Title: Overcoming Absolute and Comparative Advantage: A Reappraisal of the Relative Cheapness of Foreign Commodities As the Basis of International Trade

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Abstract

The paper proves that the cloth traded in the famous numerical example in chapter 7 of the *Principles* cost less money to produce in England than in Portugal, despite the fact that it could be made with less quantity of labour in the latter. Consequently, Portugal had no cost advantage, in money, over England in the production of cloth. This novel interpretation of the numerical example refutes the widespread belief that David Ricardo proposed there a new law, principle or rule for international specialisation, known as *comparative advantage*. He rather used the same rule for specialisation as Adam Smith in the *Wealth of Nations*. Thus, the popular contraposition of Smith's absolute versus Ricardo's comparative cost advantage has to be dismissed.

Keywords: comparative advantage, absolute cost advantage, David Ricardo, Adam Smith, classical rule for specialisation

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Introduction

> *"The motive which determines us to import a commodity, is the discovery of its relative cheapness abroad: it is the comparison of its price abroad with its price at home."*
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> David Ricardo, *Principles*

Economic textbooks tell a simple and compelling story about the theoretical foundation of international trade. According to the textbook narrative, Adam Smith made us all believe that foreign exchanges were based on absolute advantages in the cost of production, until David Ricardo proved him wrong by discovering the law or principle of comparative advantage. With the help of four "magic numbers", Ricardo allegedly demonstrated in chapter 7 of the *Principles* that international trade is based on comparative rather than absolute production cost advantages.

The fact that nowadays most explanations of comparative advantage start with a reference to absolute advantage is indicative of the ongoing appeal and widespread popularity of this narrative among economists. Notwithstanding, a thorough review of the literature reveals that in recent years a growing list of scholars have been partially questioning the factual and historical accuracy of the contraposition of Smith's absolute cost advantage and Ricardo's comparative advantage.

With respect to the absolute-advantage side of the contraposition, the range of opinions in the literature goes from the justified but inadequate criticism that economic textbooks have unduly reduced Smith's thoughtful views on international trade to the theory of absolute cost advantage (Schumacher 2012), to a flat-out denial that he was the author of this theory (Ruffin 2005).

A similar diversity of opinions can be found with respect to comparative advantage. Some scholars have expressed doubts about whether Ricardo really grasped the insight[2], while others claim that one can already find traces of it in the *Wealth of Nations*.[3] Pullen (2006) even states that Ricardo's case for international specialisation is based on absolute advantage, not comparative advantage. Schumacher (2013, p. 88), on the other hand, affirms the following: "Ricardo states that domestic and international trade are regulated by different rules, the former by absolute and the latter by comparative production cost advantages." Unfortunately, he does not indicate the

[2] See Chipman (1965, p. 480).

[3] See, for example, O'Brien (2004, p. 211). Hont (2005, p. 68) argues that Smith had already grasped the basics of this principle without as yet using the confusing term comparative advantage, while Magnussen (2004, p. 30-31) goes even further and refers to Smith as a founding father of the comparative cost theory.

specific passage where Ricardo is supposed to have written this, and so far, I could not find a similar statement in the *Principles* nor in any other of his writings.

All these conflicting opinions suggest that the prior consensus on the textbook narrative about the foundation of international trade is starting to erode. Moreover, they are also indicative of a growing confusion among economists about which of the two rules for specialisation should be considered as the basis of international trade, and who should be credited for its discovery.

The origin of this confusion seems to be the misinterpretation of Ricardo's four numbers as the amount of labour required for the production of one unit of cloth and wine. As most scholars agree now, they should be correctly interpreted as the number of men working for a year required to produce some unspecified amounts of cloth and wine traded between England and Portugal. This accurate definition of the four numbers in the *Principles* shows quite clearly that Ricardo did not propose a new rule for international specialisation. On the contrary, he used the same rule as Smith and other classical political economists. The rule has been traced back to an anonymous pamphlet titled "*Considerations on the East-India Trade*" published in 1701, which is currently attributed to the English journalist Henry Martyn.[4]

These findings are in open contradiction with the longstanding practice of contraposing Smith's absolute and Ricardo's comparative advantage in the cost of production. Notwithstanding, most economists still cling to the current textbook narrative as if nothing had happened. Even the aforementioned critics of this narrative centre on a specific aspect of the absolute-versus-comparative-advantage framework, without questioning nor transcending it. This unusual restraint seems to be the result of the special status of comparative advantage within mainstream economic theory. Many economists indeed revere comparative advantage as "the deepest and most beautiful result in all of economics" (Findlay, 1987, p. 514). When teased by the mathematician Stanislaw Ulam to name a single proposition in all of the social sciences that is both true and non-trivial, Nobel Memorial Prize laureate Paul A. Samuelson could only think of the theory of comparative advantage, and the answer occurred to him some thirty years after being challenged.[5] Paul Krugman, another Nobel laurate economist, affirms: "If there were an Economist's Creed, it would sure contain the affirmations "I understand the Principle of Comparative Advantage" and "I advocate Free Trade"" (Krugman, 1987, p. 131). It is therefore quite understandable why most economists have decided to stay with the beleaguered but familiar narrative rather than risking their academic reputation by messing up with "one of the crown jewels of the economics profession" (Rodrik, 1998, p. 3).

[4] See MacLeod (1983).

[5] See Samuelson (1969).

Recently, a few scholars have tried to accommodate the ongoing reassessment of Ricardo's numerical example within the traditional absolute-versus-comparative-advantage-framework. According to Farhad Rassekh (2015), the theory of comparative advantage is still the pinnacle of international trade theory, and can already be found in the *Wealth of Nations*. He further claims that Martyn, by articulating what has been doubted the eighteenth-century rule, "prepared the path for the intellectual transition from absolute advantage to comparative advantage as the basis of trade" (Rassekh, 2015, p. 60). In essence, Rassekh proposes to add a third component to the textbook narrative right in between the usual sequence of absolute and comparative advantage.

Gilbert Faccarello (2015), on the other hand, attempts to restate Ricardo's approach to international trade by looking beyond the few paragraphs of chapter 7 of the *Principles* that deal with the "principle of comparative advantage" and the related "gains from trade". This allows him to shed light on some long-omitted passages of the book that contradict the textbook narrative. But instead of taking Ricardo's statements as basis for critically reviewing the mainstream theory of comparative advantage, he tries to reconcile them by relegating this theory to the background. According to Faccarello, the principle of comparative advantage and the related gains from trade should not be seen as a "rule for action" but merely as "unintended consequences of the decisions of agents in free markets" (Faccarello, 2015, pp. 787-788). The lack of correspondence between this interpretation and what is actually written in the *Principles* is explained quite conveniently by Ricardo's alleged poor writing skills.

These proposed amendments diminish the main strength of the current textbook narrative – its deceptive simplicity – without addressing its core flaw: the misleading contraposition of absolute and comparative production costs advantages. It is therefore unlikely that they will help to restore the consensus on the foundation of international trade.

The aim of the present paper is to debunk the contraposition of absolute and comparative production costs advantages by proving that it is the result of a widespread misinterpretation of the famous numerical example in the *Principles*. The misinterpretation consists in the following: it has been erroneously inferred from Ricardo's indication that the making of the lot of cloth traded would have required less labour in Portugal than in England, that the Portuguese cloth had to have lower production costs, in money, than the English cloth. As will be unequivocally proven here for arguably the very first time, though, the English cloth was in fact cheaper to produce that the Portuguese cloth. Thus, Portugal had no production cost advantage over England in cloth making.

This novel interpretation of Ricardo's numerical example allows to reconstruct the original consensus on the foundation of international trade and the corresponding rule

for specialization between the two most influential and prestigious classical political economists. Both Smith and Ricardo viewed the cheaper price of foreign articles as the logical starting point and *condicio-sine-qua-non* of most exchanges between countries.[6] Hence, both considered the relative cheapness of foreign articles as the basis of international trade, with its corresponding rule for specialisation that one should acquire commodities abroad whenever they are offered more cheaply than local products of similar quality.

The paper is structured as follows. After this introduction, section two of the paper argues that the now ubiquitous contraposition of absolute and comparative advantage is completely absent from the *Wealth of Nations* and the *Principles*. Section three reconstructs what Smith actually wrote in the *Wealth of Nations* about the foundation of trade and the proper rule for specialisation. The forth section is dedicated to proving that Ricardo agreed with him on these issues. This will be done not only by presenting several passages of the *Principles* where Ricardo explicitly stated his agreement with Smith, but also by proving that both the English cloth and Portuguese wine exchanged in his famous numerical example were indeed cheaper than the local production of these articles. Section five identifies an essay published by J. S. Mill in 1844 as the original source of the contraposition of absolute and comparative advantage. The last section before the conclusions explains why J. S. Mill's absolute-versus-comparative-advantage framework is completely inadequate for popularizing Ricardo's insights.

Smith's absolute costs versus Ricardo's comparative advantage?

The logical starting point for finding the original contraposition of absolute and comparative advantage is the famous numerical example in chapter 7 of Ricardo's magnum opus *On the Principles of Political Economy and Taxation* (1817). According to economic textbooks, this numerical example featuring the exchange of English cloth and Portuguese wine supposedly refuted Smith's theory of absolute cost advantage.

A careful study of the relevant paragraphs in the *Principles* reveals that what Ricardo originally intended to illustrate with the four numbers was the proposition that "the same rule which regulates the relative value of commodities in one country, does not regulate the relative value of the commodities exchanged between two or more countries" (Vol. 1, p. 133).[7] He also mentioned a possible implication of this

[6] The rather obvious exception to this requirement is when consumers consider the foreign article to be of superior quality than a local product, like, for example, French wine or Cuban cigars. In these cases, the foreign article would be imported irrespective of its higher price.

[7] Throughout this paper, all direct quotations of Ricardo are extracted from *The Works and Correspondence of David Ricardo*, Volume I to XI, 2004, edited by Piero Sraffa. I will refer to them usually by indicating the volume and page numbers only.

proposition, namely that Portugal might import cloth from England although it "could be produced there with less labour than in England" (Vol. 1, p. 135). I have already shown in previous occasions that it would have been impossible for Ricardo to prove this implication in a mutually beneficial exchange without contradicting his labour theory of value.[8]

The term "comparative advantage", however, is nowhere to be found in the chapter *On Foreign Trade*. It appears for the first and only time in the *Principles* in chapter XIX titled "*On Sudden Changes in the Channels of Trade*".[9] Hence, Ricardo's use of the term is not directly related to the two propositions he announced and fully proved in his famous numerical example.

The term *absolute advantage* – or *absolute cost advantage* –, on the other hand, is completely absent from the *Principles*. More importantly, there is not even a trace of a critique towards Smith with regard to the proper rule for international specialisation. This absence of critique is indeed surprising, taking into account that Ricardo had announced in the preface of the book that he would "advert more particularly to those passages in the writings of Adam Smith from which he sees reason to differ" (Vol. 1, p. 6). Since Ricardo followed through his announcement with respect to many other topics, it makes me wonder why did he abstain from criticising Smith on this particular issue?

The search for the term *absolute advantage* in the *Wealth of Nations* yields an equally unexpected result. Smith mentioned it only twice there, in relation with the advantages of the colonial trade for the metropolis.[10] The term does not appear though in the two adjacent paragraphs which most scholars quote as textual evidence for his alleged adherence to the theory of absolute cost advantage.[11]

So, while the terms absolute advantage and comparative advantage are indeed to be found in the *Wealth of Nations* and the *Principles*, respectively, there is no contraposition of the two terms in either of these books. Instead, they are rather mentioned on the fly, and neither Smith nor Ricardo bothered to offer a precise definition of them. More importantly, the terms do not appear in the passages which are mostly associated with Smith's alleged theory of absolute cost advantage and the so-called Ricardian theory of comparative advantage. Let us analyse these passages in

[8] See Morales Meoqui (2011, pp. 754-755; and 2017, pp. 39-40).

[9] Ricardo stated: "A new tax too may destroy the comparative advantage which a country before possessed in the manufacture of a particular commodity; or the effects of war may so raise the freight and insurance on its conveyance, that it can no longer enter into competition with the home manufacture of the country to which it was before exported" (Vol. 1, p. 263).

[10] See *WN* IV.vii.c.16, p. 594; and IV.vii.c18, p. 595.

[11] See *WN* IV.ii.11 and IV.ii.12, pp. 456-457.

detail in the next two sections, starting with the ones in the *Wealth of Nations*.

Smith's micro- and macroeconomic rule for specialisation

As consumers, we usually look to buy the necessities of life as cheap as possible. While searching for bargains, we do not bother much whether the desired articles were produced within the country or beyond its borders. Moreover, whenever we are confronted with the rare choice of making the article by ourselves or buying it from someone else, our decision is often guided by the maxim that one should never attempt to make something that cost less to buy.

In this respect, we are probably quite similar to Smith and his contemporaries. As a keen observer of the economic activities of his time, Smith realised that these common practices were not only beneficial for the individual consumer but for the country as a whole. Consequently, he recommended governments to abstain from protecting national industries which could not produce commodities cheaper than their foreign competitors, stating in the *Wealth of Nations*: "To give the monopoly of the home-market to the produce of domestick industry, in any particular art or manufacture, is in some measure to direct private people in what manner they ought to employ their capitals, and must, in almost all cases, be either a useless or a hurtful regulation. If the produce of domestick can be brought there as cheap as that of foreign industry, the regulation is evidently useless. If it cannot, it must generally be hurtful. It is the maxim of every prudent master of a family, never to attempt to make at home what it will cost him more to make than to buy" (*WN*, IV.ii.11, p. 456).

He further explained his point of view in the following paragraph: "What is prudence in the conduct of every private family, can scarce be folly in that of a great kingdom. If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with some part of the produce of our own industry, employed in a way in which we have some advantage. The general industry of the country, being always in proportion to the capital which employs it, will not thereby be diminished, no more than that of the above-mentioned artificers; but only left to find out the way in which it can be employed with the greatest advantage. It is certainly not employed to the greatest advantage, when it is thus directed towards an object which it can buy cheaper than it can make. The value of its annual produce is certainly more or less diminished, when it is thus turned away from producing commodities evidently of more value than the commodity which it is directed to produce. According to the supposition, that commodity could be purchased from foreign countries cheaper than it can be made at home. It could, therefore, have been purchased with a part only of the commodities, or, what is the same thing, with a part only of the price of the commodities, which the industry employed by an equal capital, would have produced at home, had it been left to follow its natural course. The

industry of the country, therefore, is thus turned away from a more, to a less advantageous employment, and the exchangeable value of its annual produce, instead of being increased, according to the intention of the lawgiver, must necessarily be diminished by every such regulation" (*WN*, IV.ii.12, p. 457).

Smith considered the advantages of acquiring goods from the cheapest seller as being so obvious to his readers that he saw no need to present any further proof.[12] It takes indeed little effort to convince consumers that they should buy a cheaper article instead of a dearer one of similar quality, irrespective of its place of origin. They realise perfectly well that with the money saved, they can buy additional goods and services of local and foreign origin, and thus increase their level of consumption. By contrast, interested merchants and manufactures always have a tough job when trying to lure their countrymen to buy dearer articles from them. Their campaigns in favour of buying locally produced articles often fail to convince enough people to have a significant economic impact. This is why protectionists usually prefer to call for tariffs and quotas, whose sole purpose it to make foreign articles artificially dearer for consumers. If protectionists had any real faith in their arguments about the alleged benefits of buying locally produced goods, then they would present their case to the public, and let consumers make their purchase decision based on undistorted market prices.

In line with Smith's view that individual consumers as well as the country benefit from acquiring goods at cheaper prices, it was of no importance to him whether the origin of the advantages that one country has over another for producing certain goods more cheaply were natural or acquired. He made this perfectly clear in the following statement:

"The natural advantages which one country has over another in producing particular commodities are sometimes so great, that it is acknowledged by all the world to be in vain to struggle with them. By means of glasses, hotbeds, and hotwalls, very good grapes can be raised in Scotland, and very good wine too can be made of them at about thirty times the expence for which at least equally good can be brought from foreign countries. Would it be a reasonable law to prohibit the importation of all foreign wines, merely to encourage the making of claret and burgundy in Scotland? But if there would be a manifest absurdity in turning towards any employment, thirty times more of the capital and industry of the country, than would be necessary to purchase from foreign countries an equal quantity of the commodities wanted, there must be an absurdity, though not altogether so glaring, yet exactly of the same kind, in turning

[12] Smith stated: "In every country it always is and must be the interest of the great body of the people to buy whatever they want of those who sell it cheapest. The proposition is so very manifest, that it seems ridiculous to take any pains to prove it; nor could it ever have been called in question, had not the interested sophistry of merchants and manufacturers confounded the common sense of mankind" (*WN*, IV.iii.c.10, p. 493-494).

towards any such employment a thirtieth, or even a three hundredth part more of either. Whether the advantages which one country has over another, be natural or acquired, is in this respect of no consequence. As long as the one country has those advantages, and the other wants them, it will always be more advantageous for the latter, rather to buy of the former than to make. It is an acquired advantage only, which one artificer has over his neighbour, who exercises another trade; and yet they both find it more advantageous to buy of one another, than to make what does not belong to their particular trades" (*WN*, IV.ii.15 pp. 458-459).

One can clearly deduce from the above quotes that Smith considered the possibility of acquiring articles at lower prices as the main motivation for trading with other countries. Thus, it seems only logical to conclude that he viewed the relative cheapness of foreign commodities as the basis of international trade. Moreover, Smith's corresponding rule for specialisation was that one should never attempt to make an article that cost less to buy. A positive formulation of the rule would be that one should always acquire articles abroad whenever they are offered more cheaply than what their internal production would cost. The next section is dedicated to proving Ricardo's agreement and recurrent use of this rule, which should be referred to as the *classical rule for specialisation*.

Ricardo's agreement with Smith on the proper rule for specialization

It is in fact quite easy to find the passages in the *Principles* where Ricardo explicitly indicated that he too considered the relative cheapness of foreign commodities as the basis of most international exchanges. Perhaps the clearest statement in this respect is the one already quoted in the introduction of this paper, where he affirms that "the motive which determines us to import a commodity, is the discovery of its relative cheapness abroad: it is the comparison of its price abroad with its price at home" (Vol. 1, p. 170). He further emphasized this by pointing out that if a farmer decides to sell his corn below the price at which it is currently imported, this importation will stop under the supposition that the importer cannot reduce the price of the foreign corn even further (Vol. 1, p. 269). In the following passage Ricardo even expressed his explicit agreement with Smith on the benefits of acquiring manufactures from the markets with the cheapest prices: "Adam Smith, in his observations on colonial trade, has shewn, most satisfactorily, the advantages of a free trade, and the injustice suffered by colonies, in being prevented by their mother countries, from selling their produce at the dearest market, and buying their manufactures and stores at the cheapest. He has shewn, that by permitting every country freely to exchange the produce of its industry when and where it pleases, the best distribution of the labour of the world will be effected, and the greatest abundance of the necessaries and enjoyments of human life will be secured" (Vol. 1, p. 338).

The above quotes from the *Principles* are clearly at odds with the way Ricardo's numerical example is currently interpreted in economic textbooks. If the textbook interpretation were accurate, then the *master logician of political economy* (Maneschi 2004, p. 435) would have refuted himself with the four numbers. The rest of the section is dedicated to proving, though, that he did not. On the contrary, it will be shown that the famous numerical example was perfectly aligned with his thinking, since the English cloth and the Portuguese wine traded were indeed cheaper than their respective local productions.

In the featured barter trade in chapter 7 of the *Principles*, an unspecified amount of cloth produced by 100 Englishmen working for a year is given for an unspecified amount of wine which required the labour of 80 Portuguese men also working for a year. With respect to this exchange of unequal quantities of labour, Ricardo remarked the following: "Thus England would give the produce of the labour of 100 men, for the produce of the labour of 80. Such an exchange could not take place between the individuals of the same country. The labour of 100 Englishmen cannot be given for that of 80 Englishmen, but the produce of the labour of 100 Englishmen may be given for the produce of the labour of 80 Portuguese, 60 Russians, or 120 East Indians" (Vol. 1, p. 135).

Why does Ricardo affirm that such an exchange could not take place between individuals of the same country? Because according to the labour theory of value, which he assumed to be valid for commodities made in the same country, the produce of 100 Englishmen would have to have a higher exchange value than the produce of 80 Englishmen. Hence, the proposition about the non-appliance of the labour theory of value to commodities produced in different countries makes the featured barter trade of English cloth and Portuguese wine feasible. Moreover, this proposition also explains why the cloth produced by the labour of 100 Englishmen can be exported to Portugal, where its production would have required the labour of 90 men. Despite the higher quantity of labour embodied in the English cloth, it can be offered in the Portuguese market more cheaply than the local production, because it has a lower money cost of production than the Portuguese cloth. In correspondence with the current Zeitgeist in the economic science, I will prove this conclusion mathematically.

It is inconsequential for the purpose of this proof whether the two countries have a common currency or not. In the latter case, one can simply presume that there is a given exchange rate between the two currencies – for example, the pound sterling £ and the Euro € – at the moment of the exchange.

Let's define CC_{ENG} and CW_{POR} as the respective money costs of production of the batches of English cloth and Portuguese wine traded. CW_{ENG} is the estimated cost of production, in money, if the lot of wine would have been produced in England, while

CC_{POR} is the estimated money cost of production of the lot of cloth in Portugal. Moreover, I will use the following three assumptions:

(1) The labour theory of value is valid for commodities produced in the same country, but not for commodities produced in different countries.[13]

(2) When the production of an unspecified amount of commodity *C* requires more (less) quantity of labour than the making of an unspecified amount of commodity *W* in the same country, then one can also presume that the money cost of production of the former is higher (lower) than the money cost of production of the latter.[14]

(3) Since it is a barter trade, the batches of cloth and wine exchanged have to be of equal value and have to have the same money costs of production.

These three realistic assumptions are firmly rooted in Ricardo's economic theory, since they are supported by explicit statements in the *Principles* and his correspondence. This is in sharp contrast with the many unrealistic assumptions of the textbook model of comparative advantage, which not only lack any foundation in his writings, but also contradict quite openly his thinking.

Because of assumptions (1) and (2), and the fact that making the wine in England would require 20 additional men working for a year compared to the production of cloth, it must be that $CW_{ENG} > CC_{ENG}$. Thus, the exchange is beneficial for England, since it would cost her more to make the wine than to buy it from Portugal.

Since $CW_{ENG} > CC_{ENG}$, and according to (3), $CC_{ENG} = CW_{POR} \Rightarrow CW_{ENG} > CW_{POR}$

By applying transitivity, thus, it is proven that the cost of production of wine in England has to be higher than in Portugal. There is nothing particularly counterintuitive about this conclusion, because it seems perfectly logical that the money costs of the produce of 120 men (CW_{ENG}) are higher than that of 80 men (CW_{POR}). The counterintuitive insight appears in the analysis of Portugal's numbers, though.

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[13] Ricardo stated in the *Principles*: "The quantity of wine which she shall give in exchange for the cloth of England, is not determined by the respective quantities of labour devoted to the production of each, as it would be, if both commodities were manufactured in England, or both in Portugal" (Vol. 1, pp. 134-135). This statement concretizes a previous proposition which I have already quoted on page 4.

[14] In a letter from October 9th, 1820, Ricardo explained to his friend Malthus the relationship between the money cost of production and the quantity of labour as follows: "Cost of production, in money, means the value of labour, as well as profits. Now if my commodity be of equal value with yours its cost of production must be the same. But cost of production is with some deviations in proportion to labour employed. My commodity and your commodity are both worth £1000 – they will therefore probably have the same quantity of labour realized in each."

Because of assumptions (1) and (2), and the fact that the cloth imported would have required in Portugal the labour of 90 men, while the wine exported required only the labour of 80 men, we can presume that the local production of the imported cloth would have cost more than the wine exported, or $CC_{POR} > CW_{POR}$. Thus, the exchange is beneficial for Portugal, since it would cost her more to make the cloth than to buy it from England.

Since $CC_{POR} > CW_{POR}$, and according to (3), $CW_{POR} = CC_{ENG} \Rightarrow CC_{POR} > CC_{ENG}$

By simply applying transitivity, it is unmistakably proven that the money costs of making the cloth in Portugal have to be higher than in England. Thus, Portugal had no cost advantage over England in the production of cloth. This result is not contradicted by the fact that the production of the English cloth requires the labour of 10 additional men working for a year compared to the production of the Portuguese cloth, because the labour theory of value does not apply to commodities produced in different countries. Thus, the cloth may well be produced more cheaply in England than in Portugal, although its production would have required less quantity of labour in the latter.[15]

Furthermore, this result is further supported by what Ricardo wrote in the following pages of the *Principles*. He stated that "cloth cannot be imported into Portugal, unless it sell (sic) there for more gold than it cost in the country from which it was imported; and wine cannot be imported into England, unless it will sell for more there than it cost (sic) in Portugal" (Vol. 1, p. 137). The cloth and wine can only be imported, though, as long as local producers are unable to undercut of at least match the prices at which these commodities are currently imported.[16] After already mentioning in page 137 that the price of cloth in Portugal is indeed higher than in England, Ricardo indicated in the very next page that the price of wine in England is 50*l*. per pipe, and the price of a certain quantity of cloth is 45*l*., while in Portugal the price of the same quantity of wine is 45*l*., and that of the same quantity of cloth 50*l*.

By taking the famous four numbers as basis, and assuming that 45*l*. is the natural price[17] of cloth in England and wine in Portugal, it is possible to make a sound estimate of the respective natural prices if the lot of cloth had been produced in Portugal and the pipe of wine in England. In the case of the latter, one has to multiply the 45*l*. by 1.2 (120/100), resulting in an estimated natural price of 54*l*. for a pipe of English wine. After multiplying the 45*l*. with 1.125 (90/80), one obtains an estimated natural price of

[15] See also Morales Meoqui (2017, p. 40).

[16] See Ricardo's statements at the beginning of this section.

[17] Ricardo stated later in the *Principles*: "It is the natural price of commodities in the exporting country, which ultimately regulates the prices at which they shall be sold, if they are not the objects of monopoly, in the importing country" (Vol. 1, p. 375).

50.625*l*. for the lot of Portuguese cloth. In both cases, thus, the estimated natural prices for the English wine and the Portuguese cloth are above 45*l*., the natural price of cloth in England and wine in Portugal. This further supports the prior proof that the cost of production of the lot of cloth is higher in Portugal than in England. Moreover, the estimated natural prices of the Portuguese cloth and the English wine are above 50*l*., the price of wine in England and cloth in Portugal indicated by Ricardo. Under these conditions, the respective local producers have no interest in offering the lot of cloth and the pipe of wine at cheaper prices. Evidently, the master logician of political economy did not leave any loose ends.

This interpretation of the numerical example establishes, arguably for the first time, a logical connection between the prices and quantities of labour indicated by Ricardo in chapter VII of the *Principles*. Moreover, it gives the simplest possible answer to the question of why the merchant is able to sell the English cloth in Portugal: because it can be offered more cheaply than the locally produced cloth. The relative cheapness of the English cloth is precisely the reason why the featured exchange is beneficial for Portugal: it would have cost more to make the cloth internally than to buy it from England. Thus, the proper interpretation of the numerical example effectively eliminates the two alleged difficulties in Ricardo's text mentioned by Faccarello (2015, pp. 759-764).

All of the above means that Ricardo's numerical example offers no basis whatsoever for the claim that a foreign producer does not need to have a lower cost of production, in money, in order to sell an article of similar quality in another country. In fact, Ricardo never suggested that it would be advantageous for a country to import a dearer product of similar quality. To the contrary, he agreed with and applied the classical rule for specialisation, which recommends buying from the cheapest seller, irrespective of whether this seller is located in the same country or abroad.

This accurate interpretation of the famous numerical example also explains why Ricardo never claimed to have discovered a new law, principle or rule for international specialisation, and why the contraposition of absolute and comparative advantages in the cost of production is nowhere to be found in the *Principles*. These notions are completely alien to his genuine theory of international trade. They were formulated by later scholars based on erroneous interpretations of the purpose, definition and implications of Ricardo's famous four numbers.

The true origin of absolute versus comparative advantage

The real genesis of the popular contraposition of absolute and comparative advantage is to be found in John Stuart Mill's "*Essays on Some Unsettled Questions of Political Economy*" (J. S. Mill 1844); more precisely, in the first essay titled "*Of the*

Laws of Interchange Between Nations; and the Distribution of the Gains of Commerce among the Countries of the Commercial World".[18] J. S. Mill claimed there that "to render the importation of an article more advantageous than its production, it is not necessary that the foreign country should be able to produce it with less labour and capital than ourselves. We may even have a positive advantage in its production: but, if we are so far favoured by circumstances as to have a still greater positive advantage in the production of some other article which is in demand in the foreign country, we may be able to obtain a greater return to our labour and capital by employing none of it in producing the article in which our advantage is least, but devoting it all to the production of that in which our advantage is greatest, and giving this to the foreign country in exchange for the other. It is not a difference in the *absolute* cost of production, which determines the interchange, but a difference in the *comparative* cost" (J. S. Mill, 1844, p. 2).

This quoted passage of the essay is, indeed, the very first occasion in which the later inseparable tandem of absolute and comparative advantage appeared together. J. S. Mill defines *absolute advantage in the cost of production* as the ability to produce an article with less labour and capital than a foreign manufacturer. He further claims that it is not necessary to have an absolute advantage in the cost of production to export to another country. It is important to point out, though, that J. S. Mill did not explicitly attribute the theory of absolute cost advantage to Smith. This was done by later scholars presumably after reading his essay.

Moreover, the essay does not offer a clear-cut definition of comparative costs or comparative advantage. Instead, it contains several numerical examples which allegedly illustrate that international trade is based on comparative rather than absolute advantage. And since J. S. Mill conveniently branded his propositions in the essay as further developments of Ricardo's principles of foreign trade[19], he clearly laid the foundation for the currently predominant view that Ricardo had discovered a new law for international specialisation. This explains why the so-called law or principle of comparative advantage was completely neglected prior to the publication of the essay: it was simply non-existent until J. S. Mill made it up.

The close friendship between John Stuart's father James Mill and Ricardo surely contributed to the legitimation and general acceptance of this interpretation of the famous numerical example. One should take into account, however, that James Mill had already passed away when J. S. Mill finally decided to send his unpublished essays

[18] According to his own account in the preface, J. S. Mill wrote the five essays in 1829 and 1830, but with the exemption of the fifth, did not publish them until 1844 due to a perceived lack of public interest in the respective topics.

[19] See J. S. Mill (1844, p. 5 and p. 14).

to the printing press. Therefore, we can only speculate now whether the father would have agreed or not with the way his son presented Ricardo's insight in the essay. What can be asserted with certainty is that J. S. Mill's exegesis of this insight differs significantly from the way James Mill presented it in the *Elements* (J. Mill, 1826) and in the article "Colony" (J. Mill, 1825) for the Encyclopaedia Britannica.[20]

A critique of J. S. Mill's absolute-versus-comparative-advantage framework

J. S. Mill realized quite rapidly that his contraposition of absolute and comparative production cost advantages was prone to originate confusion about the relative cheapness of foreign commodities as the basis for most international exchanges. Four years after the publication of his essay, he intended to clarify this by stating in the *Principles of Political Economy with some of their Applications to Social Philosophy* (1848) that "(…) there are many things which, though they could be produced at home without difficulty, and in any quantity, are yet imported from a distance. The explanation which would be popularly given of this would be, that it is cheaper to import than to produce them: and this is the true reason" (1965, Vol. III, p. 587). As he further clarified there, his contraposition of absolute versus comparative advantage was rather meant to explain why a "thing may sometimes be sold cheapest, by being produced in some other place than that at which it can be produced with the smallest amount of labour and abstinence" (ibid.).

It seems, thus, that Ricardo was not the only one who has been badly misinterpreted, but J. S. Mill too. The latter, however, clearly originated the confusion in the first place by reiterating his previous assessment that Ricardo had allegedly shown that "it is not a difference in the *absolute* cost of production, which determines the interchange, but a difference in the *comparative* cost" (1965, Vol. III, p. 589). Since J. S. Mill's book became the leading text on political economy during the second half of the 19th century, and his analysis of comparative advantage "the starting point of all further developments in trade theory" (Ruffin, 2002, p. 742), the stage was set for almost two centuries of confusion regarding Ricardo's numerical example.

The misleading nature of J. S. Mill's absolute-versus-comparative-framework resides precisely in the term *absolute advantage in the cost of production*. The definitions he gave in the essay – the ability to produce an article with less labour and capital – and the book – smallest amount of labour and abstinence – suggest that he is referring to physical units rather than money. Since distinct physical units cannot be added for the purpose of calculating the cost of production, the latter is usually indicated as number of labourers working for a certain period of time. A contemporary definition of absolute

[20] I'm indebted to Professor Taichi Tabuchi for drawing my attention to Mill's article. According to Tabuchi, it was written in late 1817 and first published in February 1818.

cost advantage in line with this interpretation can be found in Roy Ruffin (2005). According to Ruffin (2005, p. 714), the absolute cost advantage theory of trade stipulates that "it is necessary for a country to have a productivity advantage over other countries in order to profitably export."

But this is not the most obvious way of understanding the term absolute advantage in the cost of production. Most people, even those with an economic degree, might interpret the term as a lower money cost of production, with the consequent ability to offer products more cheaply than the competition. This interpretation can be found for example in Bloomfield (1989, p. 621): "Countries tend to export those goods that can be produced at lower costs at home than abroad and to import those goods that can be produced at lower costs abroad than at home or that cannot be produced at home at all. And it was implied or explicitly stated that under free trade commodities would in fact be produced in countries where their absolute costs were lowest."

Any keen observer of the current process of globalisation may easily understand that these two interpretations of absolute production cost advantages are not equivalent. Lower production costs do not necessarily imply that a manufacturer has a productivity advantage over another and vice versa. As Bloomfield (1989, p. 621) himself recognises, an absolute advantage in money costs can be consistent with an absolute disadvantage in labour-time costs.

The factual accuracy of the claim that Ricardo's numerical example refuted the theory of absolute cost advantage, though, depends entirely on the concrete definition of this theory. If one defines absolute cost advantage according to Ruffin – as a productivity advantage –, then it was certainly refuted by Ricardo's numerical example. He proved indeed with the four numbers that it is not necessary that the exporting country produces the commodities with less quantity of labour than the importing country. According to the more obvious and natural interpretation of absolute advantage in the cost of production as a monetary cost advantage, however, it is incorrect to affirm that Ricardo refuted it.

For over one hundred fifty years now scholars have been trained into thinking about the foundation of international trade and the proper rule for specialisation as a dichotomy between absolute and comparative advantage. Hence, the analysis presented in this paper could be easily misinterpreted as if I were portraying both Smith and Ricardo as advocates of the theory of absolute cost advantage.[21] To prevent this misinterpretation, it seems rather prudent to explain more precisely what I am actually claiming here.

As already stated, both Smith and Ricardo considered the relative cheapness of

[21] See King (2013, p. 466).

foreign commodities as the basis for most international exchanges. Indeed, foreign articles have to be cheaper than local ones – or have to have a real or perceived advantage in terms of quality –, to get imported. To offer an article of similar quality at a cheaper price point, a manufacturer usually has to have a lower money cost of production compared to his local and foreign competitors. While this is certainly true for most cases, there are some exemptions to this requirement. The manufacturer, for example, might be the lucky recipient of export subsidies, or a foreign government might grant preferential tariffs to the country where the manufacturer is located. Since the very aim and effect of export subsidies and preferential tariffs is precisely to offset higher costs, they might indeed enable the beneficiaries of these trade-policy instruments to offer their products at cheaper price points in specific markets, despite having a higher cost of production than the competition.

But even if every government in the world would start honouring the principle of free trade and refrain from granting export subsidies or preferential treatment to specific manufacturers, some articles might not be made where its money cost of production is lowest. Instead, they might be produced in the location from which they can be offered more cheaply in specific markets. The cost of production only accounts for a fraction of the price that a consumer has to pay for an article at the counter. Additional cost factors have to be considered too, like the expenses of transportation, advertising and the profit margins of merchants, among others. Each of these cost items, and even more so their sum, could well offset lower production costs. Therefore, having a lower cost of production is neither a necessary nor a sufficient condition for offering an article more cheaply than the competition in specific markets. This is why the focus should be on the retail price, which usually accounts for all the costs incurred in the production and distribution of the article.

For all the reasons mentioned above, I consider J. S. Mill's contraposition of absolute and comparative advantage in the cost of production as an utterly inadequate and misleading framework for explaining and popularizing Ricardo's insights. This harsh assertion seems fully justified in view of the ongoing confusion about the basis of international trade and the corresponding rule for specialization that is still generated by this framework.

In addition to this, J. S. Mill is also responsible for the custom of defining the four numbers as the respective quantities of labour required for the production of a single unit of cloth and wine, and the comparison of cost ratios for the assessment of the countries' interest in the featured barter trade.[22] By contrast, the accurate interpretation of the four numbers in the *Principles* shows unequivocally that Ricardo established the interest of England and Portugal by applying the classical rule for specialisation.

[22] See Ruffin (2002, p. 742).

Notwithstanding, the comparison of cost ratios is still viewed by most scholars as a distinct but equivalent method for the determination of comparative advantage. This perception is incorrect, though. As I have shown in a recently published paper (Morales Meoqui, 2017, pp. 42-43), the classical rule for specialisation and the comparison of cost ratios may lead to contrary recommendations about the beneficial nature of an exchange under a different set of numbers. Hence, they cannot be considered as equivalent methods. This also means that J. S. Mill's notion of comparative advantage is different from Ricardo's.

Instead of using an unnecessary abstract term like comparative advantage with multiple notions attached to it, it is more precise to say that Ricardo proved in his famous numerical example that it might be beneficial for countries to import commodities although their internal production would have required less quantity of labour compared to the exporting country. Thus, a country does not need to have a productivity advantage over another in order to export there, as long as the relative value of commodities produced in different countries is not determined by the respective quantities of labour necessary for their production.

That commodities are often exported to countries where they might have been produced with less quantity of labour is a counterintuitive fact which requires a proper explanation. Smith already attempted to explain it in the *Wealth of Nations* by pointing out that poorer nations could compete with richer countries in agriculture because this sector does not admit the same degree of division of labour as manufactures.[23] He added: "But though the poor country, notwithstanding the inferiority of its cultivation, can, in some measure, rival the rich in the cheapness and goodness of its corn, it can pretend to no such competition in its manufactures; at least if those manufactures suit the soil, climate, and situation of the rich country" (*WN* I.i.4, p. 17). Smith's dictum, which might have been valid for the late eighteenth century, is contradicted by the current composition of trade flows between developed and less developed economies. Nowadays, the latter are exporting many industrial articles to Europe and the U.S., although they still require more quantities of labour to produce them. A proper explanation for this can be found in Ricardo's famous four numbers.

[23] Smith stated: "The most opulent nations, indeed, generally excel all their neighbours in agriculture as well as in manufactures; but they are commonly more distinguished by their superiority in the latter than in the former. Their lands are in general better cultivated, and having more labour and expence bestowed upon them, produce more, in proportion to the extent and natural fertility of the ground. But this superiority of produce is seldom much more than in proportion to the superiority of labour and expence. In agriculture, the labour of the rich country is not always much more productive than that of the poor; or, at least, it is never so much more productive, as it commonly is in manufactures. The corn of the rich country, therefore, will not always, in the same degree of goodness, come cheaper to market than that of the poor" (*WN* I.i.4, p. 16).

Conclusions

The paper unequivocally proves that the English cloth and the Portuguese wine traded in Ricardo's famous numerical example in chapter 7 of the *Principles* had lower money costs of production than the respective local commodities. Contrary to what is generally believed, thus, Portugal had no production cost advantage, in money, with respect to England in making cloth. This means that Ricardo's numerical example cannot be presented as a proof for the claim that countries do not need to have an absolute cost advantage for exporting certain commodities, because international trade is supposed to be based on comparative rather than absolute production cost advantages.

This novel interpretation of Ricardo's numerical example allows to restate his original agreement with Smith on the foundation of international trade and the corresponding rule for specialization. Both considered the relative cheapness of foreign commodities as the basis of most international exchanges. They also agreed on the corresponding rule for international specialisation, namely to acquire foreign articles whenever they are offered more cheaply than what their internal production would cost. Due to its widespread support among classical political economists, it should be referred to as the *classical rule for specialisation*. Buying cheaper foreign articles is not only beneficial for individual consumers, but for the country as a whole, providing the micro- as well as the macro-foundation of international trade. These findings further confirm my previous assertion (Morales Meoqui, 2014) that the level of compatibility between the theories of international trade of Smith and Ricardo is significantly higher than it is currently reflected in the economic literature.

Ricardo's four numbers were in fact never meant to be a proof for a new law, principle or rule for international specialisation. As he repeatedly indicated in the surrounding paragraphs, the original purpose of these numbers was to illustrate the proposition that the relative value of two lots of commodities produced in different countries is not determined by the respective quantities of labour devoted to the production of each, as long as capital is relatively less mobile internationally than nationally. This proposition explains why the cheapest products might not be produced necessarily in the countries with the highest productivity. It is indeed a characteristic feature of current international exchanges that many commodities are produced more cheaply in countries with relatively low productivity. While it is true that Smith and others already attempted to explain this occurrence, it was Ricardo who gave the most elegant and complete explanation for it.

All of this means that J. S. Mill's contraposition of absolute and comparative advantage in the cost of production has to be dismissed, since it has proven to be a misleading framework for explaining and popularizing Ricardo's insights. Whether

absolute and comparative advantage are compatible or mutually exclusive depends on the specific definitions of these terms. As Ricardo demonstrated, it is possible to adhere to the proposition that a foreign article has to be cheaper than a local product of similar quality to get imported, and at the same time agree with the proposition that it might be beneficial for a country to import commodities although its internal production would have required less quantity of labour compared to the country where they were produced.

If for whatever reason some economists want to argue that manufacturers might be able to export to certain countries despite having a higher money cost of production than local producers, they do not have to rely on the concept of comparative advantage, nor on any ingenious international trade model, for that matter. Instead, they may refer to the obvious facts that the cost of production of an article merely accounts for a fraction of its selling price; that suppliers are not only chosen based on cost considerations, but also on other criteria like, for example, proximity, reliability and flexibility; and that the quality of a product also matters.

To finish on a more lightly note, I do realize that this paper is a bit of a spoiler. It dispels the current mysticism surrounding Ricardo's famous numerical example, shortly after economists around the world commemorated the bicentennial anniversary of its publication. In a sense, all this silly talk about the “four magic numbers” is quite revealing: it seems to be part of the human nature to revere and attribute magical properties to the things we cannot fully grasp. Once it becomes clear that the English cloth was cheaper than the cloth made in Portugal, the magic is gone. I am pretty sure, though, that Ricardo would not mind losing his wizard status. He would have been rather baffled that his simple numerical example has caused so much trouble and confusion over the past two hundred years.

The next time someone challenges the economic profession to name a principle that is both true and non-trivial, we might have to think harder and hopefully come up with something different than comparative advantage. But if we are asked about the foundation of international trade and the corresponding rule for specialization, at least we can start giving again the proper answers.

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