In 1812 the government was desperate to get a huge amount of additional war finance, and organised a Loan of £ 22,500,000, nearly twice as much as in 1811. After the disappointing or mediocre performance of the 1810 and 1811 Loans, not a single consortium wanted to take up such a big Loan on its own. Instead of competitive bidding, all consortia tried to submit a common bid. The Prime Minister, Lord Liverpool, was unhappy about this collusion, and refused the first two offers of the consortia. He proposed an alternative that was cheaper for the government and ultimately all parties agreed. In this way the big 1812 Loan was divided between all three interested consortia:¹⁹

- Baring-Angerstein-Battye-Dawes-Ellis
- Barnes-Steers-Ricardo
- Robarts, Curtis and Co.

Most of the above names reappear in 1813, 1814, and 1815, in consortia that were always colluding to make one joint bid. Sraffa (1955b: 80-81), probably following Grellier and Wade (1812), refers to the first consortium in 1812 as "Battye and Co.", but this is misleading. The first consortium was not dominated by John Battye, but by Baring and Angerstein, who took a much larger share in the Loan than their partners. This is revealed in the small notebook in which Angerstein described the details of all the Loans from 1812 to 1815. He and Baring played an important role in all these Loans, and every time they made the same negotiated bid as Barnes-Steers-Ricardo and some other contractors. Some information from the Angerstein notebook was first published in 2002 in a remarkable doctoral dissertation by Anthony Twist. It turns out that these Loans were "highly profitable" for Angerstein (Twist 2002: 166). There are no similar notebooks by Ricardo, but it might be suggested that Ricardo's involvement in exactly the same Loans was equally lucrative. I emphasise that all five Loans started with a profitable premium (see Table 2 in the Appendix, and also Table 4, which provides additional details about the 1815 Loan), and that probably Ricardo immediately benefited from this by selling a large part of his Omnium. This seemed to be one of his risk decreasing tactics.

Studies on Ricardo's finances usually concentrate on 1815, the year of a record Loan of 36 million, but they seem to underestimate the importance of 1813, the year in which the government launched not one, but two Loans (June and November). In this way the total for 1813 was 49 million, hence much higher than the famous Waterloo Loan of 1815. In 1813 only two consortia had to divide the Loans of June and November. In both cases the names were:

- Baring, Angerstein, Ward, Barwis, Ellis, Trower and Battye
- Barnes, Ricardo and Steers

¹⁹ The difficult negotiations between the Prime Minister and the would-be contractors were reported in several newspapers, for example in *The Morning Chronicle* (17 June 1812), *The Times* (17 June 1812), and *The Caledonian Mercury* (20 June 1812).

Moreover, the two 1813 Loans generated record premiums. Both went to more than 30 percent premium in February 1814, a level never reached by the 1815 Waterloo Loan (see Table 2 in the Appendix). *I believe that especially these two very lucrative 1813 Loans stimulated Ricardo's plans to retire, and to become a country gentleman.* In 1814 he bought the Manor of Minchinhampton (Gloucestershire) which included the residence of Gatcomb Park plus more than 5,000 acres of land. David Weatherall was able to consult some family papers of the Sheppard family (the former owners) and other documents in Gloucester related to Gatcomb. The Deed of Covenant, drawn up in June 1814, opens as follows:

Whereas sometime in the year 1813 the said Philip Sheppard agreed with the said David Ricardo . . . (Weatherall 1976: 94).

This official document clearly shows that Ricardo's plans to become a country gentleman date from at least as early as 1813, two years *before* the Battle of Waterloo. The profits of the 1815 Loan were a big bonus at the end of his business career, but were not the cause of his retirement.²⁰

2.8. *Preparing for the 1815 Loan*

On 14 June 1815, four consortia, including Steers-Ricardo, signed the contract for the new Loan. For every £100 subscribed, the government offered the following package:

- £130 Reduced (three percent annuities)
- £44 Consols (three percent annuities)
- £10 four percent annuities

It was possible to pay in ten monthly instalments: first 10% to be paid 17 June 1815, last 10% on 15 March 1816. The sum of the market values of the three separate items above on 14 June 1815 was £101.15.2½, hence nearly 2% more than the price of £100 for the package. Taking into account a few percent extra discount for prompt payment in full, the Chancellor of the Exchequer estimated that the *bonus to the contractors* was nearly 4.5 % (Hansard 1815: col. 801-803).

In addition, it is often neglected that the stock prices on contract day were lower than one or more weeks earlier. Niles (1815: 67) computed the sum of the market values of the three separate items above for 8 June 1815, and the result was £107.10.6. Hence, if you sold these separate items on 8 June and bought them back separately again on the market on 14 June, you earned more than 5%. If you were a Loan contractor, you could replace these items via the Loan package, and earn the 4.5% extra bonus mentioned above. In this way you get a total of about 10 %. In his letter of 27 June 1815 to Malthus, Ricardo referred to this strategy, and

²⁰ See also Ricardo's letter to Malthus, dated 1 January 1814, which mentions a visit by Ricardo and his wife to Gatcomb (6: 100).

he suggested this was the main source of his profits in 1815: note the expression “*in the first place*” in the following:

I have been a considerable gainer by the loan; in the first place by replacing the stock which I had sold before the contract with the minister at a much lower price . . . (6: 233)

In a related context, Sraffa (1955b: 77-78) describes the strategies often used by potential contractors as soon as a new Loan was forthcoming; sometimes such an approach was called “preparing for the Loan”. It is likely that Ricardo and the other Loan contractors benefited from such preparation strategies also in June 1812 and June 1813 (the statistics in *The European Magazine* clearly show falling prices of Consols and Reduced in the weeks before the opening day of these Loans).

3. A risk averse Malthus under pressure from a risk taking Ricardo?

3.1 Samuelson's remarks on Ricardo and Malthus

According to Samuelson (1962; 2009), Ricardo provided insistent advice to Malthus just before the 1815 Battle of Waterloo:

The Duke of Wellington may have regarded the battle of Waterloo as “a damned near close-run thing,” but David Ricardo urged before the battle that his friend Robert Malthus go to the limit in holding British government bonds; and Malthus, a parson with small means and a convex-from-above utility function, lived to reproach himself for not having followed that advice. (Samuelson 1962: 8)

. . . David Ricardo's legendary advice to his friend Robert Malthus just before the 1815 Battle of Waterloo: “Invest now in British bonds, which will go up when Napoleon meets defeat at Waterloo.” Though tempted, Malthus didn't care to do so risky a thing. (See Sraffa, 1951, volume 7). Too bad for him. But why was Ricardo so confident? After the event, Britain's commander, the Duke of Wellington, said: The Waterloo victory was a close-run thing. Had the Prussian allies of Britain not arrived at the battlefield late in the day, things might have turned out differently. (Samuelson 2009: 25)

Here Samuelson referred to Volume 7 of *The Works and Correspondence of David Ricardo*, which presents the letters from the period 1816-1818. As Samuelson obviously discusses the earlier year 1815, he should have referred to Volume 6, which includes the correspondence from 1810-1815, or to Volume 10, which contains Sraffa's (1955b) report on Ricardo in business.

First, I will look at the information that was already available when Samuelson formulated the above statements. Then, at the end of this Section 3, I will mention the more precise data about Malthus's financial affairs which became available only recently, thanks to the archival research by John Pullen (2013), who was able to examine the bank accounts of Malthus which are still carefully preserved by Hoare & Co., Malthus's bank in London two centuries ago.

3.2 Information that Samuelson should have used

Samuelson created the impression that Malthus was a sort of newcomer who was put under pressure by Ricardo to take unpleasant risks on the unknown terrain of the Stock Exchange. However, Malthus had several years of experience in investing in government bonds. Like many other intellectuals of Ricardo's circle (James Mill, Jeremy Bentham, etc.), Malthus regularly conversed about the state of the latest government Loan. Consider the following extracts from letters in Volume 6 of *The Works and Correspondence of David Ricardo*:

I congratulate you on the rise of omnium. (6: 42; Malthus to Ricardo, 26 July 1811)

The first thing of a newspaper which is looked at every morning is the price of Omnium. (6: 48; Mill to Ricardo, 22 September 1811)

I am obliged to you for the interest you take in the price of Omnium, - it appears to be in a very thriving condition. (6: 85; Ricardo to Malthus, 29 August 1812)

I wonder as you do that the stocks have not felt the effects of Mr. Vansittart's vigorous system. (6: 92; Ricardo to Malthus, 24 March 1813)

The letter of 26 July 1811 above is the first in the Ricardo-Malthus correspondence that explicitly refers to the Omnium. There exist no earlier letters on that subject for the simple reason that their correspondence started only a few weeks earlier, in June 1811, just after their first meeting. Several years before he met Ricardo in 1811, Malthus was well acquainted with the problems of the British national debt and the associated government Loans. After becoming a close friend of Ricardo, Malthus used Ricardo's services for a transaction at the Stock Exchange, in the summer of 1814, when Malthus invested £ 1000 in the new Loan:

Another year I hope I shall better understand your wishes respecting your taking a share in the Loan. In making the sale for you which I have done I have by no means prevented you from having an interest in the success of the Omnium during the year, for I can without the least trouble repurchase your £ 1000 ... If you are so inclined you will write accordingly. If I do not hear from you I shall not do any thing. (6: 107-108; Ricardo to Malthus, 26 June 1814)

I think as I am at such a distance I will not begin dealing afresh in the Loan. (6: 110; Malthus on holiday in Bangor, writing to Ricardo on 6 July 1814)

I found on calling at Hoares that you had paid in 50£ to my account. I am much indebted to you for the trouble you have taken for me, and indeed almost feel as if you presented me with 50£, as I fear it was taken from what would otherwise have been your own. (6: 116; Malthus to Ricardo, 5 August 1814)

To avoid misunderstandings in the future, both friends agreed about the exact investment to be made by Malthus when the next Loan would be launched at an unknown date in the distant future. :

I have always regretted that I did not sooner know your wish of being a subscriber to the last Loan. In the list for the next I will not fail to ask you what sum you would like to be interested in. (6: 119; Ricardo to Malthus, 11 August 1814)

I am truly sensible of your kind offer about a future loan, and if you are sure it would not be inconvenient should like to have about £ 5000. (6: 122; Malthus to Ricardo, 19 August 1814)

Note that all the letters quoted above were written in 1811-1814, thus *in the years before the Battle of Waterloo*. They clearly show that Ricardo in 1815 did not act as an importunate salesman who put pressure upon an inexperienced new customer. On the contrary, here Ricardo was humbly fulfilling the old wishes of a good and competent friend, without even asking the usual commission (see the letter of 5 August 1814 above: normal customers would receive less than 50£ due to transaction costs). Moreover, the investments by Malthus formed only a negligible part of Ricardo's immense transactions.

Although both Ricardo and Malthus belonged to the most prestigious intellectuals of the British upper class, it is well-known that their private wealth was not comparable. In February 1815, Malthus himself made a rare written statement about his own financial situation in his pamphlet *The Grounds of an Opinion on the Policy of Restricting the Importation of Foreign Corn*. He described the implications of free import of corn for different social groups in Britain, and he suggested that his plea for import restrictions was not generated by his own financial self-interest. After investigating the effects on the labouring classes, the farmers, and the landholders, Malthus wrote:

We now come to a class of society, who will unquestionably be benefited by the opening of our ports. These are the stockholders, and those who live upon fixed salaries.*

*It is to this class of persons that I consider myself as chiefly belonging. Much the greatest part of my income is derived from a fixed salary and the interest of money in the funds. (Malthus 1815: 36)

This again confirms that Malthus was well acquainted with the nature of investing in government bonds (“the funds”), long before the special Waterloo situation in June 1815.

The well-known Malthus biography by Patricia James (1979) suggests it is difficult to find out how much money Malthus had. From her research we can gather the following information (James 1979: 102, 176, 426). In 1803 Malthus was instituted non-resident rector of the parish of Walesby, a sort of purely honorary appointment generating a yearly income of about £300, from which he paid £70 to the curate who served the parish (these amounts were slightly higher in later decades). In addition, two years later Malthus was appointed professor of history and political economy at the East India College, which implied a salary of £500 per year. From all this, it is possible to guess that Malthus’s total income might have been approximately £1000 per year. Because of his works on population, Malthus became very famous, but James (1979: 426) suggested that Malthus may often have been embarrassed and annoyed by the widespread misunderstanding that being a very famous author automatically means being very rich.²¹ When Malthus died in 1834, his will was brief and uninformative, as he simply left all his possessions to his wife.

Contrary to the remarks by Samuelson (1962: 8) quoted above, it is not true that Malthus after Waterloo “lived to reproach himself” for not having followed an investment strategy “advised” by Ricardo. In point of fact, the Malthus-Ricardo correspondence above clearly shows that Malthus made his own decisions. Without any pressure from Ricardo, Malthus, already at a very early stage, in August 1814, asked Ricardo to reserve £5000 for him in the next Loan, which was ultimately launched at 14 June 1815, four days before the Battle of Waterloo. A few days before the Battle, Malthus asked Ricardo to sell his share of the Loan

²¹ An entry of 14 September 1820 in the diary of Thomas Moore, the Irish poet and song writer, reads: “Called on Gallois. Told me his surprise at hearing from Malthus that all his works had not brought him more than a thousand pounds.” (Moore 1853, vol. 3, p. 148). See also Bonar (1885: 416) and Keynes ([1933] 1972: 85). The information by Moore, Bonar and Keynes might be right or wrong, but it is not contradicted by Malthus’s bank accounts at Hoare and Co., where only a total of £250 is visible, from two payments which were probably made by his publisher Joseph Johnson (Pullen 2013: 30 n12).

immediately after the opening, because Malthus wanted to avoid the negative effects of a possible victory of Napoleon:

The Champ de Mai has passed off so well for Buonaparte, and I am so much inclined to think that he will make a formidable resistance, that I expect the Stocks will be rather lower than higher some months hence. I may very likely be quite mistaken; but under this impression I should naturally be disposed to take an early opportunity of realising a small profit on the share you have been so good as to promise me. I will not however do this if it is either wrong, or inconvenient to you, and whatever may occur, you may depend upon it, that I shall always, be sensible of your kindness, and not disposed to repine (6: 229; Malthus to Ricardo, 11 June 1815)

Ricardo faithfully executed the request by Malthus, and was able to sell the £5000 bonds at nearly 3% premium, hence generating a quick profit of nearly £150 for Malthus. If Malthus had waited until he knew the favourable outcome of Waterloo, he might have gained £300 or £400 more, but surely this relatively small extra amount would not have created a significant change in his standard of living. Malthus was satisfied, and thanked Ricardo:

...how much obliged to you I am for your kindness about the Loan, and the trouble you have taken for me. Should the Allies be successful at the commencement of the campaign, Omnium will certainly rise very considerably; but on the other hand if Bonaparte should begin prosperously, I think there might be a panic which would occasion a rapid fall; and tho on the whole the probabilities of a rise are perhaps the greatest, yet I am fully and entirely satisfied with what you have done and beg to thank you sincerely. (6: 231; Malthus to Ricardo, 19 June 1815)

When writing this letter on Monday, Malthus and all other people living in Britain were unaware that Napoleon had been beaten at Waterloo on Sunday evening. In 1815 such information needed several days to travel slowly from Belgium to London, “with no steam power or electricity to hurry it along but propelled only by the muscle power of men and horses and by the wind in the sails of ships” (Cathcart 2015: xi).

Samuelson (and many other authors) create the impression that in 1815 there was a sort of maximal difference between Malthus’s extreme risk aversion and Ricardo’s extreme propensity to “go to the limit” (to use Samuelson’s expression quoted above). My arguments above have showed that Ricardo had not urged his friend to “go to the limit”. What is more, neither did Ricardo himself go there. Ironically, Ricardo sold a part of his own huge share of the Loan before knowing the favourable outcome of the Battle. He had invested all his money in the Loan, plus an extra amount he had taken over and above his capital. Such a strategy was possible, because the investors needed to pay only 10 percent immediately in June 1815 and the rest in nine other monthly instalments, in this way postponing full payment until March 1816 (Niles 1815: 67). Ricardo did not hold this extra amount “to the limit”. On the contrary, this risky “uncovered” portion of his investment he sold very quickly. The result of this was:

a moderate gain on such part of the loan as I ventured to take over and above my stock. This portion I sold at a premium of from 3 to 5 percent and I have every reason to be well contented (6: 233; Ricardo to Malthus, 27 June 1815).

Given the evolution of the prices of the Omnium in June 1815 (see my Table 4 in the Appendix), such sales with 3 to 5 percent premium must have occurred between 14 and 21 June, hence *before the official news from Waterloo had reached London*. Ironically, Ricardo's sales at 5 percent most probably occurred on 21 June, a few hours before Wellington's messenger informed London about the victory at Waterloo, just before midnight. At the start of the next day the premium rose to 9 percent. If Ricardo had taken maximal risks, he would have waited until a few days after the news from Waterloo, when the premium rose to 13 percent (but then it went down a few percent again). Malthus commented:

I was disappointed to find that you had not sold any of your omnium at a higher price than five per cent premium. I was in hopes that you had got some of the high prices, tho I had missed them." (6: 235; Malthus to Ricardo, letter of 16 July 1815).

The conclusion is clear: in the Waterloo case, both Malthus and Ricardo could have obtained a larger rate of profit if they had been less risk averse. Samuelson misleadingly exaggerates their difference in risk aversion. Of course, we should not confuse their profit rate and their amount of profits. As on some other occasions, Ricardo was a great gainer by the Loan, in the sense that a moderate *rate* of profit on his very large investment generated an impressive amount of *total* profits.

3.3 Recent archival finds on Malthus's finances by John Pullen

All the above information could have been used by Samuelson (2009), but it was neglected. More recently, important additional information on the financial affairs of Malthus finally became available thanks to the detailed research of John Pullen (2013) in the archives of Hoare & Co. in London, where Malthus conducted most of his banking transactions.

The Hoare bank accounts show that Malthus, from 1806 onwards, received interest on government securities with a yearly average of over £422, thus nearly the same amount as his professor's salary of £500. His investment portfolio was dominated by three percent Consols and Reduced annuities, the favourite securities of most investors in that period. Pullen (2013: 22) even discovered the exact amount of profits obtained by Malthus after Ricardo had quickly sold Malthus's share of £5000 of the 1815 Omnium: a credit entry in Ricardo's name shows that Malthus realised a profit of £131.5.0, which means that Malthus's Omnium was sold at a premium of $2\frac{5}{8}$. Pullen (2013: 19) showed that Malthus's total holdings of government bonds reached a maximum face value of over £17,000 in 1826. There is no evidence then for Samuelson's (1962: 8) claim that Malthus "lived to reproach himself" for not having made a few hundred pounds extra after the Battle of Waterloo.

4. Unethical use of inside information and market manipulation?

4.1 Inside information

Samuelson suggested that Ricardo possessed a special information agent in Waterloo:

Facts gathered by Piero Sraffa, Ricardo's biographer, seemed to be these. Ricardo did have an observer near the battlefield. He by fast horse brought the news to the nearest harbor where a packet ship was on the wait. So very early Ricardo in London did know the outcome, and did personally convey the news to the English government. (Samuelson 2009: 25)

According to Colin Read (2016: 15-16), Ricardo used an information network that provided relevant news as fast as possible to him and his subscribers "much in the manner of Michael Bloomberg in the 21st century." In contrast to the assertions by Samuelson and Read, I could not find evidence for this anywhere in Sraffa's published writings or in Sraffa's files on Ricardo in the archives in Cambridge.

It is extremely unlikely that Samuelson obtained some "secret" information in his personal conversations with Sraffa. Samuelson made several visits to Cambridge, U.K., and had several meetings with Sraffa there. When the first volumes of Sraffa's Ricardo edition appeared in 1951, Sraffa put the name Samuelson on the list of presentation copies (Sraffa D/3/11/83:77). In this context, Sraffa surely told Samuelson about his Ricardo research, but it is highly unlikely that Sraffa's conversations with Samuelson delivered important information that Sraffa never wrote down in his Ricardo edition or in his unpublished papers. We can safely assume that Samuelson's (2009) statements on inside information are not based upon oral or written information by Sraffa. Samuelson's remarks on inside information lack historical evidence. An important additional reason for this conclusion is that, if Ricardo would have possessed early information about Waterloo, his actual sales in the stock market on Wednesday 21 June 1815 would have been completely stupid, because the next day the Waterloo news became known generally and stock prices went up.

Newsgathering in 1815 was extremely slow and unsophisticated. Brian Cathcart (2015), in Chapter 3 of his book *The News from Waterloo*, provides abundant details about this. He describes the many contrasts between the press of today and of the early 19th century, showing how the 1815 newspapers faced completely different technological, political and financial constraints, which explains why it was normal that not a single British newspaper reporter was present in Waterloo or in Wellington's headquarters. The press used to wait for the arrival of the official government reports in London.²²

The logistic support for Ricardo was even more primitive. He was not the head of a big bank or a complex merchant firm with many employees. The personnel structure of his business was always very simple. In 1815 he employed just one person, his clerk William Arthur

²² A typical British newspaper of the early 19th century contained only four pages, and was heavily taxed by the government. Hence prices were high and circulations were low. For example, in 1801, *The Times* had a sale of between 2,500 and 3,000, and *The Morning Chronicle* between 1,500 and 2,000 (Wadsworth 1955: 7).

Wilkinson, who was the eldest son of Ricardo's brother-in-law Josiah Henry Wilkinson. The young William provided administrative support for Ricardo's activities as a jobber on the Stock Exchange in London. On 31 March 1815, thus several months *before* the Battle of Waterloo, Ricardo wrote to his brother-in-law about William's future career:

Since I have had it in contemplation to leave business, or to carry it on in a very limited way, I have been thinking about some arrangement about William. He has little to do for me for some months and if I carried my intention into execution he would have still less to occupy his time at the Stock Exchange (10: 116)

Ricardo made a special effort to secure William's financial future. When this was arranged, dissolving Ricardo's business as an individual stockjobber would be a relatively easy matter: "lock the door of his office at 16 Throgmorton Street and leave Babylon" (Henderson and Davis 1997:373).

4.2 Confusing the information networks of two Masters R. (Ricardo and Rothschild)

In the many writings about huge Waterloo profits in the stock market, the most frequently mentioned protagonist is not David Ricardo, but Nathan Rothschild. Contrary to Ricardo, Nathan Rothschild and his brothers managed a sophisticated financial business, which in 1815 included one of the best information networks in Europe. These networks were discussed in numerous articles and books, containing both facts and myths. Sometimes Nathan Rothschild is simply called Mr. R. For example, the *St. James Chronicle* of 8 July 1815 (p. 4) writes:

The stockholder (Mr. R.) who availed himself of his priority of intelligence respecting the victory of Waterloo, by the purchase of Omnium to the amount of near a million sterling, at 3¼ percent premium, sold out to nearly as great an extent, at 12 ½ percent premium, in the early part of last week.

A few days later a similar paragraph appeared in several other London and regional newspapers, and the debates over the influence of Waterloo profits on the making of Rothschild's fortune continued for more than two hundred years. Brogden (1894: 83) quoted the above paragraph on Mr. R. in his discussion of Rothschild's fortune, and suggested that Rothschild's courier network also provided him with early and profitable information on Napoleon's escape from Elba in February 1815.

Sometimes the newspapers and magazines of 1815 were very vague on their sources and sloppy in copying. I found one and only one magazine that replaced "Mr. R." by "Mr. Ricardo" in the paragraph quoted above: *The Literary Panorama and National Register* of August 1815 (column 842) writes:

The Stockholder (Mr. Ricardo) who availed himself of his priority of intelligence respecting the victory of Waterloo . . .

This magazine seems to transform Rothschild legends into Ricardo legends, just like Samuelson and Read. Such transformations become even more remarkable with respect to the mythical million sterling of Waterloo profits and the spreading of false rumours.

4.3. A million sterling of Waterloo profits for Rothschild?

A widely read pamphlet of 1846 on Rothschild presented an extreme version of the Rothschild story. The title page of the short pamphlet used the pseudonym *Satan*, but page 33, at the end of the pamphlet, revealed that the text was written by Georges Dairnvaell, an anti-Semitic left wing French pamphleteer. Dairnvaell (1846: 11-12) claimed that Nathan Rothschild himself was a privileged spectator in Waterloo. As soon as he saw with his own eyes how Napoleon was losing the battle, Rothschild hurried to the harbour of Ostend, where several sailors refused to cross the North Sea, because of the life-threatening stormy weather. Only a huge quantity of gold could urge some men to go with Rothschild in a boat to England. In this way Nathan Rothschild arrived in London with a lead of 24 hours on Wellington's official messenger. Still according to Dairnvaell (1846: 12), Nathan and his brothers then in a single big coup reaped "twenty million" on the Stock Exchange. If we suppose the numbers in Dairnvaell's French pamphlet are always expressed in French francs, the gain by Rothschild is nearly equivalent to the mythical *one million sterling* that Ricardo earned, at least according to some popular (but never proven) rumours, alluded to in the Ricardo obituary on the front page of *The Sunday Times* of 14 September 1823.

Despite its fantasies, Dairnvaell's 1846 pamphlet was quickly translated into several languages, and widely cited in the anti-Semitic and the anti-capitalist literature. Even Friedrich Engels himself immediately showed his support for the pamphlet in a letter to *The Northern Star* (published 5 September 1846):

A working man has written a pamphlet against the head of the system, not against Louis-Philippe, but against "Rothschild I, King of the Jews". The success of this pamphlet (it has now gone through some twenty editions) shows how much this was an attack in the right direction (Engels 1846: 29).

Neither Engels nor Dairnvaell provided historical statistics in their text. Note the existence of two separate legends, one on Rothschild and one on Ricardo, both telling a similar story about a single investor with unique inside information, gaining one million of Waterloo profits. The non-uniqueness of the central character in such legends does not increase their credibility.

4.4 Creation of false rumours

According to Samuelson, the huge profits gained by Ricardo were not only due to inside information but also to Ricardo's tricky way of generating an unwarranted sales panic. The following quotation from Samuelson suggests substandard behaviour of Ricardo, after he

should have obtained privileged early information on the British success at Waterloo; the exclamation mark and the italics are all Samuelson's:

It is interesting how Ricardo reacted to the news. On his customary chair at the Exchange, he *sold* (!) British Treasury stuff again and again. The other traders saw this, and suspecting that he would know the true story, they joined in the selling. Then, suddenly, Ricardo reversed course and bought and bought. It was his biggest coup ever . . . If not illegal, an ethical purist would have to fault Ricardo for in effect profiting from his own spreading of false rumors. In this millennium that might be something to criticize or even to litigate about (Samuelson 2009: 25).

When retelling this legend by Samuelson, David Warsh (2011) also refers to “the details adduced by Ricardo's biographer, Piero Sraffa”, but Warsh does not present exact bibliographical or archival references. In point of fact, Sraffa's writings and archives do not contain support for such Samuelsonian legends.

The above legend about Ricardo's market manipulation shows again a remarkable overlapping with similar myths about Rothschild. Consider, for example, the often cited account given by John Reeves (1887). Just like Dairnvaell, Reeves first describes the dangerous journey by Rothschild from Waterloo to London, and then Reeves adds some extra details about Rothschild's behaviour after his express return in London:

The next day he was to be seen leaning against his well-known pillar on the Stock-Exchange, apparently broken in health and spirits ... as men looked at Rothschild, and then significantly at each other, they seemed to come unanimously to the conclusion that their hopes had been blasted, and that the worst was yet to be known. Had not Rothschild travelled post-haste from the Continent, and were not his agents already selling out? ... The evil news spread through the City like wildfire. The Funds dropped rapidly... The change was so violent and so sudden ... But the next afternoon a sudden, wild reaction set in. It was everywhere reported ... that Wellington was victorious, and the French defeated. The Funds rose again at a bound. Many pitied Rothschild for the enormous losses he had, as they thought, suffered; they little suspected that, while his known agents had been selling openly, his unknown agents had bought up secretly every piece of scrip they could secure. Far from losing, he had by his manipulations pocketed nearly a million sterling. (Reeves 1887: 173-175)

The similarity with the Ricardo legends is striking.

Numerous very readable, but highly unreliable publications on the Rothschilds have presented such stories of insider trading and market manipulation. Only a minority of authors, like Herbert Kaplan (2006), and Brian Cathcart (2015), have ultimately checked the Rothschild correspondence and some other material, to criticise the lack of historical evidence for the Waterloo legends about Rothschild. Kaplan's (2006) book investigated many relevant archives to describe in detail the creation of the Rothschild financial dynasty in 1806-1816. In the last phases of the Napoleonic War, the British government desperately looked for a method to deliver huge amounts of gold coins and bars to Wellington's army and to the Allies on the Continent. Such a precarious enterprise was impossible without a complex network of

agents in Europe, and a sophisticated knowledge of the best ways to transport (smuggle) gold in various parts of Europe during the war. Only the Rothschilds possessed the expertise to do it. In this way, they acted as a sort of unofficial bankers and paymasters for the British government, and received a rich commission for this risky task. In addition, the Rothschilds obtained an entrance to international financial circles, because the collaboration with the British government had implicitly given them an “imprimatur of respectability” (Kaplan 2006: 177). In brief, Ricardo and other Loan contractors helped Britain to raise the money for the war effort, and the Rothschilds transferred it to Wellington’s troops on the Continent.

During his Ricardo research, Sraffa also seemed to be interested in the credibility of the Rothschild legends launched by Dairnvaell, Reeves and others. No one seems to have noticed that in his unpublished papers, Sraffa refers to a visit at the Record Office of the Bank of England on 6 October 1932, which included an examination of *N.M.R. 3 p.c. Consols account*. Sraffa’s report on N.M.R. (Nathan Mayer Rothschild) is surprisingly simple:

Between May 12 → July 18, 1815 there is not a single transaction, either purchase or sale (Sraffa D3/11/25:22)

Some Rothschild stories seem to be exaggerated.

4.5 Were Ricardo’s ethics in the world of finance below or above average?

Every person is obviously heavily influenced by the moral standards of his times and environment. The above Samuelson quotations about Waterloo seem to suggest that Ricardo acted less ethical than the average member of the Stock Exchange. Wikipedia made the even stronger statement that therefore Ricardo *was forced to leave* the Stock Exchange:

He made the bulk of his fortune as a result of speculation on the outcome of the Battle of Waterloo. *The Sunday Times* reported in Ricardo's obituary, published on 14 September 1823, that during the Battle of Waterloo Ricardo "netted upwards of a million sterling", a huge sum at the time. He immediately retired, his position on the floor no longer tenable, and subsequently purchased Gatcombe Park, an estate in Gloucestershire, now owned by Princess Anne, the Princess Royal and retired to the country. (Wikipedia 2019)

The end of my Section 2 has already emphasised that Ricardo’s purchase of Gatcomb Park and his announcement of future retirement date from *before 1815*. Unreliable Waterloo stories about Ricardo’s substandard ethics lack evidence. In point of fact, there exist many examples where Ricardo behaved more ethical than his average colleague. Nancy Churchman (2002) provided several such examples about Ricardo on public debt, and she concluded:

Ricardo was motivated in his actions with respect to the public debt as he was in his actions with respect to other policy questions, by concern not for any one particular interest, but rather for the interests of the nation as a whole (Churchman 2001: 93)

Churchman’s book concentrates on public debt. Perhaps I can provide further examples of Ricardo’s integrity by mentioning some examples about the Stock Exchange. My Section 2

already mentioned the remarkable present of a silver vase that Ricardo received from thankful Loan subscribers, who praised his unusually high moral principles for the 1807 Loan. On various other sensitive occasions Ricardo was again involved in trying to preserve the honesty of the Stock Exchange transactions.

For example, in February 1814, a certain Charles de Berenger at Dover created the impression that he just arrived from France, bearing a dispatch that reported the death of Napoleon and the defeat of the French army. With several collaborators, using ingenious logistics and theatre tricks, he was able to spread the rumours while traveling from Dover to London. The frauds had purchased a lot of Consols and Omnium in the preceding weeks, using many different brokers (because a single broker would not want to handle too large a transaction). On Monday 21 February the Omnium of the November 1813 Loan started at 26½ premium, about the same level as the week before. When the fake news about Napoleon's death arrived in London, Omnium went up to 30¼, and the frauds sold all they had, earning a profit of a little more than £10,000. All were convicted in criminal court.²³ To preserve its reputation, the Stock Exchange too decided to take special action. Its *Committee for the Protection of Property against Fraud* concluded that illegal profits would be given to different charities (Duguid 1901: 115). One of the most influential and respected members of the Committee was David Ricardo (6: 105-107).

On 5 May 1803, when an officially looking notice suggested that peace negotiations between Britain and France were brought to an amicable conclusion, Consols quickly rose from 63¾ to 71¼. When the report was announced to be a forgery, the Stock Exchange was shut immediately, and a special committee proposed that (as far as possible) all transactions "should be declared null and void" (*European Magazine*, May 1803, p. 400). Again, Ricardo was anxious to counter this fraud (10: 123-124).

On 18 May 1803, Britain declared war on France, and this made many members of the Stock Exchange "astound the neighborhood with their yells."²⁴ They reacted cheerfully because they expected more war Loans, and hence more business. Ricardo manly reprimanded his colleagues for their joyful reaction to news that would bring misery to millions of ordinary people.

Ricardo also desired high standards for the correctness of the official price lists by James Wetenhall. A strong example can be found in the paper by Davis, Neal and White (2004) on the London Stock Exchange. They discuss a lengthy letter, written by Ricardo on 11 August 1811, to its Committee for General Purposes.²⁵ On 26 July 1811, the partnership of Street & Andrews had offered £14,000 Consols to Ricardo at a price of 61⅛ on the condition set by

²³ All the relevant data are in a book that Gurney (1814) wrote on the trial of de Berenger and his group. On de Berenger, see also Credland (2006).

²⁴ *Sunday Times*, Ricardo obituary, 14 September 1823, p.1.

²⁵ In their paper, Davis, Neal and White often refer to material in the Guildhall Library in London (Minutes of the Committee for General Purposes of the London Stock Exchange, Manuscripts Section 14600), but they do not explicitly give finer details about the exact location of the Ricardo letter. Neither do they explicitly mention that the letter of 11 August 1811 is not in Sraffa's edition of Ricardo. Sraffa (1955a: 30n) thanks the Guildhall Librarian for information on the change of address of Abraham Ricardo in 1772 (a few months after David was born), but it is not clear to me to what extent Sraffa himself searched the Guildhall Library Archives.

Street that payment be in bank notes. Other potential buyers had rejected this and preferred to buy at $61\frac{1}{4}$ by draft. Wetenhall refused to include the price paid by Ricardo in his price statistics, because he argued that such a purchase by banknotes was not a representative transaction. Note that “the transaction had taken place over the course of half an hour in five parts, with pauses between each” (Davis, Neal and White 2004: 12). After Ricardo’s long letter and a Committee meeting on 7 September 1811, it was agreed that this bargain stood on the same basis as all the others in the Stock Exchange.

In the above story, Davis, Neal and White concentrate only on Ricardo’s plea for correct statistics. However, I think the transaction of 26 July 1811 is also useful to discuss Ricardo’s investment behaviour. Note that the average price for the Consols was $62\frac{1}{4}$ on that day.²⁶ Hence, the above example also seems to illustrate Ricardo’s talent and perseverance for making special bargains. Ricardo’s cash purchase of £14,000 Consols at $61\frac{1}{8}$ meant a price of £8,557½, whereas at $62\frac{1}{4}$ the price would have been £8715. Here Ricardo seemed to gain £157½. Maybe this is a good example of Mallet’s remarks on Ricardo, that he was “never to have carried his stock transactions to any speculative extent” and that by inconspicuous arbitrage he often was able “to realise as much as £200 or £300 in one day” (Mallet 1823: 206). On a yearly basis, the sum of numerous such small daily profits generates a very respectable income. It is not as sensational as the dubious stories about gaining one million in one day after Waterloo, but it is more credible.

²⁶ See the price statistics in *The European Magazine* for July 1811, or *The Times* of 27 July 1811.

5. Did Ricardo make a life changing coup after Waterloo?

5.1. Ricardo's retirement was not caused by Waterloo profits

Samuelson suggests that Ricardo was able to retire due to his once in a lifetime gain of Waterloo profits:

It was his biggest coup ever, and enabled him to retire from active trading and become a passive rentier investor for the rest of his life. (Samuelson 2009: 25)

Wikipedia (2019), which often represents a widely held majority point of view, made the even stronger statement that Ricardo was immediately “forced to retire”, because his position on the Stock Exchange was “no longer tenable” (see the complete quotation in my Section 4.5 above). Here Wikipedia seems to suggest that Ricardo’s retirement should have been caused by the general disapproval of his investment tactics, involving insider trading and creation of false rumours. I already refuted these accusations in Section 4, and I also emphasised that Ricardo’s plan to retire from business dates from as early as 1813. His 1815 profits were an important bonus, but if the 1815 Loan had not existed, Ricardo’s life after 1815 would not have been existentially different.

Sraffa (1955b: 90) draws attention to the difference between David Ricardo and Nathan Rothschild. The latter found in the making of money the main enjoyment of his life, whereas Ricardo considered the acquisition of wealth as a means of retirement into the country, to find more time to write on economics and to participate in policy debates.

When Jean-Baptiste Say in 1817 tried to interest Ricardo in joint speculation in a project involving potato flour, Ricardo politely refused: ²⁷

My life has been one of success, but of anxiety, and I am endeavouring so to arrange my affairs, that I shall have no cares for the future, respecting pecuniary matters (7: 230-231)

There are several other examples in Ricardo’s correspondence expressing similar feelings. For example, on 25 July 1814, nearly a year before the Waterloo Loan, Ricardo wrote to Malthus from his new residence (Gatcomb Park):

I believe that in this sweet place I shall not sigh after the Stock Exchange and its enjoyments (6:115).

Ricardo’s friend Hutches Trower had retired from the Stock Exchange (“the modern Babylon”) already in 1812, and had bought a country residence in 1814 too. He praised Ricardo’s decision to retire:

I am rejoiced to find, that you have wisely determined no longer to subject yourself to the anxieties and vexations of business (6: 237).

In this context, Weatherall (1976: 134) draws attention to the following characteristic of Ricardo:

²⁷ Say’s potato flour venture turned out to a financial failure (Schoorl 2013: 91).

. . . if he had been asked the value of his fortune, he would probably have answered, freedom. Freedom was what he wanted, and freedom was what he got. The first freedom was for the economist. The second freedom was for Parliament . . . (Weatherall 1976: 134).²⁸

In Parliament Ricardo belonged to no party, and was one of the most independent debaters ever, also showing more than average openness when defending freedom of thought, also in religious matters (Cremaschi 2017). In his economic writings too, he dared to defend high moral principles, against vested interests, for example in his *Proposals for an Economical and Secure Currency* (Ricardo 1816), which contained critical comments on the monopoly profits earned by the top of the Bank of England. James Mill had read several drafts, and reassured Ricardo that his arguments against the Bank directors could not create a boomerang argument against Ricardo's own financial wealth:

Do not dread the chance of any body advancing that you, as a Loan contractor, and a successful one, are in the predicament which you condemn. The case is not so. You have gained nothing from the public, but under the fair laws of an open market, exposed to all the force of unrestrained competition (7: 5, letter from James Mill to Ricardo, 3 January 1816)

If some later legends about insider trading and false rumours were true, Ricardo's contemporaries would surely have used such information frequently in debates against Ricardo, both in publications and in Parliament.

5.2 Ricardo's investment strategies

Today the literature on Ricardo's strategies at the Stock Exchange is often directly or indirectly under the influence of a paragraph on Ricardo written by James Grant, a 19th century British newspaper editor, who published several comprehensive volumes on London, called *The Great Metropolis*. These volumes contained hundreds of entertaining pages on London's theatres; the clubs; the gaming houses; the higher, middle and lower classes; the newspaper press; high society nightlife at Almack's; politics; literature; authors and publishers; the Bank of England; the Stock Exchange; the Royal Exchange; the Old Bailey; the prison of Newgate; etc. The chapter on the Stock Exchange devoted several pages to Rothschild legends, and ended with a paragraph on David Ricardo. Here Grant (1837: 81) claimed that Ricardo amassed his immense fortune by following what he called his *three golden rules*:

1. Never refuse an option when you can get it.
2. Cut short your losses.
3. Let your profits run on.

Sraffa (1955b: 73) notes that many later writers have repeated the second and third rule, and have not taken up the first rule, for the obvious reason that it is incomplete and useless as long

²⁸ Churchman (2001: 96) makes the same point

as it adds no details on the price of the option. Hence, most commentators focus on the second and third rule: see, for example, Duguid (1901: 118), Henderson and Davis (1997: 214), King (2013: 5), and Skousen (2016: 99).

Although Grant's paragraph on Ricardo is often mentioned in the Ricardo literature, its reliability is not perfect. I wonder to what extent Grant can be treated as authoritative, because elsewhere in the same chapter, Grant (1837: 64-72) presents a rather incredible story of the enormous Waterloo profits of a certain Mr. F. According to Grant, in June 1815, Mr. F. was unable to pay his debts and therefore was excluded from the Stock Exchange, where the names of such defaulters were visible on a special blackboard. Deeply humiliated, Mr. F. wanted to commit suicide at London Bridge, when suddenly an old French friend appeared, seized him by the hand, and told him about the outcome of the Battle of Waterloo. This was exclusive information, which this friend had just obtained from the French ambassador in London. Mr. F. hastily returned to a certain firm that invested on the Stock Exchange, and communicated his Waterloo information, on the condition that he should receive half of the profits the firm could realise by immediately buying an enormous amount of consols. Without moral hesitations, Mr. F. made a similar deal with a second firm too. Still according to Grant (1837: 71-72), when later the news from Waterloo became generally known, prices rose 15% on average, but taking all different variations into account; "the fluctuation was fully 100 percent". Both firms that had been informed early by Mr. F. made an immense profit. Mr. F. himself obtained half of it, left London as a rich man, and bought an expensive estate in the country.

Grant's description of the huge changes of the stock prices is not supported by the statistics. Both the Omnium and the Consols moved parallel. The day after the official news from Waterloo arrived, they rose a few percent. The *Morning Chronicle* reported the following (see also my Table 4 in the Appendix):

- On Wednesday 21 June, Omnium fluctuated between $104\frac{1}{4}$ and $105\frac{3}{4}$, closing at $104\frac{3}{4}$
- The official news from Waterloo arrived just before midnight.
- On Thursday 22 June, Omnium started at 109, then fell to $107\frac{5}{8}$, and closed at 108.

Given Grant's fantasies about price fluctuations of 100%, and other implausible details, his paragraph on Mr. F. seems hard to believe. It also diminishes the authority of Grant's paragraph on Ricardo's Golden Rules. Note that Mr. F. is already the third person, after Dairnvaell's Rothschild and Samuelson's Ricardo, who should have made exclusive profits from being the first to know about Waterloo.

My Table 5 in the Appendix shows Ricardo's purchases and sales of Consols in 1815, and similar Tables can be constructed for earlier years and also for Reduced annuities. It turns out that Ricardo bought and sold nearly two million of Consols in 1815, and even more in several other years, for example more than six million of Consols and Reduced in 1813 (see my Table 6 in the Appendix). However, the balance, i.e. his stock in hand, was relatively low. Not only did he sell quickly when prices were falling (to cut his losses), but he also was often satisfied

with small profits when prices were going up, without waiting for maximum profits. In other words, he was not letting his profits run on, contrary to the third golden rule mentioned above. In 1815 Ricardo sold a large part of his Omnium at 3 to 5 percent premium, and was happy. His friend Trower performed better, in the sense that Trower waited longer and sold at 10, but Trower seemed to be unhappy because a few days earlier he could have sold at the maximum premium of 13 (6: 237). Ricardo was “well contented” with the half of Trower’s profit rate (6: 233). It seems that he was not letting his profits run on here, but was often satisfied with small profit rates. In case of a large investment in a Loan, even a small profit rate implied a large amount of total profits. Another method of generating a large total profit was to spend a few thousand days at the Stock Exchange during his whole career, and making on average (for example) £200 per day out of inconspicuous purchases or sales, and clever arbitrage. It seems that Ricardo benefited from both methods, i.e., from the few Loans he was involved in, and from the nearly uncountable number of small transactions on the Stock Exchange during his career.

A reference to small profits was also made by the American economist Henry Vethake, whose lectures in the 1830s in Pennsylvania were strongly under the influence of Ricardo’s views, somewhat like John Ramsay McCulloch earlier in England. Vethake had several contacts with economists or investors that had belonged to Ricardo’s network, and even took care of the American edition of McCulloch’s voluminous *Dictionary, Practical, Theoretical, and Historical, of Commerce and Commercial Navigation*. According to Vethake, when Ricardo in 1823 was asked by a friend how he had accumulated so much wealth, Ricardo answered:

my whole art in getting rich lay in my being always contented with small profits; or, in other words, never holding on to the commodities or goods in my possession too long, when small profits could be had, in an ill-grounded expectation of realizing eventually a higher rate of profit (Vethake 1840: 109)

Vethake adds that after Ricardo became known to be a judicious speculator, many persons preferred to be guided by what they supposed him to be doing, and this created a new element of success for Ricardo. Still according to Vethake, Ricardo once said:

At length, such had my reputation as a successful speculator become, that I have sometimes thought it possible for me to have gone into the market and purchased at random, no matter what, with a good prospect of advantage to be gained by selling out again promptly. (Vethake 1840: 110).²⁹

5.3. Correcting Skousen

We must not only be careful when interpreting the stories presented by Grant, but also the following remarks on the 1815 Loan made by Mark Skousen (2016), in a section on *The Day Ricardo Made £1 Million Sterling*:

²⁹ My attention to Vethake was drawn by a much longer quotation that Joseph Dorfman inserted in his edition of the famous lectures by Wesley Mitchell (1967: 265).

There were four bidders for the Loan contract, but Ricardo's firm won. Ricardo bravely held onto his position in the deeply depressed bonds, his biggest gamble ever. Other more timid investors sold early, before the Battle of Waterloo (see Malthus's story below), but not Ricardo. He held on after the shocking news arrived that Wellington had won the battle against Napoleon. The government consols skyrocketed and Ricardo became an instant millionaire. (Skousen 2016: 99)

I suggest several corrections for this text. First, Ricardo did not made a contract for £36,000,000 single-handed. The bidders for a Loan were consortia, not single persons or a single "Ricardo firm". Moreover, in 1815 all four consortia colluded and made exactly the same bid. Hence the Loan was divided by four winning consortia. By "Malthus's story", Skousen refers to Malthus's quick sales on the first day of the Loan. I already showed that Ricardo too sold a large part of his Omnium *before* the news from Waterloo arrived (see Section 3.2), and that Hutches Trower was less timid and held on much longer (see Section 5.2). Ricardo build up his fortune gradually, the 1815 Loan was a great bonus for him, but not a unique life changing coup. When he discusses Ricardo's death in 1823, Sraffa (1955b: 103) estimated that "Ricardo's total estate must have been worth between £675,000 and £775,000." If Ricardo really had made one million in one day in June 1815, where did he then lose a large part of his fortune between 1815 and 1823?

In 1815 the four winning consortia were Steers-Ricardo, Baring-Angerstein, Ellis-Tucker, and Trower-Battye.³⁰ It would be interesting to compare Ricardo's situation with this from the other seven contractors. As far as I know, only in case of Angerstein do we have some additional material for comparison, thanks to Anthony Twist, as I explained in Section 2.7. From 1812 to 1815, Angerstein was a co-contractor for the same profitable Loans as Ricardo. He died in 1823, the same year as Ricardo. According to Twist (2002: 194) the value of Angerstein's estate was not easy to estimate, but from Twist's discussion of Angerstein's properties in Britain and abroad, I have the impression that the total value of Angerstein's estate was not very different from Ricardo's. Note there is no legend of Angerstein making one million in one day in 1815, maybe because he was less famous than Ricardo or Rothschild.³¹ Another necessary correction to the Skousen quotation above is: replace the word "skyrocketed" by a much weaker word.

5.4. Stock prices rose, but did not skyrocket after Waterloo

On the occasion of the 200th anniversary of the Battle of Waterloo, numerous new books on Waterloo appeared. One of the most original and well-researched was *The News From Waterloo* by Brian Cathcart (2015), a book that spent many of its 335 pages on the following question: How did false rumours and correct news from the Battle of Waterloo reach London?

³⁰ The first member of the last consortium was not Hutches Trower, but his brother John.

³¹ Angerstein's main claim to fame today is probably that of an art collector. After his death, his collection of paintings was bought by the British government and this formed the start of the National Gallery in London in 1824.

On Tuesday morning 20 June 1815, *The Morning Post* quickly replaced its original edition by a special Second Edition, to include the information it had obtained from a Mr. Daniel Sutton, a packet-ship owner who claimed he had learned in Ostend on Sunday night of the defeat of Napoleon. Today we know this is impossible: at 8 p.m. on Sunday the outcome of the Battle was still unpredictable, and in 1815 it was impossible to bring news from Waterloo to Ostend in four hours. In fact, Cathcart (2015) shows that Sutton's information was unreliable, and was based upon a misinterpretation of the fights at Quatre Bras, two days before Waterloo. At Quatre Bras Wellington had resisted Napoleon's attacks, but ultimately nothing decisive happened.³²

On the Stock Exchange, the Omnium, which had closed at $3\frac{1}{8}$ on Monday 19, now on Tuesday 20 rose slightly, but it surely did not skyrocket. *The Morning Chronicle* reported that the Tuesday premiums were $3\frac{5}{8} - 4\frac{1}{4} - 3\frac{3}{4} - 4\frac{3}{8} - 4\frac{5}{8}$ respectively. Most investors seemed to remain sceptical about the value of Sutton's report, perhaps because they remembered how often false rumours had appeared in the past (for example, the notorious de Berenger hoax about Napoleon's death in 1814; see my Section 4.5).

The premiums reported for Wednesday 21 were $4\frac{3}{4} - 4\frac{1}{4} - 5\frac{3}{4} - 4\frac{3}{8} - 5 - 4\frac{3}{4}$ respectively, again no skyrocketing. On this Wednesday London received several rumours announcing a victory for Wellington, while at least three others suggested that Napoleon had invaded Brussels (Cathcart 2015: 212-213). The small rise of the Omnium on Wednesday showed that the number of optimists was slightly higher than the number of pessimists, but the average investor in London was still confused, and waited for news that was 100% official.

Wednesday evening, just before midnight, Major Percy, the official messenger of the Duke of Wellington, finally arrived in London with the official Waterloo Dispatch, written by Wellington himself. The Dispatch officially announced the defeat of Napoleon. Most newspapers had double luck: they were able to insert the news just in time in their edition of Thursday morning, and they didn't have to discuss the premature nature of their Sutton report of two days earlier.

Of course, the reaction on the Stock Exchange on Thursday 22 was positive. The premiums for the Omnium were $9 - 8\frac{1}{4} - 8 - 7\frac{5}{8} - 8\frac{3}{8} - 8$. Again this is a nice increase. However, the rise of the Wednesday closing price of $104\frac{3}{4}$ to the Thursday closing price of 108 should not be called "skyrocketing".

³² The information by Sutton in *The Morning Post* was reproduced by several other newspapers, for example by *The Morning Chronicle* and *The Times*. Sraffa (1955b: 83) mentions Sutton and these three newspapers, but does not seem to know that Sutton turned out to be an unreliable source. Recent research by Cathcart (2015) has clearly shown that Sutton did know nothing about Waterloo, and that the newspapers above did never apologise for using Sutton's report. The next weekend, *The Observer* was perhaps the only publication that drew attention to the imperfect handling of the Sutton affair by a large part of the British press (Cathcart 2015: 269-270). Note that the special edition of *The Morning Post* of 20 June was already available in the morning, hence, before the opening of the Stock Exchange (Cathcart 2015: 100-101, 131). According to Sraffa (1955b: 83) it appeared "late on the 20th"; hence, Sraffa misleadingly suggests that it was still unknown to investors on the Stock Exchange on Tuesday 20 June.

In the *Journal of Financial Economics*, Brown, Burdekin and Weidenmier (2006: 698) presented a list of the ten largest upward and ten largest downward monthly price shifts for Consols in the very long period from 1729 to 1959. Such events were not distributed uniformly in this period of 230 years under investigation. On the contrary, a disproportional number of these events (five out of twenty) occurred during the Napoleonic wars, which had created many rumours of new or broken peace agreements, positive or negative outcomes in battles, and of course Napoleon's sensational escape from his exile on Elba in February 1815 and his reclaiming of power in Paris in March 1815. However, the Battle of Waterloo is absent from the list by Brown, Burdekin and Weidenmier.

After some time, historians noticed how important Waterloo was for the history of Britain and other European countries in the next decades. However, immediately after the Battle many British politicians and investors were still somewhat uncertain about the future. Napoleon was still alive and free. From his reading of the letters of Earl Bathurst (Secretary of War), Neville Thompson commented that in June 1815 "no one in Britain could be sure that Waterloo marked the end for Napoleon".³³ Remember Elba.

5.5 How to net upwards of a million sterling in 1815

I now describe a game that includes the theoretical possibility to gain more than one million from the 1815 Loan:

1. You must already own 1 million before the start
2. You become a Loan contractor and subscribe for 10 million in the new Loan; hence 9 million of your risky subscription is "uncovered"
3. A few days after the launching of the Loan, you have to pay the first instalment (10%). Hence you have to spent all your money (1 million) to pay for 10% of the 10 million you subscribed for
4. When you have paid the first instalment, you receive Scrips showing that you already paid 1 million of your 10 million subscription. These Scrips are marketable. You must sell them, because you have no money to pay for the next instalments.
 - 4a. If the Omnium is at par in the market, these Scrips are worth 1 million.
 - 4b. If the Omnium sold at more than 10 % premium in the market, your Scrips do more than double in value and are worth more than 2 million (see Section 2.4). You gain more than one million if and only if you are able to sell this enormous amount of Scrips without spoiling the market
 - 4c: If the Omnium was 10% or more *below* par (for example, suppose Napoleon won the Battle of Waterloo), then your Scrips are worthless. You lose all your money.

³³ See Thompson (1999: 97). I owe this reference to Kaplan (2006: 147).

The conditions for this game are so risky and unrealistic that Ricardo surely did not play it:

- Making the big transactions theoretically necessary to be a winner in this game, would be impossible in practice; such transactions would spoil the market
- Starting this game meant that Ricardo already owned a fortune of a million of money, plus his real estates. Why did he not leave business earlier then?
- In this risky game Ricardo could lose everything he owned. Then Ricardo and his large family had to leave their beautiful residence at Gatcomb Park. He had to forget about his plans to retire as a country gentleman, and make a humiliating, existential change in his life style. Participating in this risky game was extremely against his life-long strategy of playing for small stakes.
- The 1815 Loan was for £36 million. If all eight co-contractors involved in one of the four winning consortia took an equal share, Ricardo could never subscribe for 10 million in his own name. Moreover, the largest part of the 1815 Loan was not subscribed by the eight Loan contractors in their own name, but by the hundreds of subscribers on their lists. The names and the amounts of the many subscribers on the Steers-Ricardo list are not extant, and Ricardo's share of the Loan and his June transactions in Omnium are unregistered. The only thing we know, from the John Julius Angerstein archives, is that Angerstein, one of the seven other co-contractors, took around £1¼ million in his own name, and that was considered an unusually high amount (Twist 2002: 173). It is absurd to believe that Ricardo or someone else took 10 million in his own name.
- However, let us make the absurd assumption that Ricardo owned a fortune of 1 million, could subscribe for 10 million, and, given the Waterloo victory and a sophisticated lucky timing for his sales, could add more than 1 million to his fortune at the end of June 1815. Hence, he then owned more than 2 million. However, a few years later he died and left between £675,000 and £775,000 according to Sraffa (1955b: 103), or £700,000 according to the *Gentleman's Magazine* (vol. 93, October 1823, p. 376). Can someone explain where more than a million of his fortune disappeared between 1815 and 1823? We lack exact information about Ricardo's unregistered transactions in Omnium in 1815 and earlier, but his investments after 1815 in land, loans on mortgage, and French funds, are rather well-documented, thanks to Sraffa (1955b: 95-106). There is not a trace of a dramatically disappearing million between 1815 and 1823.
- In his letter of 27 June 1815 to Malthus, Ricardo (6:233) mentioned he obtained "a moderate gain on such part of the loan as I ventured to take over and above my stock. This portion I sold at a premium of from 3 to 5 percent and I have every reason to be well contented." The price statistics (see my Table 5) reveal that such sales must have occurred before the official news from Waterloo arrived in London. That was much too early to obtain maximum profits. Ricardo should have waited longer, until at least five days after the official news from Waterloo arrived, but not too long, because in July Omnium went below 10% premium again.

- I assume that Ricardo had no early information about Napoleon's defeat at Waterloo; otherwise the timing of his early sales of Omnium was utterly incompetent.

In the light of all the above arguments, it is obvious that the often quoted *Sunday Times* rumours about Ricardo having "netted upwards of a million sterling" lack historical and rational evidence. Note that the hastily produced obituary in the *Sunday Times* was even unable to compute the correct age of Ricardo, as it wrongly mentioned that Ricardo was "in his 53d year".

The obituary of *The Morning Chronicle* was less sensational, but also less implausible. This newspaper had played a special role in Ricardo's career. It had published his first ever appearance in print (Ricardo 1809), an article on the price of gold, and several additional contributions to the famous Bullion Controversy. Two days after Ricardo's death, the obituary included the following:

Mr. Ricardo is supposed to have been worth upwards of half a million when he retired from business. He was remarkably successful, hardly ever sustaining any loss. Indeed the system on which he proceeded in some measure secured him against heavy losses, though it also prevented him from gaining much at any one time. His practice was to sell always at the turn of the market, and his gains, though small at any one time, by being often repeated became large in the end (*Morning Chronicle*, 13 September 1823).³⁴

Here we find are no sensational rumours of gaining one million "upon one single occasion". Probably this obituary exaggerates Ricardo's ability for selling exactly "at the turn of the market". For example, in 1815 he sold too early, before news from Waterloo drove up the stock prices. However, the rest of the obituary seems sound and insightful, suggesting that Ricardo's wealth was not the result of one big coup, but of accumulating large total profits by the sum of numerous small profits.

Ironically, historians who desperately look for an amazing story about an economist who gained most of his fortune in one big coup can perhaps try to turn their attention away from David Ricardo and turn it towards his editor Piero Sraffa.³⁵

³⁴ The same text can also be found later in *The Observer* (14 and 15 September), *The Morning Herald* (15 September) and several related regional newspapers.

³⁵ Sraffa had inherited from his father gold bars in a Swiss bank. During the war he sold the gold and invested the capital in Japanese bonds that were quoted extremely far below their nominal value. After the war the Japanese government fulfilled all its financial obligations, as had been expected by Sraffa, but not by other investors. The bonds recovered spectacularly, and Sraffa put the proceeds back into gold (Neild 2008: 133,136). See also Kaldor (1985: 627). Samuelson (1990: 264) wrote: "What theory of inductive inference, I wonder, could have persuaded me to make a like investment?"

6. Conclusion

Several legends by Samuelson and others suggest that Ricardo was an extreme risk taker, that he used inside information and market manipulation, and that his decision to retire was caused by a once-in-a-lifetime big coup in 1815. The latter legend originated from the often quoted Ricardo obituary in *The Sunday Times*, which suggested that Ricardo made more than a million “upon a single occasion, that of the Battle of Waterloo”. The statistics of the stock prices in 19th century newspapers and magazines, Ricardo’s correspondence, and other archival documents, show that such legends lack historical evidence. Probably some nice stories are being spoiled here. Samuelson’s and other legends on Ricardo are often very readable but not reliable.

Ricardo did not amass his whole fortune “upon a single occasion”. He became financially successful in a less sensational way, often contented with small profit rates, first as a jobber on the Stock Exchange, and later also as a Loan contractor for the British government.

Already in 1795, at the age of 23, Ricardo could afford a wealthy life-style. In a few years he became one of the dominant names on the Stock Exchange, serving on several of its committees, trying to improve its moral standards, and defending the interests of its members. In 1807 a consortium from the Stock Exchange entered the winning bid for the new British Loan. Many Ricardo studies described how Ricardo was one of the co-contractors in this consortium, together with John Barnes and James Steers, a position that could only be occupied by a few top financiers whose excellent financial standing was approved of by the government. Sraffa and others have signalled the existence of an “unknown fourth member” in this consortium. I identified this fourth man as Charles Steers, the brother of James Steers.

During his business career Ricardo was a co-contractor for seven big British Loans (1807, 1811, 1812, June 1813, November 1813, 1814, 1815) and a small Irish Loan (23 March 1807). All these Loans started with a positive premium in their first ten days, as shown in Table 2 of the Appendix of my paper. Ricardo’s correspondence suggests that he often preferred to sell a large part of his Loan share rather quickly, and that he was “contented” about this risk averse strategy, even when he noticed more profitable prices one or two weeks after his sales, for example in June-July 1815, i.e. in case of the “Waterloo Loan”. Ricardo was not a maximum risk taker; the legends about the extreme difference between Ricardo’s attitude to risk and that of Malthus in 1815 are contradicted by archival facts.

Given the simple logistics of his business (only one clerk) and his early sales in 1815, it is obvious that Ricardo possessed no advance information about the defeat of Napoleon, contrary to Samuelson’s claims. A look at the different prices of the 1815 Omnium in the first days after the Battle of Waterloo (Table 5 in the Appendix) also shows the absence of strong fluctuations in the course of one day. The statistics never show a day where prices first fell due to a panic and then skyrocketed a few hours later. Such a day did not exist, contrary to the legends about market manipulation by Ricardo, and also contrary to strikingly similar myths about Rothschild.

For obvious historical reasons, much attention has been paid to the year 1815, and its Loan of £36 million. However, from a purely financial point of view, the year 1813 deserves more attention. In 1813 Britain borrowed much more than ever, £49 million, spread over a Loan in June and one in November. Both these 1813 Loans reached much higher maximum premiums than the 1815 Loan. The sum of the profits of these two 1813 Loans might have been decisive for Ricardo to start making plans in 1813 for his retirement. His Waterloo gains were a huge bonus, but without this bonus Ricardo would not have changed his retirement plans.

Ricardo made some big gains from several Loans, especially from 1812 on, when the Loans were very large and profitable, and were shared by a few consortia that used joint bids (collusion) instead of hard competition. On these few occasions Ricardo's small or medium *rates* of profits on a large investment generated large *total* profits. His everyday transactions as a stock jobber created considerable total profits too, generated by multiplying a small average profit per day by a few thousand working days in his career. We are lucky that Ricardo was financially successful, because this enabled him to retire from the Stock Exchange and to find time to concentrate on more scholarly problems. Otherwise we would probably never have seen his influential classic *On the Principles of Political Economy, and Taxation* (Ricardo 1817).

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Appendix: Statistical Tables

Table 1: Highest and lowest prices of 3% Consols from 1793 to 1823

| Date | Consols | Date | Consols | Date | Consols |
|--------------|---------|---------------|---------|---------------|---------|
| 1793 Feb 12 | 71 | 1804 Jan 6 | 54 | 1815 Jan 21 | 66 |
| 1793 April 9 | 81 | 1804 Dec 6 | 59 | 1815 June 15 | 54 |
| 1794 Jan 2 | 72 | 1805 Jan 14 | 62 | 1816 Jan 10 | 60 |
| 1794 Dec 16 | 63 | 1805 April 8 | 57 | 1816 May 30 | 65 |
| 1795 Jan 23 | 61 | 1806 Aug 4 | 65 | 1817 Jan 15 | 62 |
| 1795 Dec 16 | 71 | 1806 Dec 1 | 59 | 1817 Dec 6 | 84 |
| 1796 Jan 12 | 71 | 1807 Jan 23 | 58 | 1818 April 15 | 82 |
| 1796 Dec 30 | 53 | 1807 Nov 16 | 64 | 1818 Aug 29 | 73 |
| 1797 Jan 17 | 57 | 1808 Jan 7 | 63 | 1819 Jan 23 | 79 |
| 1797 June 1 | 48 | 1808 June 17 | 69 | 1819 May 26 | 65 |
| 1798 Aug 23 | 47 | 1809 Jan 19 | 63 | 1820 June 2 | 70 |
| 1798 Nov 7 | 58 | 1809 Nov 10 | 70 | 1820 Sept 28 | 66 |
| 1799 Jan 29 | 53 | 1810 May 22 | 71 | 1821 Jan 17 | 69 |
| 1799 Sept 3 | 69 | 1810 Sep 28 | 63 | 1821 Oct 22 | 79 |
| 1800 Jan 29 | 60 | 1811 Jan 4 | 67 | 1822 Jan 21 | 75 |
| 1800 Sept 29 | 67 | 1811 July 16 | 62 | 1822 Oct 26 | 83 |
| 1801 Jan 26 | 54 | 1812 Jan 7 | 63 | 1823 March 1 | 72 |
| 1801 Oct 14 | 70 | 1812 July 10 | 55 | 1823 Dec 21 | 86 |
| 1802 Jan 22 | 66 | 1813 July 14 | 56 | | |
| 1802 April 6 | 79 | 1813 Dec 24 | 68 | | |
| 1803 May 5 | 73 | 1814 March 31 | 62 | | |
| 1803 July 28 | 50 | 1814 April 9 | 73 | | |

Special remark:

In January 1816, half a year after the Battle of Waterloo, the prices of Consols fluctuated around 60. In January 1815, half a year before the Battle, they were around 66. Hence, do not think that Waterloo immediately created skyrocketing prices for Consols: **at the end of 1815 the prices of Consols were still lower than at the beginning.** Note that prices of Reduced and Omnium moved parallel with those of Consols.

Sources and further comments:

Table 1 starts in 1793 (the year when Ricardo purchased his first Consols) and ends in 1823 (the year of Ricardo's death). My Table is based on data provided by Fenn (1855, p. 385). For simplicity and transparency, the figures presented by Fenn are rounded here to the nearest whole number.

I made a few slight corrections in the light of the statistics of *The European Magazine*. The last page of each issue of this monthly magazine contained the daily prices of many different stocks for the previous month. Different magazines and newspapers obtained their information from different stockbrokers, who often reported slightly different prices. Compare, for example, the prices in *The European Magazine*, based upon data from the stockbroker James Wetenhall, and the prices in its

main monthly competitor, *The Gentleman's Magazine*, which used data from Richardson, Goodluck and Co. I prefer the first, i.e., Wetenhall's data, which were originally published every Tuesday and Friday in *The Course of the Exchange*, an official list under the authority of the *Committee of the Stock Exchange*. Both Ricardo and Malthus subscribed to Wetenhall's lists and used them in their correspondence (6: 79, 85, 95, 174).

Frequently occurring errors for 1814, 1815 and 1816:

Many authors present strongly misleadingly data for 1814, 1815, and 1816, three critical years for the Waterloo story. I used the correct data from the compendium by Fenn (1855), edited by Henry Ayres. However, a later and less rigid edition of Fenn (1883: 29), edited by Robert Lucas Nash, is used in the authoritative *History of Interest Rates* by Homer and Sylla (2005: 192-194). Their table gives the correct prices in the row for the year 1813, but then it makes the elementary error of repeating the same 1813 data in the row for 1814, then it puts the correct 1814 prices in the row of 1815, and the correct 1815 prices in the row of 1816. In this way the prices in the 1815 row are incredibly high. Neither in their table nor in their later remark on "the year of the Battle of Waterloo" (p.196) do Homer and Sylla notice the problem. They clearly copied the error by using the 1883 edition of Fenn's compendium, where the editor Nash or a secretary who typed the table must have lost concentration when entering data for 1814, 1815, and 1816.

The even more prestigious *British Historical Statistics* by Brian Robert Mitchell (1988, p. 678) shows similar errors for the yield on the Consols in 1814, 1815, 1816. Mitchell mentions he reproduced the data from Thomas Southcliffe Ashton (1948: 16), who thanked William Ashworth (then his LSE colleague) for preparing his table. No further information is given, but obviously Mitchell, Ashton and Ashworth were all misled by the Nash edition of Fenn (1883: 29).

Many modern authors draw their statistics from Ashton, Mitchell, or Homer and Sylla, and in this way repeat the misleading data for the Waterloo period: see, for example, Cook and Stevenson (1980: 187), Churchman (2001: 150), and Hutchinson and Dowd (2018: 664). I referred to the most recent editions of Mitchell (1988) and Homer and Sylla (2005), but the first editions (Mitchell and Deane 1962; Homer 1963) already contained the same errors.

Table 2: Premiums of all the Loans co-contracted by Ricardo

| | 3 March 1807 | 23 March 1807 | 20 May 1811 | 16 June 1812 | 9 June 1813 | 15 Nov 1813 | 13 June 1814 | 14 June 1815 |
|-----------------|-----------------|------------------|----------------|-----------------|----------------|----------------|-----------------|-----------------|
| day 1 | 1 | 3 | 2 | 2 | 3 | 4 | 6 | 3 |
| day 2 | 2 | | 1 | 1 | | | 5 | 3 |
| day 3 | 1 | | 1 | 2 | | 3 | 4 | 3 |
| day 4 | 2 | 4 | 0 | | 3 | | 5 | 3 |
| day 5 | 2 | | 0 | 3 | | 4 | 4 | |
| day 6 | | | 1 | | 3 | 5 | 4 | 3 |
| day 7 | 2 | | | 2 | 4 | | | 4 |
| day 8 | 2 | | 1 | 2 | 5 | 6 | 5 | 5 |
| day 9 | 2 | | 0 | | 4 | 7 | 4 | 8 |
| day10 | 2 | 4 | | 2 | 5 | 9 | 3 | 9 |
| highest ever | 3 | 5 | 2 | 11 | 32 | 30 | 7 | 19 |

Sources and comments:

All Loans co-contracted by Ricardo started above par. Table 2 presents the average premium (rounded to the nearest whole number) for the first ten days after the opening of the Loans, and the last row mentions the highest premium the Loan ever reached.

Row “day 1”, column “1815”, refers to the first day of the 1815 Loan, i.e. 14 June. On that day the 1815 Omnium started at $3\frac{1}{2}$ above par (or at 4 according to a few newspapers) and then fell to $2\frac{1}{4}$ and $2\frac{1}{2}$ at the end of the day. My Table 2 now gives the rounded average for the day, which was 3.

I computed most averages from Wetenhall’s tables in *The European Magazine*, and I also used the main London newspapers and *The Gentleman’s Magazine*. The empty spaces correspond to Sundays, or holidays, or days without information. On several days not a single newspaper or magazine provided the price of the new Omnium. Especially the data for the small Irish Loan that started on Monday 23 March 1807 are often missing.

Note that this Irish Loan was not opened on Saturday 21 March 1807, contrary to the information by Sraffa (1955b: 80-81). Probably Sraffa was misled by using Grellier and Wade (1812, Appendix, p. 4), who mention that on 21 March the bids by Battye-Angerstein, Reid-Irving, and Jordaine-Shaw were not accepted by the government, which then contacted Barnes-Steers-Ricardo, because they had accepted the British Loan of a few weeks earlier. However, the final negotiations with Barnes-Steers-Ricardo were not held on the same Saturday 21, but on the next Monday 23. Then various newspapers on Tuesday reported that the Loan contract was signed on Monday 23. *The Morning Chronicle* added that the bargain was made known to the Stock Exchange on Monday at 2 o’clock, and that transactions in the new Omnium were done immediately at $3\frac{1}{4}$ to $3\frac{1}{2}$ premium. Hence I give a rounded average of 3 on day 1 in my column for 23 March 1807.

Table 3a: Loans involving Ricardo, and his subscriptions to Consols (all quantities in £)

| <i>1. Date of contract</i> | <i>2. Total sum raised by the Loan</i> | <i>3. Total Quantity of 3% Consols in the Loan</i> | <i>4. Quantity of 3% Consols registered via subscription by Ricardo in that year</i> | <i>5. Percentage of Loan Consols personally subscribed by Ricardo</i> |
|--------------------------------|--|--|--|---|
| 1807 March 3 | 14,200,000 | 9,940,000 | } 540,000 | 4.37 % |
| 1807 March 23 (for Ireland) | 1,500,000 | 2,410,000 | | |
| 1811 May 20 | 12,000,000 | 2,400,000 | 60,000 | 2.50 % |
| 1812 June 16 | 22,500,000 | 12,600,000 | 954,000 | 7.57 % |
| 1813 June 9 | 27,000,000 | 16,200,000 | } 2,242,000 | 7.25 % |
| 1813 Nov 15 | 22,000,000 | 14,740,000 | | |
| 1814 June 13 | 24,000,000 | 5,640,000 | 1,216,000 | 21.56 % |
| 1815 June 14 | 36,000,000 | 15,840,000 | 573,000* | 3.61 % |

Table 3b: Loans involving Ricardo, and his subscriptions to Reduced (all quantities in £)

| <i>1. Date of contract</i> | <i>2. Total sum raised by the Loan</i> | <i>3. Total Quantity of 3% Reduced in the Loan</i> | <i>4. Quantity of 3% Reduced registered via subscription by Ricardo in that year</i> | <i>5. Percentage of Loan Reduced personally subscribed by Ricardo</i> |
|--------------------------------|--|--|--|---|
| 1807 March 3 | 14,200,000 | 9,940,000 | } unknown | unknown |
| 1807 March 23 (for Ireland) | 1,500,000 | 0 | | |
| 1811 May 20 | 12,000,000 | 12,000,000 | 452,000 | 3.77 % |
| 1812 June 16 | 22,500,000 | 27,000,000 | 1,134,000 | 4.20 % |
| 1813 June 9 | 27,000,000 | 29,700,000 | } 915,000 | 1.70 % |
| 1813 Nov 15 | 22,000,000 | 24,200,000 | | |
| 1814 June 13 | 24,000,000 | 19,200,000 | 1,109,000 | 5.78 % |
| 1815 June 14 | 36,000,000 | 46,800,000 | 643,000* | 1.38 % |

Sources and comments for Tables 3a and 3b: Columns 1, 2 and 3 are in Hamilton (1818). For column 4 of Table 3a see Sraffa (1955b: 72), for column 4 of Table 3b, see Sraffa's unpublished papers (D3/11/25:10-12). As there was no new Loan in 1816, I included all purchases registered by subscription in 1816 in the row of the 1815 Loan (see the starred quantities in column 4). My column 5 results from dividing column 4 by column 3. I wondered if the percentages in my column 5 are a good indication for the percentage of the Loans that Ricardo took himself. We have no information on the latter. The results of the columns 5 are disappointing, as I had hoped that the final column of the Tables 3a and 3b would be more similar.

Table 4: The premiums of the Omnium of 1815

| <i>Date</i> | <i>Lowest and highest premium (percent above par)</i> | <i>Comment</i> |
|---------------------|---|---|
| Wednesday 14 June | $2\frac{1}{4} - 3\frac{1}{2}$ | opening day of the Loan; it starts at $3\frac{1}{2}$ (at 4 according to some newspapers), then falls to $2\frac{1}{4}$, and closes at $2\frac{1}{2}$ |
| Thursday 15 June | $2\frac{1}{2} - 2\frac{5}{8}$ | according to Sraffa (1955b: 83) the Omnium remained above 3 |
| Friday 16 June | $2\frac{1}{2} - 3\frac{3}{4}$ | |
| Saturday 17 June | $3 - 3\frac{1}{2}$ | |
| Sunday 18 June | BATTLE OF WATERLOO | |
| Monday 19 June | $2\frac{1}{4} - 3\frac{1}{8}$ | no Waterloo news in London; Malthus thanks Ricardo, who sold for Malthus last week at $2\frac{5}{8}$ |
| Tuesday 20 June | $3\frac{5}{8} - 4\frac{5}{8}$ | in the morning a special edition of <i>The Morning Post</i> publishes premature positive rumours from a Mr. Sutton |
| Wednesday 21 June | $4\frac{1}{4} - 5\frac{3}{4}$ | sales by Ricardo today and on earlier days |
| Thursday 22 June | $7\frac{5}{8} - 9$ | official news of victory available since Wednesday night, rises to 9 at the opening, then profit taking, closes at 8 |
| Friday 23 June | $8\frac{1}{2} - 9\frac{1}{2}$ | |
| Sat 24, Sun 25 June | | holiday weekend; Ricardo was at Tunbridge Wells, and back in London on Tuesday 27 June |
| Monday 26 June | $11 - 12\frac{1}{2}$ | |
| Tuesday 27 June | $11\frac{3}{4} - 13$ | Ricardo writes to Malthus: I have sold at 3 to 5 premium (hence, before and on 21 June) |
| Wednesday 28 June | $11\frac{7}{8} - 13$ | |
| Thursday 29 June | $12 - 12\frac{7}{8}$ | |
| Friday 30 June | $11\frac{3}{4} - 12\frac{1}{4}$ | |
| July | $7 - 12\frac{3}{4}$ | highest 7 July, lowest 11 July, rest of month 9 or lower |
| August | $5\frac{1}{2} - 8\frac{5}{8}$ | highest 1 Aug; lowest 16 Aug |
| September | $5\frac{7}{8} - 7\frac{5}{8}$ | lowest 7 Sept; highest 26 Sept |
| October | $7\frac{5}{8} - 16$ | lowest 2 Oct; highest 20 Oct |
| November | $14\frac{7}{8} - 16\frac{7}{8}$ | lowest 1 and 30 Nov; highest 15 Nov |
| December | $13\frac{5}{8} - 15\frac{1}{4}$ | lowest 1 Dec; highest 14 Dec |
| January 1816 | $14 - 18\frac{5}{8}$ | lowest 10 Jan; highest 29 Jan |
| February 1816 | $15\frac{5}{8} - 18\frac{3}{8}$ | lowest 9 Feb; highest 19 and 21 Feb |
| 1 – 15 March 1816 | $16\frac{3}{8} - 18$ | highest on 13 and 15 March; note that 15 March 1816 is payment day of the last instalment |

Sources and comments related to Table 4:

The lowest and highest prices per month for July 1815 till March 1816 were computed from the daily prices provided by *The European Magazine*. Because this magazine does not mention the prices of the 1815 Omnium in the first two weeks after its opening, I compiled the prices from 14 June till 30 June 1815 from *The Morning Chronicle*, but I had to take the prices for 17 June from *The Observer*, for 23 June from *The Times*, and for 29 June from *The European Magazine*, because on a few days *The Morning Chronicle* (and other newspapers) rather unpredictably failed to report the prices of the stocks. Similar tables could be constructed for the prices of Consols and Reduced, because they all moved parallel.

Table 5: Purchases and sales of 3% Consols by Ricardo in 1815 (all quantities in £)

| 1. Period with 70 transactions | 2. Purchases from existing holder | 3. Purchases by subscription | 4. Total purchases | 5. Total sales | 6. Balance of stock in hand at end of each period |
|--------------------------------|-----------------------------------|------------------------------|--------------------|------------------|---|
| 28 Jan-12 April | 146,000 | 6,000 | 152,000 | 152,000 | nil |
| 12 April-30 May | 89,000 | nil | 89,000 | 89,000 | nil |
| 5 June-18 July | 422,000 | 96,000 | 518,000 | 200,000 | 318,000 |
| 18 July | 44,000 | nil | 44,000 | 213,000 | 149,000 |
| 18 July-21 July | 142,000 | 82,000 | 224,000 | 349,000 | 24,000 |
| 22 July-17 Oct | 205,000 | 316,000 | 521,000 | 471,000 | 74,000 |
| 19 Oct-31 Dec | 240,000 | nil | 240,000 | 184,000 | 130,000 |
| Total for 1815 | 1,288,000 | 500,000 | 1,788,000 | 1,658,000 | 130,000 |

Sources and comments:

The first period starts at 28 January, because in the first weeks of 1815 Ricardo was at Gatcomb. This Table 5 shows transactions by Ricardo in three percent Consols in 1815, as computed by Sraffa in his unpublished papers (file D3/11/25:7). Sraffa observed that in Ricardo's accounts of the Consols, in the Stock Ledgers of the Bank of England, each page contained 70 transactions. Hence, each time interval in column 1 represents 70 transactions. Sraffa (file D3/11/25:8) noted that on 18 July 1815 Ricardo made 110 sales of £1,000 to £5,000 each, totaling £346,000. Because this means more than 70 transactions, these transactions are spread over more than one page in the Stock Ledgers, actually three pages, and this explains why 18 July appears in three rows (three periods) of column 1.

The evolution of the quantities in column 6 can be explained by an example. At the end of the fifth period Ricardo had a small stock of £24,000 (column 6). In the next period, he made total purchases of £521,000 (column 4) and total sales of £471,000 (column 5); in this way he increased his stock by £50,000. Therefore his new balance is £24,000 plus £50,000, which makes £74,000 (column 6).

Table 6: Ricardo's yearly purchases of 3% Consols and Reduced (all quantities in £)

| 1.Year | 2. Total purchases of 3% Consols | 3. Balance of Stock of Consols in hand on 31 December | 4.Total purchases of 3% Reduced | 4. Balance of Stock of Reduced in hand on 31 December | sum of all total purchases |
|--------|----------------------------------|---|---------------------------------|---|----------------------------|
| 1809 | 2,207,000 | 102,000 | 1,064,000 | | 3,271,000 |
| 1810 | 2,547,000 | 0 | 833,000 | | 3,380,000 |
| 1811 | 2,338,000 | 46,000 | 1,365,000 | 49,000 | 3,703,000 |
| 1812 | 2,648,000 | 78,000 | 2,870,000 | 2,500 | 5,518,000 |
| 1813 | 3,718,000 | 84,000 | 2,690,000 | 500 | 6,408,000 |
| 1814 | 2,959,000 | 163,000 | 2,408,000 | | 5,367,000 |
| 1815 | 1,788,000 | 130,000 | 1,282,000 | | 3,070,000 |
| 1816 | 1,305,000 | 295,000 | 1,498,000 | | 2,803,000 |
| 1817 | 456,000 | 46,000 | 128,000 | | 584,000 |

Sources and comments: The columns for Consols are based upon data published by Sraffa (1955b: 72). The columns for Reduced are compiled from Sraffa's unpublished notes (D3/11/25: 10-12). In both cases, Sraffa computed the yearly totals from the Stock Ledgers of the Bank of England. I cannot extend Table 6 to years before 1809 due to lack of data for 3% Reduced. After 1817 the quantities become negligibly small. Note the following:

1. Ricardo nearly always sold his Consols and Reduced very quickly, and therefore his stock in hand at any moment was just a small fraction of the many millions he transacted.
2. The year 1813 (not 1815) is the year with the highest purchases.
