University of Antwerp
Faculty of Business and Economics

DEPARTMENT OF ECONOMICS

David Ricardo, the Stock Exchange, and the Battle of Waterloo: Samuelsonian legends lack historical evidence

Wilfried Parys

UNIVERSITY OF ANTWERP
Faculty of Business and Economics
City Campus
Prinsstraat 13, B.226
B-2000 Antwerp
Tel. +32 (0)3 265 40 32
www.uantwerpen.be

FACULTY OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

David Ricardo, the Stock Exchange, and the Battle of Waterloo: Samuelsonian legends lack historical evidence

Wilfried Parys

RESEARCH PAPER 2020-009
DECEMBER 2020

University of Antwerp, City Campus, Prinsstraat 13, B-2000 Antwerp, Belgium
Research Administration – room B.226
phone: (32) 3 265 40 32
e-mail: joeri.nys@uantwerpen.be

The research papers from the Faculty of Business and Economics are also available at www.repec.org (Research Papers in Economics - RePEc)

D/2020/1169/009

David Ricardo, the Stock Exchange, and the Battle of Waterloo: Samuelsonian legends lack historical evidence

Wilfried Parys

Address for correspondence: Wilfried Parys, Department of Economics, University of Antwerp, Prinsstraat 13, BE 2000 Antwerp, Belgium; e-mail: wilfried.parys@uantwerpen.be

Acknowledgements: I am grateful to the very helpful staff of the archives that I visited in the Bank of England, the Guildhall Library, the London Metropolitan Archives, the Cambridge University Library, and the Wren Library, Trinity College, Cambridge, U.K. I owe special thanks to Jonathan Smith, and to Lord Eatwell (literary executor of the Sraffa Papers). My research also greatly benefited from being able to work in the LSE Library and the British Library. I also thank the staff of the Interlibrary Loan Services of the University of Antwerp and the Special Collections of the Newcastle University Library. An earlier version of my paper was presented at the 2019 ESHET Conference in Lille (France), where I received stimulating comments from my discussant Neri Salvadori and some other participants.

Keywords: David Ricardo, Paul Samuelson, Piero Sraffa, London Stock Exchange, British Loans

JEL codes: B12, B31, N23

Abstract: see the end of my paper (pp. 77-78)

Table of contents

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*.[1] 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 his narratives on Ricardo's finances, because of Samuelson's authoritative position in the history of economics, and because Ricardo seemed to be 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 2015b).

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.

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.[2] After looking at the available Sraffa material, at many relevant files

[1] 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.

[2] My paper needs many references to *The Works and Correspondence of David Ricardo*, 11 volumes, edited by Piero Sraffa (with the collaboration of Maurice Herbert Dobb). In these cases, I simply specify the volume number and the page numbers. For example, "VI, p. 233" refers to a letter by Ricardo in volume 6, while "X, pp. 79-80" refers to a text from Sraffa in volume 10. It will always be obvious from the context whether I refer to a text written by Ricardo himself or by his editor Sraffa.

in various English archives, 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 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 during Ricardo's business career (Section 2). Here the concepts of Omnium, Scrips, 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), the legends about 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 exact 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 & Sylla (2005), ultimately originating from errors in the Nash edition of Fenn (1883).

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 Stock Exchange in London. 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. After retiring very rich from business, he published his famous book *On the Principles of Political Economy, and Taxation* (Ricardo 1817), and entered 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.[3]

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 final defeat at 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.[4] 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".

---

[3] For more background information on Ricardo, see Sraffa (X, pp. 16-106), Mitchell (1967), Heertje (1974; 2015), Weatherall (1976), de Vivo (1987), Henderson and Davis (1997), Samuelson (2001), Peach (2008), King (2013), Kurz and Salvadori (2015a), Skousen (2016), and Kurz (2016).

[4] The abstract of the well-documented dissertation by O'Brien (1967) concludes: "given the nature and constraints of the financial system, the Ministers, civil servants and their advisers responsible for providing the indispensable monetary means to obtain resources to prosecute the war, on the whole performed their task with commendable efficiency."

[5] Remember that before 1971 Britain operated the following non-decimal system: 1 pound = 20 shillings, 1 shilling = 12 pence, 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 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*, usually simply abbreviated as the *Reduced*. They 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* were created, which always bore a 3% interest rate, without any real problem of "reduction". Half of the interest on Reduced was paid in April, half in October. In this way many rentiers who invested both in 3% Reduced and 3% Consols could receive interest payments every three months.

These Consols and Reduced had no fixed date of maturity. In principle the government could redeem them whenever their quotation reached 100. After the start of the war, however, 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%). Hence, in Ricardo's time, the 3% Reduced and Consols were treated as a sort of perpetual annuities, with an inverse relation between their market price and the market rate of interest.[6] Such perpetual bonds can be very volatile. In theory, market rates of interest of 3 – 4 – 5 – 6 percent will generate market prices of 100 – 75 – 60 – 50 for such Consols and Reduced. In practice, their market prices are also "a good deal influenced by speculation, and by the anticipation of political and financial events" (Ricardo, V, pp. 344-345). This remark was made by Ricardo when he provided evidence before *The Select Committee on the Usury Laws*, on 30 April 1818, after nearly three years of peace with France. It is obvious that in the war years 1793-1815 the stock prices were also heavily influenced by military events.

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 3% percent annuities.

[6] The 3% Reduced gave the same interest as the 3% Consols. In practice, an investor had to pay slightly different prices for them, mainly depending on the different timing of their half yearly interest payments. Another difference was that many laymen were more familiar with Consols than with Reduced.

Ricardo acted as a stock jobber, i.e., a dealer who bought and sold on his own account. In other words, he was a sort of middleman who created a continuous market for the purchases and sales of the Consols or other securities. 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. 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. Consider the following simple example. Suppose that the market price of Consols with a nominal value of £100 fluctuates around £60, and that today A owns no such Consols. In spite of this, A agrees to sell a nominal value of £10,000 to B, to be delivered in twenty days, for £6,000. If the price on the day of delivery is only £58, A can then purchase the required quantity for £5,800, and thus earn a profit of £200. If the price had risen to £63, A will lose £300. Such business between A and B is generally completed without any actual transfer of Consols from A to B. It is settled by A receiving £200 from B or paying him £ 300, depending on whether the price on the day of settlement is £58 or £63. Such simple *time bargains* or more sophisticated ones, were not approved by law. The brokers and jobbers, however, ignored this problem and used their own self-regulating methods so that time bargains were still possible and actually very frequent (Hamilton 1818, pp. 313-317; Duguid 1901, pp. 48-51; Kynaston 1995, p. 16; Ricardo, V, pp. 337-347).

Because the above example involved no transfer from A to B, nothing was registered in the Stock Ledgers of the Bank of England, and thus it was impossible to know how much a dealer gained or lost by such time bargains. Hence, we have no exact idea how much Ricardo earned by intelligent time bargains but Ricardo's correspondence clearly shows that already in 1795, only two years after starting on his own, he could afford a wealthy lifestyle, and in the next years he easily helped solving the financial problems of his brother-in-law (X, pp. 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 financiers entered the competition. Every consortium formed a list of subscribers, usually containing 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).

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, X, pp. 79-80). In 1806 some 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 Identifying 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, p. xlii), Sraffa succeeded in finding 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, III, pp. 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, IV, pp. 415-418).[7]

Another detective problem remained unsolved. Many historians have described how Ricardo, in a 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

[7] Some other examples of Sraffa's detective skills are given by Gehrke (2010).
[8] Both John Barnes and James Steers regularly appear in Sraffa's Ricardo edition (VI, p. 112n; X, pp. 79-82, 123-125).

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, X, pp. 125-128).[9] 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, X, p. 125n1)

In their classic history of the London Stock Exchange, Morgan and Thomas (1962, p. 49) signal the same open problem and conclude that "only three of the names survive". The expression "Barnes-Steers-Ricardo" also reappears often in the newspapers for Loans after 1807.[10]

Sraffa (X, p. 125n1) apparently consulted the newspapers of 4 March 1807, which described the launch of the new Loan of 3 March. Here Sraffa could not find the identity of the mysterious fourth member of the Barnes-Steers-Ricardo group. I go back, however, 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) had a preliminary discussion with the representatives of the candidates for the new Loan. In this context the report of most newspapers used the standard expression "Barnes-Steers-Ricardo", but the *Morning Chronicle* of 28 February 1807 (p. 3) mentioned "C. and J. Steers" instead of simply "Steers".[11] Not one, but two members of the Steers family seem to be involved!

---

[9] Sraffa did not publish the list of subscribers, but he mentioned it contains 222 names. I checked the list in the Cambridge University Library, Ricardo Papers, file ADD 7510/III/D.3, and I counted 227 names.

[10] Ricardo loyally seemed to choose always the same partners when bidding for future Loans, until John Barnes died on 24 January 1815 (see *The Gentleman's Magazine*, February 1815, p. 185; *The Monthly Magazine*, March 1815, p. 176). This explains why the Waterloo Loan of 1815 was taken by Steers-Ricardo only. Then James Steers died on 31 July 1817 (see *The Gentleman's Magazine,* August 1817, p. 185). 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 that year 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.

[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), *The Times* (28 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).

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 Steers can then be obtained from the diaries of the English painter Joseph Farington, who died in 1821. 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, British politics, the Napoleonic wars, etc. A large part of the diaries was published in eight volumes under the editorship of James Greig (Farington 1922-1928). Much later, a more complete scholarly edition of seventeen volumes was produced by Yale University Press (Farington 1978-1998). Its last volume presents a comprehensive index, with many references to members of the Steers family. From the diaries, it becomes obvious that Charles Steers was one of the brothers of James Steers, and that Farington often went to see Charles and James in the City for his personal finances. Another brother, John Steers, clearly had been the first to meet Farington, as early as 1793 (Farington 1978-1998, I, p. 103). Both Farington and John Steers enjoyed numerous contacts, because of their joint interest in the world of arts. Most probably, somewhat later Farington then decided to use the brothers Charles and James as his brokers. A diary entry of 29 August 1807 reveals why Charles was less visible than James:

> Charles Steers told me that His deafness so incapacitates Him from hearing when *in company*, that He declines going where He is not upon an intimate footing (Farington 1978-1998, VIII, p. 3114).

Farington refers to several additional business contacts with Charles in 1808 and 1809, and on 2 May 1810 he describes a conversation with John Steers, about his brothers Charles and James:

> J. Steers I met today – He told me His Brother Charles who died lately after having been some time in a state of insanity, had He lived never cd. have recovered – James Steers returned to the Broking business abt. a month ago, and will remain in partnership with Mortimer. Stokes,

> a relation of the Steer's, quits the connexion as He will not act with Mortimer (Farington 1978-1998, X, p. 3646)

The above quotation suggests that Charles Steers 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 a very short notice, in the list for 8 April, on the death of *Charles Steers, esq. of London, stock-broker*. After Charles Steers has been identified as the unknown fourth man in Ricardo's consortium, I can formulate the ironical conclusion that its standard label "Barnes-Steers-Ricardo" is less incomplete than readers of Sraffa's Ricardo edition might think.[12]

Another way to find the complete identity of "C. Steers" is to look at the archives of the London Stock Exchange, in the Guildhall Library in London. Because Ricardo's consortium was formed by members of the Stock Exchange, a logical detective step is to check the membership lists of the relevant time period. Then it becomes obvious that C. refers to "Charles". In the *Applications for Admissions 1807* (file MS 17957/6), Charles Steers writes on his membership form: "I am engaged in Partnership with James Steers, John Mortimer & Charles Stokes."

The same archives show that a few years earlier both James and Charles Steers had been elected on the first *Committee for General Purposes* of the new Stock Exchange, and John Barnes had become its first chairman. In March 1802, both James and Charles Steers resigned from the Committee, just like Charles Hiett Hancock, Robert Podmore, and David Ricardo (Minutes of the *Committee for General Purposes*, file MS14600/2, pp. 22-24). Note that Sraffa never mentions Charles Steers, although he mentions the resignations of Hancock, Podmore, James Steers, and Ricardo (Sraffa, X, pp. 69, 123n2). Sraffa refers to the Minutes of Wednesday 3 March 1802, but these contain no information on resignations. The text mentions only routine matters and ends with "adjourned to Sat 12 o'clock". All the resignations are mentioned in the Minutes of Saturday 6 March 1802, except for Charles Steers, whose resignation was reported in the meeting of Wednesday 10 March 1802. Unfortunately, the text of the Minutes is sloppy.[13]

---

[12] Numerous different families with the name Steers appear in various genealogical sources, but after having discovered all the details mentioned in my text above, it is possible to find unambiguously the exact years of birth and death of John William Steers (1744-1826), Charles Steers (1748-1810) and James Steers (1756-1817). See, for example, the website http://familytree.chasegray.co.uk/3318

[13] The meeting of Saturday is wrongly dated 4 instead of 6 March. It is described both in the first and the second book of Minutes (MS14600/1 and MS14600/2), with slightly different texts. The sloppy reporting by the secretary in the beginning of the 19th century led to a radical decision of the Committee on 17 February 1812, that "all the Rules & Regulations ... prior to the 10th of this month ... be repealed" (MS14600/7). See Morgan & Thomas (1969, pp. 72, 75), and Armstrong (1939, pp. 379-381), for more details on the loose and careless manner in which the Minutes had been kept by John Hemming (secretary from 1802 until his dismissal in 1810).

It contains no information on why the five resigned. It is obvious, however, that already in 1802 James and Charles Steers were important members of the Stock Exchange and belonged to the same network as Ricardo.

A third way to find the name Charles Steers is to look at the long letter written by John Barnes on 10 April 1806, printed by McMillan in London, and addressed to subscribers of the 1806 Loan. The only copy of this neglected item that I found is conserved in the Special Collections of the Newcastle University Library, as "Grey Tract 77", one of the many documents that were formerly owned by the 2nd Earl Grey (Charles Grey, 1764-1845, the Prime Mister of the United Kingdom in the period 1830-1834). In the introduction (pp. 3-4) Barnes explicitly mentions Charles Steers and writes:

> In conjunction with Messrs. Charles and James Steers and Mr. David Ricardo, I was a bidder for the Loan contracted on Friday the 28th of last month, for the service of the current year. We began forming a List only on Saturday the 22d, and expressed to our friends, that we meant to bid for the Loan upon the principles of fair and open competition. This was very generally approved, and our List was filling very fast. Late on Saturday, I heard that Mr. Abraham Goldsmid had declared, that any person who subscribed in our List, should be excluded from his. (Barnes 1806, pp. 3-4)

Goldsmid and other experienced bidders, clearly colluded and wanted to intimidate the newcomers Barnes-Steers-Ricardo. In his long letter, Barnes provided several other examples of unfair methods that were exclusively directed against his List, even including an example of spying:

> I would ask you, Mr. Goldsmid, by what prescience you could discover that any person who wrote to me, should be known to you, unless indeed you had sent your Son into my house to collect information, who, I understand from my clerk, came in frequently behind my desk, when applications were making for the Loan? (Barnes 1806, p. 7)

On 24 March 1806, Barnes had thought it necessary to write to Lord Henry Petty, the Chancellor of the Exchequer, to inform him about the way the other Lists tried to keep every new competitor out of the market. In this way the government too suffered, because the absence of fair and open competition prevented the Loan to be contracted at a correct price. Barnes reproduced the text of his complaint to Petty at the conclusion of the letter to his subscribers (Barnes 1806, p. 18).

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 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 Navys (five percent annuities), 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 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 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 annum from the day of full payment to 15 January 1808. The Consols and the Navy annuities generated interest 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.[14]

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

[14] 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.

of B in a sealed envelope. When the sealed envelopes of the 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 per cent 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 in Scrips

My Section 2.1 already drew attention to the problem of unregistered *time bargains*. I now want to discuss the existence of another sort of popular and unregistered transactions, involving the use of so-called *Scrips.*

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 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.[15]

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 subscription receipts, usually called S*crips*.[16] These were receipts that also indicated how many instalments still had to be paid.[17] Scrips 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 Scrips 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 Scrips mentioning that he still had to pay £90 to obtain £100 of the Omnium. Suppose now that the Omnium after a short period rose to 10% premium, and thus had a market value of £110. In that case the equilibrium value of the above Scrips was £20 instead of £10 (if one could buy them at £19, and then paid the remaining instalments of £90, one obtained the Omnium for a total cost of only £109, thus lower than the market price of £110). In this context, the fewer instalments had been paid, the more suitable the Scrips were for speculation. In my example, if the premium on the Omnium was 10%, and only one instalment had been paid, the Scrips 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.

---

[15] 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 (X, p. 72).

[16] For example, the 1815 Loan started on 14 June, and the first instalment had to be paid on 17 June. According to *The Morning Post* (1 July 1815, p. 3) the Bank of England issued the corresponding Scrip receipts on 30 June.

[17] Robert Hamilton (1818, pp. 311-313) provides a very detailed explanation of the concepts of Omnium and Scrips, using the data of the June 1813 Loan.

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 Scrips, and that such transactions were not subject to a sort of official registration in the archives of the Bank of England. The absence of their registration implies an important lack of direct information on the government Loans in which Ricardo was involved. The Ricardo Papers (now in the archives of the Cambridge University Library, ADD 7510) do not solve this problem: they provide detailed information on Ricardo's purchases of land, about his loans on mortgage, and about transactions in French stocks after 1817, but they offer hardly any documents that represent Ricardo's transactions in Omnium, Consols or other British securities on the Stock Exchange in London during his business career.[18] 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 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, was purchased by Ricardo by subscription. In this way I hoped to discover a systematic rule that was "habitually" used by Ricardo in all these years. 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. Alas, the percentage is rather different for Consols and for Reduced and also different per year. We still do not know exactly 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 "small" investors who were on the lists of the different winning consortia. Moreover, up until now, not a single subscribers' list of the Barnes-Steers-Ricardo consortium could be found.

[18]The Ricardo Papers in Cambridge provide only a very small glimpse of Ricardo's ownership of stocks. One file in the Ricardo Papers (ADD 7510/X.F:1-59) contains 60 stock receipts (two items have the same number 33). All but five bear the name of David Ricardo himself, and correspond to 3% Reduced (items 3-23), 3% Consols (items 24-46) and 5% Navys (items 50-58), and nearly all are dated 1815. Such receipts were issued by the Bank of England when it registered the name of the owner in its Stock Ledgers. The registration in the Stock Ledgers was the only legal proof of ownership. The stock receipts only acted as a memorandum for the stockholder, without being legally binding certificates (Murphy 2019, pp. 69-70; Bank of England Archives, AC4/5 and 8A472/1). The set of receipts in the Ricardo Papers represents only a misleadingly small part of Ricardo's large purchases and sales in 1815. To obtain a good view of Ricardo's registered transactions, one must use the Stock Ledgers of the Bank of England (see, for example, for the year 1815, Table 5 in the Appendix of my paper).

2.5 A bad 1810 Loan for Goldsmid and Baring-Angerstein

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.[19] In 1808 Benjamin Goldsmid was in poor health and often depressed, and hanged himself at his house. Abraham tried to overcome this blow and continued business. His consortium took the May 1809 Loan on its own, and the May 1810 Loan together with the Baring-Angerstein consortium. A few months later, however, Abraham's situation became more problematic. His experienced co-contractor 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, the 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). Clapham (1944), in his well-known history of the Bank of England, also supported Silberling's arguments. Most historians of economic thought treated Silberling's 1924 article as a standard reference on Ricardo for about thirty years, until they could read the 1955 note *A Canard* published by Sraffa in his Ricardo edition (X, pp. 91-94).[20]

Silberling claimed 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 credit, and thereby would have increased Goldsmid's problems. Silberling accused Ricardo of leading a bearish clique, i.e. a faction of the Stock Exchange that systematically tried to depress stock

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

[20] Sraffa's Ricardo edition also pointed out several inaccuracies by another prestigious writer on Ricardo, Jacob Hollander. Moreover, Sraffa often complained to Keynes and others about the editorial difficulties he had with Jacob Hollander (Gehrke and Kurz 2002).

prices and to derive extra profits from it. Silberling seemed to neglect that Ricardo himself competed for several Loans and in case of winning bids hoped the Omnium would rise.

Silberling's critique of Ricardo's behaviour at the Stock Exchange heavily relied upon a pamphlet by Joseph Lancaster (1821).[21] By a meticulous archival search, Sraffa (X, p. 94) discovered that Lancaster was not a neutral scholarly observer, but a defaulter, who had been excluded from membership of the Stock Exchange. Silberling (1924, p. 429n1) seems to neglect this important point, when he called Lancaster a well-informed "insider". After being excluded, the frustrated Lancaster harshly criticised the Stock Exchange, and made some derogatory remarks about "Milord David, the bear-general" (Lancaster 1821, p. 56).[22]

In addition, Sraffa (X, p. 92) emphasises that Silberling and Lancaster neglected that Ricardo often was a co-contractor for British Loans, and in these situations obviously was hoping for rising stock prices after the contract day (i.e., then he was not a bear, but a bull). Sraffa (X, p. 91) was surprised that Silberling didn't know that the Bank of England could provide credit to subscribers of the Loan. After indicating other errors, Sraffa (X, p. 93) was rather friendly when he called the stories told by Lancaster "lively if somewhat incoherent". Jacob Viner preferred to avoid such understatements. In Viner's review of Clapham (1944), a book that had followed Lancaster and Silberling, the text by Lancaster was declared "the product of a disordered mind" (Viner 1945, p. 67).[23] Hence, Viner raised some doubts about Silberling and Lancaster, ten years before Sraffa's devastating critique was published in 1955.

Sraffa's unpublished papers, however, show that Sraffa had done a large part of his archival research on Ricardo's business already in the 1930s. In that period, Sraffa's correspondence with Edwin Cannan and Jacob Viner strongly disapproved of Silberling (1924). For example, on 26 May 1931, Cannan wrote to Sraffa:

> I hope you will scarify Silberling for his libellous statements about Ricardo's honesty.

Two days later, Sraffa replied:

---

[21] Lancaster (1821) was published as an anonymous pamphlet. Both Silberling (1924, p. 429) and Sraffa (X, p. 94n3) attributed the authorship to Lancaster, using the information in *A Dictionary of the Anonymous and Pseudonymous Literature of Great Britain* by Halkett and Laing (1882, column 863).

[22] "Milord David" is an obvious reference to David Ricardo. In my bibliography, I shorten the extremely long title of Lancaster's (1821) pamphlet. The complete title can be found in the *Catalogue of the Library of Piero Sraffa* (de Vivo, 2014, pp. 307-308). As usual, de Vivo also provides some interesting annotations.

[23] Viner's strong remark on Lancaster is also quoted by de Vivo (2014, p. 308). See also Samuel Hollander (1979, p. 499n80) on the "ludicrousness" of Silberling's charge against Ricardo.

> The temptation to scarify Silberling as he deserves is very strong, and I don't suppose I shall be able to resist it. I have a fair supply of ammunition.[24]

It's a pity that Sraffa waited more than two decades before finally showing us his ammunition in 1955. He could have published a comment on Silberling in the *Quarterly Journal of Economics* in 1931 or 1932, one or two years after his comment on Luigi Einaudi in the same journal. Sraffa's (1930) comment, entitled *An Alleged Correction of Ricardo*, improved Einaudi's (1929) account of the evolution of the theory of comparative advantage in the works of David Ricardo, James Mill, and James Pennington. In the same period, in the same journal, Sraffa could have corrected Silberling's errors on Ricardo's finances.

In addition to Sraffa's arguments, I repeat that Goldsmid in case of the 1806 Loan immediately had started using unfair methods against the newcomers Barnes-Steers-Ricardo, and that Barnes had to complain about this in a letter to potential investors and in a letter to the Chancellor of the Exchequer (see the end of my Section 2.2). It seems that Silberling confused victims and perpetrators.

2.6 Ricardo's intelligent handling of a difficult Loan in 1811

After their losses of 1810, Baring and Angerstein made a risk-shy 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 my 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. (VI, p. 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

[24] The 1931 letters by Cannan and Sraffa can be found in the Sraffa Papers (D3/11/58:52-53). See also D3/11/74:15 for a 1933 letter from Viner on Silberling.

James Mill that he would soon move to a better house (Upper Brook Street, Grosvenor Square) and that "the price was enormous".

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

In 1812 the government needed a considerable amount of additional war finance, and organised a Loan of £ 22,500,000, nearly twice as much as in 1811. After the bad or mediocre performance of the 1810 and 1811 Loans, not a single consortium wanted to take up the new Loan on its own. Instead of competitive bidding, three consortia tried to submit a common bid. The Prime Minister, Lord Liverpool, was unhappy about this lack of competition, 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 consortia:[25]

- Baring-Angerstein-Battye-Dawes-Ellis

- Barnes-Steers-Ricardo

- Robarts, Curtis and Co.

Sraffa (X, p. 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 Alexander Baring and John Julius Angerstein, two of the most prominent financiers in the world of finance, who took a much larger share in the Loan than their partners. This is revealed in a small notebook in the Angerstein Family Papers, now conserved in the London Metropolitan Archives. The existence of this notebook was first signalled in a remarkable doctoral dissertation on Angerstein by Anthony Twist (2002, p. 166). In his notebook Angerstein provides some interesting details about the Loans of the period 1812-1815. In case of the June 1814 Loan, Angerstein even specified the actual shares taken by the different investors, including, among other names, Baring (£ 5,350,000), Angerstein (£ 5,350,000), and Trower & Battye (£ 2,720,000).[26]

[25] The difficult negotiations 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).
[26] The exact file number in the London Metropolitan Archives is F/ANG/110. Twist (2002, p. 238n28) wrote 10 instead of 110.

Hence, John Trower and John Battye together, invested much less than the individual shares of Baring and of Angerstein. This is not surprising, taking into account the superior financial status of Baring and Angerstein. Sraffa should have replaced the abbreviation "Battye and Co" by "Baring, Angerstein and Co". Note that the abbreviation "Baring, Angerstein and Co" is also used in the official *Committee of Treasury Report Book*, 1797-1832, p. 63 (Minutes of 16 June 1812), conserved in the Bank of England Archives (file G8/7).

It turns out that the Loans of the period 1812-1815 were "highly profitable" for Angerstein (Twist 2002, p. 166). There are no similar notebooks by Ricardo, but it might be suggested that Ricardo's involvement in the same Loans was very lucrative too. I emphasise that all five Loans started with a profitable premium (see the Appendix, Table 2, 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.

Note that in 1813, 1814, and 1815 only two consortia signed the contracts for British Loans: on the one hand, Ricardo's consortium, on the other hand a consortium led by Baring and Angerstein that included all the other contractors (see also my Section 2.9 below). In these years both consortia always combined and made the same bid.

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 June and November 1813, the following two consortia were involved:

- Baring, Angerstein, Ward, Barwis, Ellis, Trower and Battye

- Barnes, Ricardo and Steers

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, p. 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.[27]

2.8 Ricardo's preparing for the famous Waterloo Loan in 1815

The Loan that had started on 14 June 1815, a few days before the unpredictable outcome of the Battle, was later often referred to as the Waterloo Loan. Many popular writings have described the profits enjoyed by those who dared to invest in it on 14 June. Ricardo again was one of the contractors for this new Loan. For every £100 subscribed, the government offered the following package:

- £ 130 three percent Reduced Annuities
- £ B three percent Consols, *the value of* B *to be specified by bidding*
- £ 10 four percent Consols

It was possible to pay in ten monthly instalments: first 10% to be paid 17 June 1815, last 10% on 15 March 1816. Both the Ricardo consortium and the Baring-Angerstein consortium combined to make the same bid: B = 44 £ 0 s 0 d. In this way, 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, columns 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, p. 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

[27] See also Ricardo's letter to Malthus, dated 1 January 1814, which mentions a visit by Ricardo and his wife to Gatcomb (VI, p. 100).

three 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 obtain 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 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 . . . (VI, p. 233)

In a related context, Sraffa (X, p. 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 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).

2.9 Only two (not four) consortia contracted for the Waterloo Loan in 1815

Several popular discussions have referred to the paragraphs on Ricardo's finances in *The Making of Modern Economics* by Mark Skousen. Like many other authors, Skousen paid special attention to the Waterloo Loan of 1815. He claimed the following: "There were four bidders for the Loan contract, but Ricardo's firm won" (Skousen 2016, p. 99). This is misleading. Ricardo did not make a contract for £ 36,000,000 single-handed. The bidders for the Loan were consortia, not single firms. Moreover, in 1815 there were no unsuccessful bidders. For all five Loans in 1812-1815 all candidates cooperated and made exactly the same bid.

Another inaccurate point is the reference to *four* bidders. Not only Skousen (2016, p. 99), and Raines & Leathers (2000, p. 10), but even Ricardo-specialists like Piero Sraffa, both in his Table (X, p. 80-81) and in his text (X, p. 82), and Arnold Heertje (1974, p. 74; 2015, p. 266), have wrongly signalled that four lists contracted for the 1815 Loan. Probably Sraffa was influenced by the speech of the Chancellor of the Exchequer, Nicholas Vansittart, on 14 June 1815, when Vansittart had to defend his Budget in the House of Commons and mentioned four calculations with respect to the new Loan. As usual, Vansittart defended the fairness of the contract:

> It had happened singularly enough . . . that the sum offered by the subscribers, was exactly the minimum of what the Treasury had resolved to accept. This was a circumstance so far satisfactory, as it went to show that both parties met on fair and honourable terms, and arrived at the same point from reasoning in different ways. What further proved the correctness of the view which had been taken of the case, was that four different calculations had been made by four different persons, and all had concurred in naming 44 *l.* in the 3 per cent. consols, as that which ought to be the bidding (Hansard, 1815, vol. 31, columns 801-802).

Vansittart's arguments above contain two strange points. First, Vansittart claimed that, if four persons name exactly the same value for B, the bidding result for B reveals a just price. To put this in perspective, consider the bidding for the earlier Loan of 1807, the first contract involving Ricardo. In that year four competing consortia wrote down the following bids in their sealed envelopes: £ 10. 12. 0 - £ 11. 3. 0 - £ 11. 8. 0 - £ 11. 17. 6 (see also Section 2.3). This is a normal outcome of a real competitive bidding process in 1807. If, however, for the Loan basket of 1815, four bidders all named "B = £ 44. 0. 0.", then all competent professors of statistics would raise their eyebrows, and immediately accept the hypothesis of cooperation between the bidders.

Second, Vansittart probably thought that four calculations would make a better impression in the House of Commons than three or two. Perhaps, Vansittart tried to suggest that the candidates for the Loan contract originally came from four different networks: Steers & Ricardo, Baring & Angerstein, Ellis & Tucker, Trower & Battye. Another possibility is that he did not mean to refer to four contractors, but to four anonymous government experts.

Part of the above quotation, on the fairness of the Loan, is also presented by Sraffa (X, p. 82), including Vansittart's remark on four different calculations made by four different persons. This probably is one of the reasons for Sraffa's belief that ultimately four different consortia signed the Loan contract. There are, however, several problems with Sraffa's interpretation.

Neither Sraffa nor anyone else has explained why in 1815 the candidates would behave differently than for the three earlier Loans (June and November 1813, June 1814), when we always saw cooperation between *two* big consortia: Ricardo's list and the Baring-Angerstein list. In these years, Ellis, Battye, Trower, etc. were glad that they could be part of the same consortium as the more powerful financiers Baring and Angerstein. The war generated strongly increasing government expenses, and the Loans became so big that all would-be contractors avoided risky competition and tried to cooperate as much as possible. In 1815, Britain launched

a record Loan of £36,000,000. It seems implausible that both the partnerships of Ellis & Tucker and of Trower & Battye would then suddenly break away from the Baring-Angerstein consortium.

Another possible explanation for Sraffa's inaccurate reference to four consortia is that he misinterpreted the text about the Loan contract in *The Times* of 15 June 1815, by looking at it in isolation, that is, without comparing it with the text of 1814. It is useful to compare carefully the following two texts:

> Contracted for on Monday, 13th June, 1814—the Lists having made a similar offer, by Messrs. Barnes, Steers, and Ricardo: and Messrs. Baring, J. J. Angerstein, and George Ward; Barwis, Ellis, and Co.; and Trower and Battye. (*The Times*, 14 June 1814, p. 3).

> Contracted for on Wednesday, 14th of June, 1815—the Lists having made a similar offer, by Messrs. Steers and Ricardo, and Messrs. Baring and J. J. Angerstein; and Ellis and Tucker; and Trower and Battye. (*The Times*, 15 June 1815, p. 3).

The above details for 1814 and 1815 are very similar. In both cases there were *only two lists* for the final contract, *not four*. The Ricardo list represented the Stock Exchange, the Baring list was a more heterogeneous consortium, formed by financiers from various networks, including, for example, the old partners "Trower and Battye". This explains the many repetitions of "and" in the above quotations. Note that the start of a list is indicated by "Messrs." This abbreviation is used only two times, because there are only two different lists.[28]

I can also refer to the *York Herald* (17 June 1815, p. 2), where it is made 100% explicit that only two consortia signed the contract:

> Both lists having bid the same, they were declared jointly Contractors

The existence of only two lists in 1815 is also confirmed by Angerstein's notebook (London Metropolitan Archives, file F/ANG/110). Finally, and most authoritatively, the official *Committee of Treasury Report Book*, in the Bank of England Archives (file G8/7, p. 84), explicitly mentions that the Loan of 14 June 1815 is divided between *two* consortia. The reports of the *Committee* for the three preceding Loans are similar. In all these cases Ricardo's and

[28] I used *The Times*, because Sraffa often preferred this newspaper, but similar announcements appeared in *The Courier* and *The Morning Chronicle*. Note that only James Steers and David Ricardo represented the Stock Exchange in June 1815 (after the death of John Barnes in January 1815).

Baring's consortium divided the Loan. Sraffa's Table (X, pp. 80-81) and his story of four lists in 1815 (X, p. 82) need a correction.

3. A risk-shy 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, p. 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, p. 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 report on Ricardo in business.

In Section 3.2, I will look at the information that was already available when Samuelson formulated the above statements. Then, is Section 3.3, I will mention the more accurate data about Malthus's financial affairs which became available more recently, thanks to the archival research by John Pullen (2013), who examined Malthus's bank accounts in London, which are still carefully preserved by Hoare & Co., the bank used by Malthus two centuries ago.

3.2 Information on Malthus that Samuelson could and 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.

This is misleading. 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. (VI, p. 42; Malthus to Ricardo, 26 July 1811)
>
> The first thing of a newspaper which is looked at every morning is the price of Omnium. (VI, p. 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. (VI, p. 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. (VI, p. 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 already 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. Malthus invested £ 1000 in the new Loan, and quickly let Ricardo sell it with a profit of £ 50:

> 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. (VI, pp. 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 (VI, p. 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 had presented me with 50£, as I fear it was taken from what would otherwise have been your own. (VI, p. 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 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. (VI, p. 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. (VI, p. 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: customers would normally 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, p. 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, pp. 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, p. 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.[29] 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, p. 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 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

[29] 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, III, p. 148). See also Bonar (1885, p. 416) and Keynes ([1933] 1972, p. 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 of royalties seems to be visible, from two payments which were probably made by his publisher Joseph Johnson (Pullen 2013, p. 30 n12).

> sensible of your kindness, and not disposed to repine (VI, p. 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 (VI, p. 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, p. 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 in June 1815 and the rest in nine other monthly instalments, in this way postponing full payment until March 1816 (Niles 1815, p. 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 (VI, p. 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." (VI, p. 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

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 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, the favourite securities of most investors in that period. Pullen (2013, p. 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, p. 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, p. 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 used a special informer 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, p. 25)

According to Colin Read (2016, pp. 15-16), Ricardo used an information network that provided relevant news as fast as possible to him and to 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 any evidence for this anywhere: not in the more than four thousand pages of Sraffa's Ricardo edition, not in the many files on Ricardo in Sraffa's Papers (Trinity College), not in the Ricardo Papers (Cambridge University Library).

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 some 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 generally known and stock prices went up considerably.

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 at the battlefield in Waterloo or in Wellington's headquarters. The press used to wait for the arrival of the official government reports in London.[30]

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 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, 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 of 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 (X, p. 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, p. 373).[31]

4.2 Confusing the information networks of two Misters 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 Mayer Rothschild. Contrary to Ricardo, 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. Brogden (1894, p. 83) presents the following text, and mentions it is taken from *The Morning Herald* of 11 July 1815:

---

[30] 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, p. 7).

[31] "Babylon" refers to the noisy, rude, and disorderly stress situations at the London Stock Exchange.

> 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 £1,000,000 sterling at 3¼ per cent. premium, sold out to nearly as great an extent at 12 ½ per cent. premium in the early part of last week.

Several other London and regional newspapers of 1815 presented the same text about Mr. R. (for example the *St. James Chronicle* of 8 July 1815, p. 4). The debates over the influence of Waterloo profits on the making of Rothschild's fortune continued for more than two hundred years. After quoting the above paragraph about Mr. R. in his discussion of Rothschild's fortune, Brogden 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 were vague on their sources and sloppy in copying. *The Literary Panorama and National Register* of August 1815 (column 842) copied the above quotation, changed a few commas and also added something more remarkable:

> The Stockholder (Mr. Ricardo) 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 per cent. premium, sold out to nearly as great an extent, at 12 ½ per cent. premium, in the course of a few days afterwards. It is said that he carried home in one pocket book (besides money lodged at his Banker's) no less a sum in cheques than *three hundred thousand pounds*.

This is the only magazine I know that replaced "Mr. R." by "Mr. Ricardo", and moreover it suggested that one could look into Ricardo's private pocket book. Do also note that here *The Literary Panorama* is transforming 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, pp. 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 an attractive 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, p. 12), then Nathan and his brothers 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 Dairnvaell's 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, p. 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, p. 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. I repeat that 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, pp. 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 other relevant material, to criticise the lack of historical evidence for some Waterloo legends about Rothschild. Kaplan's (2006) book investigated many relevant archives

and described 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, p. 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 in Roehampton 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.

Today the archives are located inside the Bank of England (Threadneedle Street in London). I consulted the Stock Ledgers for the 3% Consols 1812-1818, Jobbers R, file AC27/2649. Here page 74026 shows that Rothschild made a small purchase of £ 10,000 on 12 May 1815 and did nothing special in the days after the Battle of Waterloo, which confirms Sraffa's remark. Rothschild seemed to become really active not earlier than three months after the Battle. From October 1815 on, his name is often mentioned in the Stock Ledgers and then often is involved in very big transactions. In the file AC27/2668, Jobbers R, 3% Consols, 1818-1828, very large amounts are registered for Rothschild (for example, £ 1,259,590 between July 1818 and March 1819). Moreover, on 9 June 1819 he was successful when he made for the first time a bid for a British Loan (£ 12,000,000).

4.5 Were Ricardo's ethics in his world of finance below or above average?

Every person is obviously 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. The Wikipedia page on Ricardo even claims that therefore in 1815 Ricardo was forced to leave the Stock Exchange immediately:

> 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 2020)

The end of my Section 2.7 has already emphasised that Ricardo's purchase of Gatcomb Park and his announcement of future retirement date from *before 1815*. Note that the Stock Ledgers in the Bank of England registered hundreds of transactions by Ricardo in the second half of 1815 and much later, not only for 3% Consols (Ledgers AC27/2649), but also for 3% Reduced (AC27/7165) and for 5% Navys (AC27/5339). Hence, this undermines the legends about Ricardo being forced to withdraw from the Stock Exchange immediately after the Battle of Waterloo.[32]

Tales about Ricardo's substandard ethics also lack evidence. In point of fact, there exist many examples where Ricardo behaved more ethical than the average loan contractor. The strongest case is the 1814 Loan, when Vansittart, the Chancellor of the Exchequer, asked the would-be contractors for their view on two possible strategies for the government: either it could launch a Loan of £24 millions or it could use its Sinking Fund and borrow only £12 millions. Such a smaller Loan generated smaller costs for Britain and smaller profits for the contractors. Sraffa has drawn attention to Ricardo's advice in this situation:

> All the contractors advised against reducing the Loan in this way, with the exception of Ricardo, who, 'greatly to his credit', according to Grenfell, recommended the application of the Sinking

[32] The Ricardo Papers in Cambridge are less useful than the Stock Ledgers in the Bank of England, because the Papers conserve only a very small number of the thousands of stock receipts that Ricardo must have obtained from the Bank during his career. Ironically, more than half of the sixty extant receipts date from the second half of 1815 (see file ADD 7510/X.F).

> Fund and a loan of £12 millions only, as being more advantageous to the country (Sraffa, X, pp. 81-82).[33]

Vansittart made a strange error by not following Ricardo's advice. Nancy Churchman (2002) provided several other examples about Ricardo on public debt, and she wrote:

> 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, p. 93).

Churchman's book concentrates on public debt. I can provide further examples of Ricardo's integrity with respect to his activities at the Stock Exchange. My Section 2.2 already mentioned the remarkable present of a silver vase that Ricardo received from thankful Loan subscribers, who praised his unusually high moral principles when allocating the shares of the 1807 Loan. On various other sensitive occasions Ricardo was again involved in trying to preserve the honesty of the Stock Exchange transactions.

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 notice 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).[34] Ricardo (X, pp.123-124) was anxious to counter this fraud.

On 18 May 1803, Britain declared war on France, and the news of this breakdown of the fragile Peace of Amiens made many members of the Stock Exchange "astound the neighborhood with their yells."[35] They reacted cheerfully because they now expected more big 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.

In February 1814, a certain Charles Random de Berenger created the impression that he just arrived at Dover 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

[33] Pascoe Grenfell (1761-1838) was a Member of Parliament from 1802 till 1826, where he was a leading expert on financial subjects; see Sraffa (VI, p. xxxiii) and the obituary in *The Gentleman's Magazine* (April 1838, p. 429).
[34] According to Fenn (1855, p. 385) and *The Gentleman's Magazine* (May 1803, p. 488), the Consols rose to 73.
[35] *Sunday Times*, Ricardo obituary, 14 September 1823, p. 1.

had purchased a lot of Consols and Omnium in the preceding weeks, using many different brokers. When the fake news about Napoleon's death arrived in London, Omnium went up considerably, and the frauds sold all they had, earning a profit of a little more than £10,000. All were convicted in criminal court.[36] 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, p. 115). One of the most influential and respected members of the Committee was David Ricardo (VI, pp. 105-107).

The exact effect of this fraud on stock prices was described at the trial by James Wetenhall, who recorded the "official prices" at the Stock Exchange (Gurney 1814, pp. 188-192, 502). In his testimony as an expert witness, Wetenhall mentioned that on 21 February 1814 the Omnium started at 26½ premium, and that the false news increased it to 30¼, which means a rise of 3¾. Wetenhall also emphasised that these were the 'money prices', i.e., prices for immediate delivery. 'Time prices' for future delivery were higher, but Wetenhall concentrated on money prices, and the newspapers in the 19th century, and Sraffa in his Ricardo edition, normally did the same.

In his account of the fraud of 21 February 1814, however, Sraffa (VI, p. 106) mentioned that 'the Omnium immediately rose 5½ points, only to fall back as soon as the hoax was exposed'. Sraffa gave no source, but most probably (as often) he relied on an article in *The Times*. On 22 February 1814, on its page 3, *The Times* indeed reported a rise of 5 ½ points, from 27½ to 33. Neither Sraffa nor *The Times* signalled that here, contrary to their normal practice, they used 'time prices'. Rather inconsistently, on page 2 of the same issue, *The Times* presented its usual list of stock prices, in which omnium rose from 26½ to 30¼, the same money prices as Wetenhall, also found on the same day in the *Morning Chronicle* (p. 4), the *Morning Post* (p. 4), and various other newspapers.

A few details on the authoritative status of Wetenhall's price lists might be useful. Wetenhall's data 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 (VI, pp. 79, 85, 95, 174, 176). It is probably less known that in 1811 Ricardo was involved in a rare incident about the completeness of Wetenhall's list of 26 July (this story is not mentioned in Sraffa's

[36] All the relevant data are in a book that Gurney (1814) wrote on the trial of Berenger and his group; Berenger himself presented his own version in *The Noble Stock-Jobber* (Berenger, 1816). On Berenger, see also Credland (2006).

Ricardo edition). The reports about this incident fill more than ten pages of the 1811 Minutes of the *Committee for General Purposes* (Guildhall Library, file MS14600/7, pp. 454-455; 458-461; 463-470).

The roots of the incident date from the morning of 26 July 1811, when Street & Andrews had sold £14,000 Consols to Ricardo at a price of $62^1/_8$, asking him to pay in bank notes. Other transactions at that moment were done at 62¼ and paid by draft (the standard procedure; most buyers avoided cash payments). Ricardo's transaction was not included in Wetenhall's price lists. At one o'clock, an emergency meeting of the *Committee for General Purposes* ("summoned on a Sudden") called Ricardo's transaction a "Specific Bargain" and approved that it had not been recorded in the price lists. On 1 August, the *Committee* confirmed its decision, despite a request signed by twenty-six members of the House to reconsider it. On 10 August the *Committee* met again, after Ricardo had protested in a letter of 9 August.[37] The *Committee* saw no reasons for a further discussion, and on 21 August confirmed its Minutes of 10 August. Surprisingly, on 31 August it was decided to issue special summonses for the *Committee*, to meet on 5 September, to reconsider the problem again. The discussions continued in meetings of 6 and 7 September. On this last day, many brokers appeared before the *Committee*, including Andrews, who had sold the Consols to Ricardo. Obviously, Andrews wanted to prove to his principals that he was a stockbroker who did not sell their Consols at an abnormally low price. Other brokers provided extra information on Ricardo's bargain, and on other transactions of the same morning. Ultimately the *Committee* rescinded its Resolution of 26 July, and now thought that the bargain was "fairly done in the open market, at the highest price which could be obtained at that moment", and therefore the *Committee* decided "it ought to have been inserted in Wetenhall's List of that day" (MS14600/7, p. 469).

I refrain from computing the total number of labour hours expended in this incident by committee members, witnesses, letter writers, and lobbyists, but the incident surely shows that Ricardo desired high standards for Wetenhall's price lists, and that historians should prefer to use the authoritative Wetenhall prices, if available. In the first few days after the launch of a new Loan, however, when the number of transactions was chaotically large, Wetenhall traditionally did not publish its prices. For these busy days, I rely on the information provided by the main newspapers (see my Tables 2 and 4, in the Appendix). They often provide up to

[37] The complete text of Ricardo's letter of 9 August 1811 can be found in the handwritten Minutes of the *Committee for General Purposes* (MS14600/7, pp. 458-459). It is strictly of a business character and not mentioned in Sraffa's Ricardo edition.

five or six prices a day in chronological order, which is very useful when studying the evolution of the prices just before and just after the official news from Waterloo reached London (see the discussion in my Section 5.4).

5. Did Ricardo make a life changing coup after the Battle of 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, p. 25)

Wikipedia (2020), which often represents a widely held majority point of view, mentions 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 emphasised that already in 1813 Ricardo started making plans to retire from business. 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 (X, p. 90) draws attention to the difference between David Ricardo and Nathan Mayer 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: [38]

> 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 (VII, pp. 230-231)

Several other examples in Ricardo's correspondence express 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 (VI, p. 115).

[38] Say's potato flour venture turned out to a financial failure (Schoorl 2013, p. 91).

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. Trower 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 (VI, p. 237).

In this context, Weatherall draws attention to the following characteristic of Ricardo:

> . . . 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, p. 134).[39]

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 (VII, p. 5, letter from James Mill to Ricardo, 3 January 1816)

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

[39] Churchman (2001, p. 96) makes the same point

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, p. 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 (X, p. 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 if 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, p. 118), Henderson and Davis (1997, p. 214), King (2013, p. 5), and Skousen (2016, p. 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, pp. 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, pp. 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". The two 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.

It turns out that Ricardo bought and sold about three million of Consols and Reduced in 1815, and even more in several other years, for example more than six million in 1813 (see the last column of 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 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 less happy because a few days earlier he could have sold at the maximum premium of 13 (VI, p. 237). Hence, Ricardo was "well contented" with half of Trower's profit rate (VI, p. 233). In case of Ricardo's large investment, however, even a small profit *rate* implied a large amount of *total* profits. Another method of Ricardo for generating large total profits was to spend a few thousand days at the Stock Exchange during his whole career and making on average small profits per day out of many inconspicuous purchases or sales, and intelligent arbitrage (as suggested by Mallet 1823, pp. 205-206). It seems that Ricardo

benefited from both methods, i.e., from the large British Loans he was involved in, and from the nearly uncountable number of clever transactions on the Stock Exchange during his career as a jobber.

From the Stock Ledgers of the Bank of England, it is possible to compute the following total quantities of 3% Consols, acquired in the period 1798-1804 (stated in round figures):[40]

- John Barnes: £ 177,000
- Charles Steers: £ 230,000
- James Steers: £ 425,000
- David Ricardo: £ 6,965,000

These figures show that Ricardo was one of the top dealers at the Stock Exchange, with a turnover that was much higher than the sum of his three Loan partners. Hence, most probably, he also took a larger share in the Loans than his partners.

A reference to small profits in numerous transactions 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 *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, p. 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:

[40] In the Bank of England Archives, I used the Stock Ledgers AC27/2599 (jobbers A-BA) for Barnes, and AC27/2615 (jobbers S) for Charles and James Steers. These files contain their transactions in 3% Consols for 1798-1804. Ricardo's figures were already computed by Sraffa (X, p. 72). In case of Barnes and the Steers brothers, a few months of the period 1798-1804 are missing in the archives, but the enormous difference with Ricardo's total remains. According to O'Brien (1967, p. 58), a typical jobber purchased and sold between £30,000 to £40,000 per year. This means approximately between £200,000 to £300,000 in the period 1798-1804 that I consider.

> 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, p. 110).[41]

5.3. Ricardo was not the biggest investor in the 1815 Loan

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

> 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, p. 99).

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 (X, p. 103) estimated that "Ricardo's total estate must have been worth between £675,000 and £775,000". Heertje (1974, p. 73n1) suggested the total was maybe £ 800,000. The *Gentleman's Magazine* (vol. 93, October 1823, p. 376) mentioned £ 700,000. 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 the period 1812-1815 Angerstein was a co-contractor for the same profitable British Loans as Ricardo. He died in 1823, the same year as Ricardo. According to Twist (2002, p. 194) the

[41] 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, p. 265). For more biographical details on Vethake, see Dorfman & Tugwell (1933) and Dorfman (1966, pp. 731-743).

value of Angerstein's estate was not easy to estimate, but from Twist's description of Angerstein's properties in Britain and abroad, I conclude that the total value of Angerstein's fortune was not very different from Ricardo's. There is no legend of Angerstein making one million in one day in 1815, maybe because he was less famous than Ricardo or Rothschild.[42]

Contrary to Sraffa, Heertje, Raines & Leathers, and Skousen, I have shown (in my Section 2.9) that only two, not four, consortia were involved in the 1815 Loan: on the one hand Steers-Ricardo, on the other hand Baring-Angerstein-Ellis-Tucker-Trower-Battye. Both consortia divided the Loan. Note that the eight co-contractors did not play an equal role. Probably extremely relevant in 1815 is the difference between the official Loan contract and the practical arrangements between the contractors. I guess the arrangements in 1815 were rather like in 1814, the only year for which there is additional archival information, thanks to Angerstein's notebook in the London Metropolitan Archives (file F/ANG/110). The notebook shows that "officially" the two consortia each took half of the Loan of 1814, but that in practice the personal commitments were very different: the total amount of £ 24,000,000 of the 1814 Loan was divided as follows:

- Baring 5,350,000
- J. J. Angerstein 5,350,000
- Stock Exchange 3,220,000
- Trower & Battye 2,720,000
- Barwis & Co 2,350,000
- Public Offices 1,800,000
- Shewell 200,000
- G. Ward 1,440,000
- Reid & Co 890,000
- Robarts & Co 140,000
- Ayton & Co 540,000

Here "Barwis & Co" probably includes Ellis & Tucker, and others, and the "Stock Exchange" in 1814 refers to Barnes, Steers and Ricardo. Observe that, according to the Angerstein notebook, Barnes, Steers and Ricardo together took only 322/2400 or about 13 % of the total in 1814. Even if, after the death of Barnes in January 1815, the same proportions were used in

[42]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.

June 1815, then Ricardo and Steers together were responsible for "only a relatively small" percentage of the Waterloo Loan. Hence, Skousen's (2016, p. 99) statement that "Ricardo's firm won", should not be interpreted as if Ricardo did underwrite a contract for £36 million single-handed. His personal investment was much lower. Moreover, remember that a large part of a consortium's investment always was paid by hundreds of subscribers on the consortium's List.

Another warning with respect to the Skousen quotation above is: replace the word "skyrocketed" by a much weaker word.

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

On the occasion of the 200th anniversary of the Battle, 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 concentrated on the following question: How did false rumours and correct news about the Battle of Waterloo of 18 June 1815 reach London?

On Tuesday morning 20 June, *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 less than eight hours. In fact, Cathcart (2015) shows that Sutton was not a fraud, but that his information was unreliable, and was based upon a too optimistic 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 there.[43]

[43] The information by Sutton in *The Morning Post* was reproduced by several other newspapers, for example the *Morning Chronicle* and *The Times*. Sraffa (X, p. 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 the only important paper that drew attention to the imperfect handling of the Sutton affair by a large part of the British press (Cathcart 2015, pp. 269-270). Sraffa (X, p. 83) mentions that the special edition of the *Morning Post* appeared "late on the 20th". This is a strange error, because in his footnote 3 Sraffa refers for this information to the *Morning Chronicle* of 21 June, which clearly refers to Sutton's news of "yesterday morning". A similar reference to "yesterday morning" appeared in *The Times* of 21 June. Hence, Sraffa creates the misleading impression that Sutton's story was still unknown to investors on the Stock Exchange on Tuesday 20 June.

On the Stock Exchange, the Omnium, which had closed at $3\,1/8$ on Monday 19, now on Tuesday 20 rose slightly, but it surely did not skyrocket. *The Morning Chronicle* reported that the Tuesday premiums were $3\,5/8 - 4\,1/4 - 3\,3/4 - 4\,3/8 - 4\,5/8$. 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 (see, for example, my Section 4.5, which describes the notorious Berenger hoax about Napoleon's death in 1814).

The premiums reported for Wednesday 21 were $4\,3/4 - 4\,1/4 - 5\,3/4 - 4\,3/8 - 5 - 4\,3/4$, again no skyrocketing. On this Wednesday London received several rumours announcing a victory for Wellington, while at least three others suggested that Napoleon had conquered Brussels (Cathcart 2015, pp. 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 $9 - 8\,1/4 - 8 - 7\,5/8 - 8\,3/8 - 8$. This is a nice increase, but the rise of the Wednesday closing price of $104\,3/4$ to the Thursday closing price of 108 should not be called "skyrocketing".

In the *Journal of Financial Economics*, Brown, Burdekin and Weidenmier (2006, p. 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. The Battle of Waterloo, however, 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".[44] 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 one million before the start.

2. You become a Loan contractor and subscribe for ten million in the new Loan. In this way nine million of your risky subscription is "uncovered".

3. Three days after the launching of the Loan, you must pay the first instalment (10%). Hence, you must spend all your money (one million) to pay for this.

4. When you have paid the first instalment, you receive Scrips showing that you already paid one million. 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 one million. You make no profits, no loss.

- 4b. If the Omnium sells at more than 10 % premium in the market, your Scrips do more than double in value and are worth more than two million (see Section 2.4). You gain more than one million if and only if you can sell this enormous amount of Scrips without spoiling the market

- 4c: If the Omnium is 10% or more *below* par (for example, suppose Napoleon won the Battle of Waterloo), then your Scrips are worthless. You lose all your money.

[44] See Thompson (1999, p. 97). I owe this reference to Kaplan (2006, p. 147).

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

- Making the big transactions which are theoretically necessary to be a winner in this game, would be difficult in practice; such transactions would spoil the market

- Starting this game meant that Ricardo already owned a fortune of one 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 lifestyle. Participating in this risky game was extremely incompatible with his life-long strategy of playing for small stakes.

- In the light of the information in Angerstein's notebook (see my Section 5.3) it is absurd to believe that Ricardo took ten million in his own name. Let us, however, for a moment make the assumption that Ricardo owned a fortune of one million, could subscribe for ten million, and, by a sophisticated lucky timing for his sales, could add more than one million to his fortune at the end of June 1815. In this way, he then owned more than two million. A few years later he died and left between £675,000 and £775,000 (Sraffa X, p. 103). Can someone explain where more than a million of his fortune disappeared between 1815 and 1823? We have relatively incomplete 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 (Sraffa, X, pp. 95-106; Ricardo Papers, ADD 7510). There is not a single trace of a dramatically disappearing million.

- In his letter of 27 June 1815 to Malthus, Ricardo (VI, p. 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 4 in the Appendix) 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 the news of the abdication of Napoleon arrived in London on Monday 26 June, but not too long, because in July the Omnium went below 10% premium again.

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. The hastily produced obituary in the *Sunday Times* also wrongly believed that David was the eldest child of the family (actually he had two elder brothers), and it was even unable to compute his correct age, as it wrongly mentioned that he was "in his 53d year".

The obituary of *The Morning Chronicle* was less sensational, but more plausible. 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. 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, page 3, column 1).[45]

Here we find no reference to 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. The rest of the obituary, however, 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 (plus substantial profits from eight Loans that all started with a premium: see my Table 2 in the Appendix).

Ironically, historians who desperately look for an amazing story about an important 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 the finances of his editor Piero Sraffa.[46]

---

[45] 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.

[46] 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 most other investors. The bonds recovered spectacularly, and Sraffa put the proceeds back into gold (Neild 2008, pp. 133, 136). See also Kaldor (1985, p. 627). Samuelson (1990, p. 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 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 lifestyle. In a few years he became one of the dominant names on the Stock Exchange, serving on several or 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, a 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" with the results of his 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 and Malthus's attitude to risk in 1815 are contradicted by archival facts. I also show that, contrary to Sraffa's and Heertje's information, the 1815 Loan was taken by only two consortia, not four.

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 (my Table 4 in the Appendix) also shows the absence of strong fluctuations in the course of one day. The statistics in this period 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 contrary to strikingly similar myths about Rothschild.

For obvious historical reasons, numerous studies have concentrated on the year 1815, and its Loan of £36 million. From a purely financial point of view, however, the year 1813 deserves careful attention too. 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 large and profitable for him and for a few other top financiers, who cooperated and made the same bid for the Loans, instead of undergoing hard competition. On these 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 magnum opus *On the Principles of Political Economy, and Taxation* (Ricardo 1817).

Appendix: Statistical Tables

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

Date	*Price*	Date	*Price*	Date	*Price*
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 1815, half a year before the Battle of Waterloo, the prices of Consols fluctuated around 66, whereas in January 1816, half a year after the Battle, they were around 60. Hence, do not think that Waterloo immediately created skyrocketing prices for Consols.

Sources:

My Table 1 starts in 1793 (the year when Ricardo purchased his first Consols) and ends in 1823 (the year of Ricardo's death). This 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, taking into account the statistics of *The European Magazine* (for 23 January 1807, 16 November 1807, 14 July 1813) and *The Gentleman's Magazine* (for 5 May 1803, 16 November 1807, 14 July 1813). The last page of each issue of these monthly magazines contained the daily prices of many different stocks for the previous month. Different magazines and newspapers obtained their information from different stockbrokers, who sometimes reported slightly different prices.

Frequently occurring errors for 1814, 1815 and 1816:

Many authors present very misleadingly data for 1814, 1815, and 1816, three critical years for the Waterloo story. I used the reliable data from the compendium by Fenn (1855, p. 385), edited by Henry Ayres. However, a later and less rigid edition of Fenn (1883, p. 29), edited by Robert Lucas Nash, is used in the authoritative *History of Interest Rates* by Homer and Sylla (2005, pp. 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. Homer and Sylla clearly copied such errors from the 1883 edition of Fenn's compendium. Neither in their statistics nor in their later remark on "the year of the Battle of Waterloo" (p. 196) do Homer and Sylla notice the problem.

The even more prestigious work *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, p. 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, p. 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, p.187), Churchman (2001, p. 150), and Hutchinson and Dowd (2018, p. 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.

A different set of errors, again including the crucial Waterloo period of June 1815, is contained in *The Annual Register*. Its issue for the year 1815, p. 323, provides the lowest and highest prices of many stocks for each month in 1815. These statistics contain some bizarre errors, involving both Consols and Omnium. For example, they give a misleadingly high value for the bottom price of 3% Consols in June 1815, and a strange zero premium for Omnium in August 1815. Of course, similar errors occur when later works use some 1815 statistics of *The Annual Register*; see, for example, the prices for Consols in the otherwise excellent study by O'Brien (1967, p. 504).

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 it started at 3½ above par (or at 4 according to a few newspapers) and then fell to 2¼ and 2 ½ 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, as reproduced in *The European Magazine,* and I also used the main London newspapers and *The Gentleman's Magazine*. The empty cells in the Table 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.

This Irish Loan (organised by the British government) was not opened on Saturday 21 March 1807, contrary to the information by Sraffa (X, pp. 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 the latter had accepted the British Loan of a few weeks earlier. The final negotiations with Barnes-Steers-Ricardo were not held on the same Saturday 21, but on Monday 23. Then various newspapers on Tuesday reported that the Loan contract was signed on Monday 23. *The Morning Chronicl*e 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 3¼ to 3½ 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 3% <u>Consols</u> (all quantities in £)

1. Date of the Loan Contract	*2. Total sum raised by the Loan*	*3. Total Quantity of 3% Consols in the Loan*	*4.Quantity of 3% Consols registered via subscription by Ricardo in that year*	*5.Percentage of Loan Consols personally subscribed by Ricardo*
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 3% <u>Reduced</u> (all quantities in £)

1. Date of the Loan Contract	*2. Total sum raised by the Loan*	*3. Total Quantity of 3% Reduced in the Loan*	*4.Quantity of 3% Reduced registered via subscription by Ricardo in that year*	*5. Percentage of Loan Reduced personally subscribed by Ricardo*
1807 March 3	14,200,000	9,940,000	} unknown	unknown
1807 March 23 (for Ireland)	1,500,000	nil		
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*	1,37 %

Sources and comments for Tables 3a and 3b: The data in columns 1, 2 and 3 are in Hamilton (1818, pp. 117-127). For column 4 of Table 3a, see Sraffa's Ricardo edition (X, p. 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 "usually" took himself. We have no direct information on the latter. The results of the columns 5 are disappointingly erratic; I had hoped that the values in column 5 would have suggested some easily recognisable pattern.

Table 4: The premiums of the Omnium of 1815

Date	*Lowest and highest premium (percent above par)*	*Comment*
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	$2\frac{1}{2} - 2\frac{5}{8}$	all values in important newspapers are *below* 3; strangely, Sraffa (X, p. 83) writes that Omnium "remained *above* 3"
Friday 16 June	$2\frac{1}{2} - 3\frac{3}{4}$	
Saturday 17 June	$3 - 3\frac{1}{2}$	payment day for the first instalment
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 *The Morning Post* publishes premature positive rumours from a Mr. Sutton
Wednesday 21 June	$4\frac{1}{4} - 5\frac{3}{4}$	some sales by Ricardo today and on earlier days
Thursday 22 June	$7\frac{5}{8} - 9$	official news of victory reached London on Wednesday night; omnium starts at 9, 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	$10 - 12\frac{1}{2}$	news of the abdication of Napoleon (on Thursday 22 June) available in London on Monday morning
Tuesday 27 June	$11\frac{1}{2} - 13$	Ricardo writes to Malthus: I sold at a premium of from 3 to 5 percent (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	$11\frac{3}{4} - 12\frac{1}{4}$	Bank of England issues the subscription receipts (Scrips) for the payment of the first instalment (see also 17 June)
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 the payment day of the last monthly 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 by Wetenhall in *The European Magazine*. Because Wetenhall does not provide the prices of the 1815 Omnium in the first ten days after its opening, I compiled most of the data from 14 June till 23 June 1815 from *The Morning Chronicle*, but I had to take the prices for 17 June from *The Observer*, and for 23 June from *The Times*, because on a few days *The Morning Chronicle* (and other newspapers) rather unpredictably failed to report the prices. Similar tables of price movements can be constructed for the Consols and Reduced, because they all moved parallel with the prices of the Omnium.

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

1. Period	2. Purchases from existing holder	3. Purchases by subscription	4. Total purchases	5. Total sales	6. Balance of stock in hand at the 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
15 June-18 July	422,000	96,000	518,000	200,000	318,000
a part of 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
The year 1815	**1,288,000**	**500,000**	**1,788,000**	**1,658,000**	**130,000**

Sources and comments:

This Table computed the transactions by Ricardo in three percent Consols in 1815, by using the data in Sraffa's unpublished papers (file D3/11/25:7), which Sraffa took from the Stock Ledgers of the Bank of England. In these Stock Ledgers each page contains 70 transactions. Therefore, each time interval in my column 1 above represents 70 transactions. Sraffa (file D3/11/25:8) mentions that on 18 July 1815 Ricardo made 110 sales of £1,000 to £5,000 each. Because this means more than 70 transactions, they were spread over three pages in the Stock Ledgers, and this explains why 18 July appears in three rows of my column 1. Do also note that the first period starts at 28 January 1815, because in the first weeks of 1815 Ricardo was at Gatcomb Park (about 100 miles away from the London Stock Exchange). The time interval between 31 May and 14 June is not mentioned in my Table, because no purchases or sales by Ricardo were registered in this period. Note that Table 5 above (and all other Tables of Ricardo's transactions in my Appendix) consider *registered* transactions only. Probably Ricardo made many *time bargains* between 31 May and 14 June, and in other periods, but such transactions were not registered by the Bank of England (on unregistered transactions, see also my Sections 2.1 and 2.4).

My Table 5 simplifies the interpretation of the data for 1815 in Sraffa's file D3/11/25:7, in which Sraffa used only three columns of data. Sraffa's first column is rather difficult to interpret, because its row t gives the sum of the total purchases in period t itself plus "the balance of stock in hand" (the total quantity owned by Ricardo) at the end of period t-1. Sraffa's other two columns are simply equivalent to my columns 6 and 3. Then I can consecutively construct my columns 4, 2, and 5, by performing some elementary summations and subtractions on Sraffa's figures.

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, row 5). In the next period, his total purchases were £521,000 (column 4, row 6) and his total sales were £471,000 (column 5, row 6); in this way he increased his stock by £50,000. Therefore, his new stock at the end of the sixth period is £24,000 plus £50,000, which makes £74,000 (column 6, row 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	5. Balance of Stock of Reduced in hand on 31 December	6. Sum of all total purchases
1809	2,207,000	102,000	1,064,000	34,000	3,271,000
1810	2,547,000	nil	833,000	31,000	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	nil	5,367,000
1815	1,788,000	130,000	1,282,000	nil	3,070,000
1816	1,305,000	295,000	1,498,000	138,000	2,803,000
1817	456,000	46,000	128,000	13,000	584,000

Sources and comments:

I cannot extend Table 6 to years before 1809 due to lack of data for Reduced. After 1817 the quantities become negligibly small. The columns for Consols are based upon data published by Sraffa (X, p. 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. Columns 3 and 5 suggest that 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. Column 6 is obtained by the sum of column 2 and column 4. Column 6 reveals that *the year 1813 (not 1815) is the year with the highest purchases*.

References

Archives

Bank of England, London: Stock Ledgers (accounts of the Jobbers), and Committee of Treasury Report Book 1797-1832

Guildhall Library, London: Archives of the London Stock Exchange

London Metropolitan Archives: Angerstein Family Papers

Newcastle University Library: Special Collections

Ricardo Papers, Department of Manuscripts and University Archives, Cambridge University Library

Sraffa Papers, Wren Library, Trinity College, Cambridge

Other references

Armstrong, Frederick Ernest. 1939. *The Book of the Stock* Exchange. Third edition, London: Pitman.

Ashton, Thomas Southcliffe. 1948. "Some Statistics of the Industrial Revolution in Britain", *Transactions of the Manchester Statistical Society*, Session 1947-1948, pp. 1-21. The same text also appeared in 1948 in *The Manchester School of Economic and Social Studies*, vol. 16, no. 2, pp. 214-234.

Barnes, John. 1806. *Letter, Addressed to the Gentlemen who Subscribed to the List for the Late Loan, Formed by Messrs. Barnes, C. and J. Steers, and Ricardo*. London: B. McMillan.

Berenger, Charles Random Baron de. 1816. *The Noble Stock-Jobber, or Facts Unveiled: Irrefutably to Disprove Lord Cochrane's Affidavits*. London: R. S. Kirby.

Bonar, James, 1885. *Malthus and His Work*. London: Macmillan.

Bonar, James. 1923. "Review of 'Economic Essays' by David Ricardo, Edited by Edward C.K. Gonner", *Economic Journal*, vol. 33, no. 131, pp. 413-414.

Brogden, Thomas William. 1894. “Major Percy’s Mission after Waterloo” [Letter to the Editor], *The Spectator*, vol. 72, 20 January, pp. 83-84.

Brown, William O. Jr., Richard C.K. Burdekin, and Marc D. Weidenmier. 2006. “Volatility in an Era of Reduced Uncertainty: Lessons from Pax Britannica”, *Journal of Financial Economics,* vol. 79, no. 3, pp. 693-707.

Cannan, Edwin. 1919. *The Paper Pound of 1797-1821*. London: P.S. King & Son.

Cathcart, Brian. 2015. *The News from Waterloo. The Race to Tell Britain of Wellington’s Victory*. London: Faber and Faber.

Churchman, Nancy. 2001. *David Ricardo on Public Debt*. Houndmills: Palgrave.

Clapham, John. 1944. *The Bank of England. A History*. Volume 1: 1694-1797. Volume 2: 1797-1914. Cambridge: Cambridge University Press.

Cook, Chris and John Stevenson. 1980. *British Historical Facts 1760-1830*. Houndmills: Palgrave Macmillan.

Cope, Sidney Raymond. 1942. “The Goldsmids and the Development of the London Money Market during the Napoleonic Wars”, *Economica,* vol. 9, no. 34, pp. 180-206.

Credland, Arthur G. 2006. “Charles Random, Baron de Berenger, inventor, marksman and proprietor of the Stadium”, *Arms & Armour*, vol. 3, no. 2, pp. 171-191.

Cremaschi, Sergio. 2017. “Theological Themes in Ricardo’s Papers and Correspondence”, *European Journal of the History of Economic Thought,* vol. 24, no. 4, pp. 784-808.

Dairnvaell, Georges (Satan). 1846. *Histoire édifiante et curieuse de Rothschild I^{er}, Roi des Juifs*. Paris: Chez l’Editeur, Rue Colbert-Vivienne, 4.

De Vivo, Giancarlo. 1987. “Ricardo, David (1772-1823)”. In: *The New Palgrave. A Dictionary of Economics.* Edited by John Eatwell, Murray Milgate, and Peter Newman. London: Macmillan, vol. 4, pp. 183-198.

De Vivo, Giancarlo (editor). 2014. *Catalogue of the Library of Piero Sraffa*. Milan: Fondazione Raffaele Mattioli, and Turin: Fondazione Luigi Einaudi.

Dorfman, Joseph. 1966. *The Economic Mind in American Civilization 1606-1865*. Volume Two. New York: Kelley.

Dorfman, Joseph and Rexford Guy Tugwell. 1933. "Henry Vethake. A Chapter in the Development of the Higher Learning in the United States", *Columbia University Quarterly,* vol. 25, no. 4, pp. 334-364.

Duchatelet, Martine. 2006. "Did Napoleon Win the Battle of Waterloo?", *Journal of the International Academy for Case Studies,* vol. 12, no. 3, pp. 57-61; no. 4, pp. 65-69.

Duguid, Charles. 1901. *The Story of the Stock Exchange. Its History and Position*. London: Grant Richards.

Einaudi, Luigi. 1929. "James Pennington or James Mill: An early correction of Ricardo", *Quarterly Journal of Economics*, vol. 44, no. 1, pp. 164-171.

Engels, Friedrich. 1846. "Government and Opposition in France", *The Northern Star*, no. 460 (5 September), pp. 27-29. Reprinted in 1976 in *Marx-Engels Collected Works*. London: Lawrence and Wishart, vol. 6, p. 61.

Farington, Joseph. 1922-1928. *The Farington Diary*. Volumes I-VIII. Edited by James Greig. London: Hutchinson.

Farington, Joseph. 1978-1998. *The Diary of Joseph Farington.* Volumes I-XVII. Edited by Kenneth Garlick, Angus Macintyre, Kathryn Cave, and Evelyn Newby. New Haven: Yale University Press.

Fenn, Charles. 1855. *Fenn's Compendium of the English and Foreign Funds*. Fifth Edition. Revised, corrected and brought down to the present time by Henry Ayres. London: Effingham Wilson.

Fenn, Charles. 1883. *Fenn's Compendium of the English and Foreign Funds*. Thirteenth Edition. Entirely re-written, and brought down to the latest date by Robert Lucas Nash. London: Effingham Wilson.

Gehrke, Christian. 2010. "Sraffa's Great Passion. The Postmistress, the Traveller's Guide, the Chess-Player, and the Fair Circassian". In: *Economic Theory and Economic Thought. Essays in Honour of Ian Steedman.* Edited by John Vint, J. Stanley Metcalfe, Heinz D. Kurz, Neri Salvadori and Paul A. Samuelson. London: Routledge, pp. 283-295.

Gehrke, Christian and Heinz D. Kurz. 2002. “Keynes and Sraffa’s ‘Difficulties with J.H. Hollander’. A Note on the History of the RES Edition of The Works and Correspondence of David Ricardo”, *European Journal of the History of Economic Thought*, vol. 9, no. 4, pp. 644-671.

The Genealogist. 1878. Volume 2. Edited by George W. Marshall. London: Golding and Lawrence.

Grant, James. 1837. *The Great Metropolis*. Volume 2. Second Series. London: Saunders and Otley.

Grellier, John James and Robert Watson Wade. 1812. *The Terms of All the Loans Which Have Been Raised for the Public Service.* Third Edition. London: Richardson.

Gurney, William Brodie. 1814. *The Trial of Charles Random De Berenger, Sir Thomas Cochrane, Commonly Called Lord Cochrane, The Hon. Andrew Cochrane Johnstone, Richard Gathorne Butt, Ralph Sandom, Alexander M’Rae, John Peter Holloway, and Henry Lyte; for a Conspiracy*. London: J. Butterworth.

Halkett, Samuel and John Laing. 1882. *A Dictionary of the Anonymous and Pseudonymous Literature of Great Britain.* Volume 1. Edinburgh: William Paterson.

Hamilton, Robert. 1818. *An Inquiry Concerning the Rise and Progress, the Redemption and Present State, and the Management, of the National Debt of Great Britain and Ireland*. Third Edition. Edinburg: Oliphant, Waugh, and Innes.

Hansard, Thomas Curson. 1815. *The Parliamentary Debates from the Year 1803 to the Present Time. Volume 31. Comprising the Period from the Second Day of May, to the Twelfth Day of July, 1815*. London: Hansard.

Heertje, Arnold. 1974. “On David Ricardo (1772-1823)”, *The Jewish Historical Society of England. Transactions. Sessions 1970-1973*. Volume 24, pp. 73-81.

Heertje, Arnold. 2015. “Life and Activities”. In: *The Elgar Companion to David Ricardo*. Edited by Heinz D. Kurz and Neri Salvadori. Cheltenham: Edward Elgar, pp. 264-272.

Henderson, John Patrick and John Bryan Davis. 1997. *The Life and Economics of David Ricardo*. Boston: Kluwer.

Hollander, Samuel. 1979. *The Economics of David Ricardo*. Toronto: University of Toronto Press.

Homer, Sidney. 1963. *A History of Interest Rates*. New Brunswick, NJ: Rutgers University Press.

Homer, Sidney and Richard Sylla. 2005. *A History of Interest Rates*. Fourth Edition. Hoboken, NJ: Wiley.

Hutchinson, Martin and Kevin Dowd. 2018. "The Apotheosis of the Rentier: How Napoleonic War Finance Kick-Started the Industrial Revolution", *Cato Journal*, vol. 38, no. 3, pp. 655-678.

James, Patricia. 1979. *Population Malthus. His Life and Times*. London: Routledge.

Kaldor, Nicholas. 1985. "Piero Sraffa, 1898-1983", *Proceedings of the British Academy*, vol. 71, pp. 615-640.

Kaplan, Herbert H. 2006. *Nathan Mayer Rothschild and the Creation of a Dynasty. The Critical Years 1806-1816*. Stanford: Stanford University Press.

Keynes, John Maynard. 1972 [1933]. *Essays in Biography*. Volume X in *The Collected Writings of John Maynard Keynes*. London: Macmillan.

King, John Edward. 2013. *David Ricardo*. Houndmills: Palgrave Macmillan.

Kurz, Heinz D. 2016. "David Ricardo (1772-1823)". In: *Handbook on the History of Economic Analysis. Volume 1. Great Economists since Petty and Boisguilbert*. Edited by Gilbert Faccarello and Heinz D. Kurz. Cheltenham: Edward Elgar, pp. 120-143.

Kurz, Heinz D. and Neri Salvadori (editors). 2015a. *The Elgar Companion to David Ricardo*. Cheltenham: Edward Elgar.

Kurz, Heinz D. and Neri Salvadori. 2015b. "Samuelson, Paul Anthony, on Ricardo". In: *The Elgar Companion to David Ricardo*. Edited by Heinz D. Kurz and Neri Salvadori. Cheltenham: Edward Elgar, pp. 495-499.

Kynaston, David. 1995. *The City of London. Volume 1: A World of its Own 1815-1890*. London: Pimlico.

Lancaster, Joseph. 1821. *The Bank—The Stock Exchange—The Bankers—The Bankers' Clearing House—The Minister, and the Public. An Exposé, Touching Their Various Mysteries*. London: Effingham Wilson, and J. Ridgway.

Mallet, John Lewis. 1921 [1823-1837]. Diary entry. In: *Political Economy Club. Minutes of Proceedings 1899-1920. Roll of Members and Questions Discussed, 1821-1920. With Documents Bearing on the History of the Club*. Volume VI. London: Macmillan, pp. 205-275.

Malthus, Thomas Robert. 1815. *The Grounds of an Opinion on the Policy of Restricting the Importation of Foreign Corn*. London: John Murray.

McCulloch, John Ramsay and Henry Vethake. 1840. *A Dictionary, Practical, Theoretical, and Historical, of Commerce and Commercial Navigation.* Volumes I-II. Philadelphia: Thomas Wardle.

Mitchell, Brian Robert. 1988. *British Historical Statistics*. Cambridge: Cambridge University Press.

Mitchell, Brian Robert and Phyllis Deane. 1962. *Abstract of British Historical Statistics*. Cambridge: Cambridge University Press.

Mitchell, Wesley Clair. 1967. *Types of Economic Theory. From Mercantilism to Institutionalism*. Edited by Joseph Dorfman. Volume I. New York: Kelley.

Moore, Thomas. 1853-1856. *Memoirs, Journal, and Correspondence of Thomas Moore.* Volumes I-VIII. Edited by John Russell. London: Longman, Brown, Green, and Longmans.

Morgan, Edward Victor and William Arthur Thomas. 1969. *The Stock Exchange. Its History and Functions*. Second edition. London: Elek Books.

Murphy, Anne L. 2019. "Performing Public Credit at the Eighteenth-Century Bank of England", *Journal of British Studies*, vol. 58, no. 1, pp. 58-78.

Neild, Robert. 2008. *Riches and Responsibility. The Financial History of Trinity College, Cambridge.* Cambridge: Granta Editions.

Niles, Hezekiah. 1815. "British Statistics. Expenditures, Loans, etc. for 1815", *Niles' Weekly Register,* vol. 9, no. 5 (30 September), pp. 66-69.

O'Brien, Patrick Karl. 1967. *Government Revenue, 1793-1815. A Study in Fiscal and Financial Policy in the Wars against France.* Doctoral dissertation: University of Oxford.

Peach, Terry. 2008. "Ricardo, David (1772-1823)". In: *The New Palgrave Dictionary of Economics.* Second Edition, vol. 7. Edited by Steven N. Durlauf and Lawrence E. Blume. Houndmills: Palgrave Macmillan, pp. 163-177.

Pullen, John. 2013. "Further Details of the Life and Financial Affairs of T.R. Malthus", *History of Economics Review,* vol. 57, no. 1, pp. 16-31.

Raines, J. Patrick and Charles G. Leathers. 2000. *Economists and the Stock Market. Speculative Theories of Stock Market Fluctuations*. Cheltenham: Edward Elgar.

Read, Colin. 2016. *The Public Financiers*. Houndmills: Palgrave Macmillan.

Reeves, John. 1887. *The Rothschilds. The Financial Rulers of Nations*. London: Sampson Low, Marston, Searle, and Rivington.

Ricardo, David. 1809. "The Price of Gold", *Morning Chronicle,* 29 August. [Published anonymously]

Ricardo, David. 1816. *Proposals for an Economical and Secure Currency*. London: John Murray.

Ricardo, David. 1817. *On the Principles of Political Economy, and Taxation*. London: John Murray.

Ricardo, David, 1951-1973. *The Works and Correspondence of David Ricardo*. Edited by Piero Sraffa with the collaboration of Maurice Herbert Dobb. Volumes I-XI. Cambridge: Cambridge University Press.

Samuelson, Paul Anthony. 1962. "Economists and the History of Ideas", *American Economic Review,* vol. 52, no. 1, pp. 1-18.

Samuelson, Paul Anthony. 1990. "Revisionist Findings on Sraffa". In: *Essays on Piero Sraffa. Critical Perspectives on the Revival of Classical Theory*. Edited by Krishna Bharadwaj and Bertram Schefold. London: Unwin Hyman, pp. 263-279.

Samuelson, Paul Anthony. 2001. "Ricardo, David (1772-1823)". In: *International Encyclopedia of the Social and Behavioral Sciences*. Edited by Neil J. Smelser and Paul B. Baltes. Amsterdam: Elsevier, vol. XX, pp. 13330-13334.

Samuelson, Paul Anthony. 2009. “An Enjoyable Life Puzzling over Modern Finance Theory”, *Annual Review of Financial Economics*, vol. 1, pp. 19-35.

Schoorl, Evert. 2013. *Jean-Baptiste Say. Revolutionary, Entrepreneur, Economist*. London: Routledge.

Silberling, Norman J. 1924. “Financial and Monetary Policy of Great Britain during the Napoleonic Wars: Ricardo and the Bullion Report”, *Quarterly Journal of Economics*, vol. 38, no. 3, pp. 397-439.

Skousen, Mark. 2016. *The Making of Modern Economics. The Lives and Ideas of the Great Thinkers*. Third Edition. New York: Routledge.

Sraffa, Piero. 1930. “An Alleged Correction of Ricardo”, *Quarterly Journal of Economics*, vol. 44, no. 3, pp. 539-544.

Sraffa, Piero (editor with the collaboration of Maurice Herbert Dobb). 1951-1973. *The Works and Correspondence of David Ricardo*. Volumes I-XI. Cambridge: Cambridge University Press.

Sunday Times. 1823. (14 September). Obituary of David Ricardo, p. 1, col. 3-4. [It is now generally accepted that the anonymous obituary was written by the newspaper’s founder Daniel Whittle Harvey].

Thompson, Neville. 1999. *Earl Bathurst and the British Empire 1762-1834*. Barnsley: Leo Cooper.

Twist, Anthony Frederick. 2002. *Widening Circles in Finance, Philanthropy and the Arts. A Study of the Life of John Julius Angerstein 1735-1823*. Doctoral dissertation: University of Amsterdam.

Vethake, Henry. 1840. “The Distinctive Provinces of the Political Philosopher and the Statesman”, *The Merchants’ Magazine, and Commercial Review*, vol. 2, no. 2, pp. 100-119.

Viner, Jacob. 1945. “Clapham on the Bank of England”, *Economica*, vol. 12, no. 46, pp. 61-68.

Wadsworth, Alfred P. 1955. “Newspaper Circulations, 1800-1954”, *Transactions of the Manchester Statistical Society*. Session 1954-1955, pp. 1-41.

Warsh, David. 2011. “Paul Samuelson’s Secret”, *Economic Principals* (23 January). Online at http://www.economicprincipals.com/issues/2011.01.23/1225.html

Weatherall, David. 1976. *David Ricardo. A Biography.* The Hague: Martinus Nijhoff.

Wikipedia. 2020. “David Ricardo”. Online at https://en.wikipedia.org/wiki/David_Ricardo (accessed 5 January 2020).

Zeckhauser, Richard. 2006. “Investing in the Unknown and Unknowable”, *Capitalism and Society,* vol. 1, no. 2, pp. 1-39.

Zeckhauser, Richard. 2010. “Investing in the Unknown and Unknowable”. In: *The Known, the Unknown, and the Unknowable in Financial Risk Management*. *Measurement and Theory Advancing Practice*. Edited by Francis X. Diebold, Neil A. Doherty, and Richard J. Herring. Princeton: Princeton University Press, pp. 304-346. [This is a slightly modified version of Zeckhauser 2006].

Ziegler, Philip. 1988. *The Sixth Great Power: A History of One of the Greatest of All Banking Families, the House of Barings, 1762-1929.* New York: Knopf.

Abstract

Samuelson and numerous other authors have presented colourful stories about how David Ricardo became the richest economist in history. The Samuelsonian legends suggest that Ricardo was an extreme risk-taker, especially in the period of the Battle of Waterloo (June 1815), that he used inside information and market manipulation, and that his decision to retire was caused by his big "Waterloo profits" in 1815. The often-quoted Ricardo obituary in *The Sunday Times* suggested that Ricardo upon this single occasion "netted upwards of a million sterling". After consulting relevant archival material in the Bank of England, the Guildhall Library and the Metropolitan Archives in London, the Ricardo Papers and the Sraffa Papers in Cambridge, I conclude that many tales on Ricardo lack historical evidence.

To develop my criticism of some 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 Stock Exchange in London during Ricardo's business career. Already in 1795, two years after starting his own business there, Ricardo could afford a wealthy lifestyle. The Stock Ledgers in the Bank of England show how Ricardo quickly became one of the top dealers on the Stock Exchange, where his unusually large number of transactions as a jobber created considerable total profits, generated by multiplying a small average profit per day by a few thousand working days in his business career. Ricardo also served on various committees of the Stock Exchange, trying to improve its moral principles, and defending the interests of its members. Several examples show that his own standards at the Stock Exchange were much more integer than average.

From 1806 on, Ricardo could participate in biddings for the large Loans of the British government, which was possible only for a few financiers of excellent moral and financial standing. Ricardo acted as the financially most important partner in a consortium that included John Barnes and James Steers. Sraffa and others have signalled the existence of an open detective problem about the name of the unknown fourth member in this consortium. To solve this problem, I draw attention to the Minutes of the Stock Exchange, some genealogical sources, the diaries of Joseph Farington, and a neglected 1806 letter from John Barnes to potential subscribers of the 1806 Loan. This leads to overwhelming evidence that the unknown fourth man is Charles Steers, a brother of James Steers.

Ricardo was a co-contractor for seven big British Loans (1807, 1811, 1812, June 1813, November 1813, 1814, 1815) and a small Irish Loan (1807). All these Loans started with a positive premium. Ricardo made some big gains from several Loans, especially from 1812 on, when the Loans were large and profitable for him and for a few other top financiers. On these occasions Ricardo's small or medium *rates* of profits on a large investment generated large *total* profits. His correspondence shows that he often preferred to sell a large part of his Loan share rather quickly, and that he was "contented" with the results of his cautious strategy, even when he noticed more profitable prices one or two weeks after his sales. Samuelson's story about the extreme difference between Ricardo's and Malthus's attitude to risk in 1815 is exaggerated. I also show that, contrary to Sraffa's and Heertje's information, the 1815 Loan was taken by only two consortia, not four.

Contrary to Samuelson's claims, it is evident that Ricardo possessed no early information about the defeat of Napoleon at Waterloo. Otherwise it is inexplicable that Ricardo sold part of his Omnium at 3 to 5 percent premium, just before the premium rose further when the official news from Waterloo

reached London. There is no archival evidence for legends about Ricardo's "million of Waterloo profits" in 1815 or for strikingly similar myths about Nathan Mayer Rothschild.

Probably the year 1813 also deserves special 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 Waterloo Loan of 1815. The sum of the profits of the two 1813 Loans might have encouraged Ricardo to start making plans in 1813 for his retirement. His Waterloo gains were a substantial bonus, but without this bonus Ricardo would not have changed his retirement plans.

In the Appendix of my paper I present various relevant statistical tables. They form an essential part of my study, because the exact data are often ignored or misrepresented. For example, many authors 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 by Homer & Sylla (2005). I claim that the origin of these errors can ultimately be traced back to deficient tables in the Nash edition of Fenn's Compendium of 1883, and I try to provide more reliable financial data by using the main newspapers and magazines from the early 19th century.