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**Title: Reconciling Ricardo's Comparative Advantage with Smith's
Productivity Theory**

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Abstract

There are three main claims in this paper: First, there is sufficient evidence for affirming that Ricardo adhered to Smith's productivity theory; second, Ricardo's original demonstration of the comparative-advantage proposition is indeed compatible and complementary with respect to the latter; and third, Ricardo agreed with Smith's multifactorial explanation of the pattern of trade, which includes increasing returns and economies of scale.

These results open the way for the reincorporation of Ricardo's propositions into a multifactorial explanation of the pattern of trade provided by the classical school of economic thought. They also add a new perspective to the ongoing process of reassessment of Smith's contributions to international trade theory, further strengthening the view that he was indeed a great international trade theorist.

Keywords: Comparative advantage, absolute advantage, division of labor, international trade theory, free trade, gains-from-trade.

JEL-Codes: B12; F10

Introduction

In the first decades after the publication of *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) in 1776, political economists relied mostly upon Adam Smith's celebrated book for praising the benefits of specialization and free trade. For the most part of the last century, however, the perception prevailed that Smith was not an outstanding international trade theorist because he allegedly failed to discover the "law" of comparative advantage.¹ Since the neoclassical theory of static comparative advantage was generally regarded as the high-point of free trade thinking (Viner, 1937, p. 104), all the other contributions to international trade theory had to be evaluated in terms of how close they came to the comparative-advantage statement (Elmslie and James, 1993). According to this yardstick, Smith's insights on international trade seem to be obsolete.²

During the 1970s Smith's contributions to international trade theory started to receive more attention and appreciation.³ This process gained considerably more steam during the 1980s with the formulation of the so called *New Trade Theory*, in which traditional trade models based on the neoclassical theory of static comparative advantage were supplemented by new trade models emphasizing increasing returns and technical progress. Those aspects

¹ The list of those who have criticized Smith for not discovering the "law" of comparative advantage is actually too long to mention. Some of these critics, however, also acknowledge and appreciate Smith's positive contributions to international trade theory, like Bloomfield (1994 [1975]), Mynt (1977), Kurz (1992) and Blecker (1997). For a brief overview of other prominent critics of Smith, see Bloomfield (1994, pp. 109-110).

² Bloomfield (1994, p. 111) states: "Admittedly, Smith was not a great trade theorist, but he comes up, on the whole, with a performance that deserves respectful consideration."

³ See West (1978).

were already present in Smith's explanation of the benefits of international trade in the *Wealth of Nations*.⁴ The demand for the formulation of these new trade models originated from the fact that the neoclassical models of static comparative advantage were inadequate for explaining the real-world trade pattern in those years, which was predominantly intradustry-trade (Krugman, 1993; 2009).

All of this has led to the current perception that Smith was a much better international trade theorist than he has previously been given credit for (Elmslie and James, 1993, p. 72). Notwithstanding this remarkable comeback, the last remaining stumbling block towards Smith's complete rehabilitation as an international trade theorist is still in place – the critique that he failed to discover the “law” of comparative advantage as defined by the neoclassical theory of international trade. Furthermore, the greater emphasis on increasing returns has widened the perceived rift between Smith's contributions to international trade theory and the static view of comparative advantage attributed to fellow classical political economist David Ricardo. Some scholars have even gone as far as to affirm that Smith and Ricardo had opposing logics of trade.⁵

⁴ The Smithean origin of the *New Trade Theory* have been highlighted by several authors, for example West (1990), Elmslie and James (1993), Kurz (1997) and Kibritcioglu (2002). It is also recognized by at least one of the leading proponents of the *New Trade Theory* (Krugman, 1990). For the relationship between the division of labor and technological progress see Elmslie (1994b).

⁵ See Buchanan and Yoon (2002). Russ Roberts has recently echoed the notion about Smith's and Ricardo's distinct and opposing logics of trade in his popular podcast EconTalk (http://www.econtalk.org/archives/2010/02/roberts_on_smit.html). This may lead to a greater divulgence of this notion among current economic students, which are presumably the largest group of subscribers to Roberts' podcast.

Prior research efforts have been headed towards discovering some traces of comparative advantage in the *Wealth of Nations* (Elmslie and James, 1993; Elmslie, 1994a) and re-evaluating the role of absolute advantage so that it is not perceived merely as a flawed antecedent of comparative advantage (Blecker, 1997). A more or less common theme of these efforts has been the view that in order to achieve the goal of completely rehabilitating Smith as an outstanding international trade theorist, one has to bring his insights on international trade somehow closer to the comparative-advantage proposition. The present paper will show that the same goal can be achieved perhaps in an easier way by reconciling the latter with the former, instead of the other way around.

Fortunately, all the necessary pieces for accomplishing the task are already in place. The point of departure is the accurate interpretation of the four numbers in Ricardo's famous demonstration of comparative advantage in chapter seven of his famous book *On the Principles of Political Economy and Taxation* (2004) as number of men working for a year required to produce *some unspecified amounts* of wine and cloth traded between England and Portugal put forward by Ruffin (2002; 2005)⁶. It has led to a better understanding of the original purpose and main propositions which Ricardo intended to prove. As I have argued in a previous paper (Morales Meoqui, 2011), the main purpose of the numerical example was to

⁶ Sraffa (1930, p. 541) interpreted Ricardo's numbers as number of men whose labor is required for one year in order to produce a given quantity of cloth and wine. Ruffin pointed out in a personal communication with me that Sraffa's interpretation was correct but incomplete since it did not say that Ricardo's numbers were the amounts of labor contained in the amounts of cloth and wine traded. Ruffin's interpretation has rapidly gained supporters – Maneschi (2004, 2008), Aldrich (2004) and Morales Meoqui (2011) and Rassekh (2012).

prove the new proposition that the labor theory of value does not regulate the relative value of commodities in international trade when the factors of production are immobile between countries. Ricardo then mentioned the associated corollary regarding comparative advantage, i.e. that a country might import a certain amount of a commodity although it can produce these commodities internally with less amount of labor than the exporting country.

Building on these insights, the present paper argues that Ricardo agreed with Smith's famous proposition that the extension of the market provided by foreign trade leads to productivity gains at home. This opens the way for the reincorporation of Ricardo's propositions into a multifactorial explanation of the pattern of trade provided by the classical school of economic thought.

The first section of the paper outlines the two explanations of the origin and benefits of international trade and rejects the attribution of the constant-labor-costs assumption to Ricardo. The second section is dedicated to prove that Ricardo actually adhered to Smith's productivity theory. The third section identifies the relevant cost comparison for specialization and trade. The fourth section argues that Ricardo agreed with Smith's multifactorial explanation of the pattern of trade, which includes increasing returns and economies of scale. The last section before the conclusions outlines what all of this means for the reassessment of Smith's contributions to international trade theory.

Two Explanations regarding the Origin and Benefits of Trade

As Smith's explains in the *Wealth of Nations*, the division of labor plays a pivot role in increasing the wealth of individuals as well as national economies. Individuals specialize and

trade with each other within and between national borders because in that way they become more productive and can obtain a greater amount of commodities and services for consumption. Concentrating the individual productive effort on a narrow range of goods — or even a single type of commodity or service — in the vast majority of cases pays off, since trading is often a more efficient mean of procuring goods for consumption than self-production, or to put it differently, the indirect method of production — trading — in many cases requires less amount of labor than the direct method of production.

Smith further argues that free trade would make a crucial contribution to the purpose of increasing the wealth of individuals and nations to the utmost, since the extension of the market beyond national borders encourages the division of labor and spurs labor productivity at home.⁷ Thus, specialization and free trade are intertwined with the quest for economic growth and development. I will borrow the denomination coined by Hla Myint and refer to this gain from trade as Smith's productivity theory.⁸

For the most part of the last century, though, the main source for praising the benefits of specialization and trade was not the one outlined above but an alternative view commonly attributed to Ricardo. This alternative view — which Buchanan and Yoon (2002) coined as the *Ricardian logic of trade* — locates the origins of exchange in the differences among individuals or countries in terms of their capacities to produce separate final goods.

⁷ Young (1928, p. 529) considers Smith's proposition that the division of labor is limited by the extent of the market as one of the most illuminating and fruitful generalizations which can be found anywhere in the whole literature of economics.

⁸ See Myint (1958, p. 318 and 1977, p. 242).

According to this alternative view, trade emerges because individuals or countries have different comparative advantages in producing different goods. If such differences exist, specialization will always prove to be mutually beneficial. If one assumes, on the contrary, that individuals or countries are identical in both their preferences and respective capacities to produce these final goods, then trade among them could not take place because it would not yield any benefits (Buchanan and Yoon 2002, p.400).

As Buchanan and Yoon point out, there is indeed a subtle reversal of the logical sequence between these two alternative explanations of the origin and benefits of trade. According to the explanation provided by Smith, trade emerges because of the inherent advantages of specialization. The observed differences among trading partners are the consequence of their respective specialization — not the point of departure. As Smith famously wrote in the *Wealth of Nations*, the differences between a philosopher and a street porter may be small prior to their individual commitment to their respective profession (WN I.ii.4, pp. 28-29). In the alternative explanation currently attributed to Ricardo, on the contrary, specialization and subsequent trade can only emerge because of inherent and preexisting differences among potential trading partners. The interest in the commercial exchange would continue as long as these differences persist, and would cease if the differences disappear over time.

When attributing this alternative explanation to Ricardo, Buchanan and Yoon (2002) assumed that the Ricardian model of international trade which can be found in contemporary economic textbooks is essentially equivalent to what is actually written in the

Principles. As Ruffin (2002) and Maneschi (2004, 2008) have acknowledged, though, Ricardo's demonstration of the comparative-advantage proposition is quite different from the textbook version.⁹ Consequently, one cannot attribute the assumptions and implications of the typical textbook trade model automatically to Ricardo.

This is particularly true with respect to the constant-labor-costs assumption. It stipulates that the amount of labor needed for producing a single unit of a commodity or service do not vary with the amount of commodities or services produced. The constant-labor-costs assumption is indeed a prominent feature of the textbook version of the so-called Ricardian model of international trade. The presence of this assumption has probably contributed to the great popularity of this basic model of international trade among neoclassical economists, since it is compatible with another widespread assumption of the neoclassical school of economic thought, namely constant returns to scale. It is important to remember, though, that this assumption was incorporated to mainstream economic thought by neoclassical economists who were trying to solve the so-called imputation problem in order to incorporate a theory of distribution to their general theory of prices. They solved it by making the unrealistic assumption that the market economy is characterized by constant returns to scale, so that production functions are everywhere "linear and homogeneous" (Buchanan and Yoon 2002, pp. 402-403).

⁹ In a paper currently under review (Morales Meoqui, 2010) I have highlighted some differences and incompatibilities between Ricardo and the so-called Ricardian model of economic textbooks. Since this automatic attribution is difficult to avoid when the textbook trade model is denominated as "Ricardian model", I have proposed another denomination, namely the Constant-Unitary-Labor-Costs (CULC) trade model.

The constant-labor-costs assumption is of course incompatible with Smith's productivity theory, since the latter stipulates that an ever-increasing amount of commodities and services is produced with less amount of labor, because the division of labor and the invention and deployment of sophisticated machinery spurs labor productivity. It implies increasing returns to scale and decreasing labor costs per unit of production, not constant returns to scale. No wonder that neoclassical economists adopted what they believed to be the *Ricardian* approach as their preferred explanation of the origin and benefits of international trade before returning partially and somewhat reluctantly to Smith's productivity theory with the formulation of new trade models featuring increasing returns to scale and imperfect competition in the 1980s.

The problem with this alleged incompatibility between Smith's and Ricardo's theories of international trade is that it is based on an erroneous attribution of the constant-labor-cost assumption to the latter. The mistaken association of this assumption with Ricardo is the consequence of the widespread but inaccurate interpretation of the four numbers in the famous demonstration of the comparative-advantage proposition in the *Principles* as unitary labor costs, which are assumed to remain constant. If the four numbers are interpreted accurately as the amounts of men working for a year required to produce some given amounts of cloth and wine traded between England and Portugal, there is absolutely no need for making such an unrealistic assumption. Moreover, it is not even possible to calculate the unitary labor costs in Ricardo's original numerical example since he did not specify the amounts of cloth and wine traded.

Perhaps the best way to prove that the attribution of the constant-labor-costs assumption and its associated explanation of the origin and benefits of trade to Ricardo is indeed erroneous, is by showing that he actually adhered to Smith's productivity theory, as will be argued in the following section.

Ricardo's adherence to Smith's productivity theory

It is not too difficult to imagine that Ricardo had Smith's productivity theory in mind when he wrote the following passage about the virtuous of free trade in the *Principles*:

“Under a system of perfectly free commerce, each country naturally devotes its capital and labour to such employments as are most beneficial to each. This pursuit of individual advantage is admirably connected with the universal good of the whole. **By stimulating industry, by rewarding ingenuity,** and by using most efficaciously the peculiar powers bestowed by nature, **it distributes labour most effectively and most economically:** while, **by increasing the general mass of productions,** it diffuses general benefit, and binds together by one common tie of interest and intercourse, the universal society of nations throughout the civilized world. It is this principle which determines that wine shall be made in France and Portugal, that corn shall be grown in America and Poland, and that hardware and other goods shall be manufactured in England (2004, Vol. 1, pp. 133–134, emphasis added).”¹⁰ Ricardo also affirms in the *Principles* that “(...) the end of all commerce is to

¹⁰ 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.

increase production, and that by increasing production (...) you increase the general happiness (Vol. 1, p. 271).”¹¹

Of course some may think that these two passages of the *Principles* are an insufficient proof for concluding that Ricardo adhered to Smith’s productivity theory. After all, an explicit endorsement of Smith’s productivity theory cannot be found in that book. One has to take into consideration, however, that Ricardo conceived the *Principles* first and foremost as a compilation of propositions and insights that were either new or opposed to already established propositions of political economy. Thus, a recurrent and lengthy exposition about a Smithean proposition he agreed with would have run against the general plan of the book.

By conceiving the *Principles* in this way, Ricardo may have contributed to the perception that he and Smith had divergent and incompatible explanations regarding the origin and benefits of trade. Since Smith was the highest authority in the nascent science of political economy back then, the general plan chosen artificially emphasizes the differences and

¹¹ It is also interesting to read Ricardo’s rejection of a doctrine put forward by James Mill in the first edition of the *Elements of Political Economy* (1821) in a section entitled “Nature of the Advantage derived from the Interchange of Commodities; And the principal Agents employed in it”. Ricardo wrote in a letter to Mill: “Secn. Page 89 I cannot agree in the distinction here taken, that the advantage in commerce is derived to all countries from what they receive, and not from what they send out. They in fact never receive any thing without sending something to pay for it, and it is the exchange which is beneficial. It is no exchange unless a commodity be given as well as received. I do not see how such a transaction can be separated into two parts and how it can be justly said that one part only is beneficial. What we get in exchange for our commodity really constitutes the price or value for which we sell it (Vol. IX, pp. 127-128).”

minimizes the level of agreement with respect to Smith. Ricardo himself was well aware of this danger, as the following paragraph from the preface of the *Principles* clearly proves:

“The writer, in combating received opinions, has found it necessary to advert more particularly to those passages in the writings of Adam Smith from which he sees reason to differ; but he hopes it will not, on that account, be suspected that he does not, in common with all those who acknowledge the importance of the science of Political Economy, participate in the admiration which the profound work of this celebrated author so justly excites” (Vol. I, p. 6).

Notwithstanding his awareness about the potential risk, Ricardo decided to proceed with this general plan for the *Principles* because of a personal virtue rarely seen in other famous scientists: humility. Ricardo was indeed a very humble and unpretentious man that had great self-doubts about his writing skills.¹² Because of his self-diagnosed shortcoming, Ricardo preferred to leave the major task of presenting a complete view of his ideas on political economy perhaps for a future book. Unfortunately, Ricardo died six years after the publication of the *Principles*, at the early age of fifty-one. Contrary to the original intention, this book became the main source of his thoughts on political economy in general and international trade in particular.

From a methodological perspective, these biographical facts are highly relevant for an accurate interpretation of the main propositions in the *Principles*. These propositions cannot

¹² See, for example, Ricardo’s letter to James Mill (VII, p. 112) on December 20th, 1816, responding to Mill’s letter of December 16th (VII, p. 106), which is equally worth reading.

be correctly interpreted without taking into close consideration the relevant passages of the *Wealth of Nations*. More importantly, one can generally presume that Ricardo agreed with those Smithean propositions which are not explicitly criticized and rejected in the *Principles*, at least until some scholar offers a convincing proof that this general presumption does not apply to a particular proposition.

With regard to the proposition that Ricardo adhered to Smith's productivity theory, the evidence is particularly strong since it is not merely inferred by the absence of critique but also backed up by implicit endorsements in the *Principles*. In the following passage, for example, Ricardo appears to be paraphrasing Smith's productivity theory:

“The labour of a million of men in manufactures, will always produce the same value, but will not always produce the same riches. By the invention of machinery, by improvements in skill, by a better division of labour, or **by the discovery of new markets, where more advantageous exchanges may be made, a million of men may produce double, or treble the amount of riches, of “necessaries, conveniences, and amusements,”** in one state of society, that they could produce in another, but they will not on that account add any thing to value; for every thing rises or falls in value, in proportion to the facility or difficulty of producing it, or, in other words, in proportion to the quantity of labour employed on its production” (Vol. I, p. 273, emphasis added).

The above passage is clearly at odd with the constant-labor-cost assumption since it refers to decreasing labor costs per unit. The quote is also interesting because it combines an implicit support for Smith's productivity theory with a rejection of the so-called vent-for-

surplus theory, the other benefit of trade mentioned by Smith.¹³ If Ricardo would have disagreed with both, then why did he criticize and rejected only one of them?

Taking into consideration the absence of critique towards Smith's productivity theory as well as the quoted passages from the *Principles* where one can easily infer Ricardo's support for this theory, I believe that it is safe to affirm that he agreed with Smith's famous proposition that the extension of the market provided by foreign trade leads to productivity gains and economic growth at home. This conclusion is further strengthened by the removal of the constant labor cost assumption in Ricardo's demonstration of the comparative-advantage proposition.

This means that the differences in the explanation of the origin and benefits of trade highlighted by Myint (1977) and Buchanan/Yoon (2002) can be considered as substantially correct if the comparison is made between Smith's productivity theory and the neoclassical theory of international trade, and not between Smith and Ricardo.

The Relevant Cost Comparison for Specialization and Trade

Besides the false attribution of the constant-labor-cost-assumption to Ricardo, the textbook version of the trade model has also contributed to spread the popular notion that he highlighted in the famous numerical example a new principle or law for international specialization known as comparative advantage. Despite investing considerable time and effort, however, I have not been able to find in the *Principles* or any other document written

¹³ See Smith (WN, IV.i.31, pp. 446-447).

by Ricardo the slightest evidence for such an interpretation. What he actually intended to illustrate with the famous four numbers was the new proposition that the labor theory of value does not regulate the relative value of commodities in international trade when the factors of production are immobile between countries. He then mentioned the associated corollary regarding comparative advantage, i.e. that a country might import a certain amount of a commodity although it can produce these commodities internally with less amount of labor than the exporting country (Morales Meoqui, 2011).

These two new propositions brilliantly demonstrated by Ricardo with a simple numerical example are indeed significant additions to the classical theory of international trade. First and foremost, they prove that a country may be able to export commodities to another country even if the former incurs in higher real costs of production than the importing country. This implies of course that a country does not need to have a productivity-advantage over the rest of the world in the production of a certain commodity in order to participate in international trade, extending Smith's claim about the benefits of foreign trade to all imaginable cases.

With the help of these two propositions one can also explain why higher real labor costs in developing countries do not command higher commodity prices in international markets. Thus, a country with relatively low labor productivity may nevertheless be the lowest nominal cost producer of a commodity. These issues are passionately contested and often misunderstood in the contemporary debate about economic globalization.

Notwithstanding the importance and continued relevance of Ricardo's new propositions, they do not constitute — nor were they ever meant to be —, a new principle or law for the determination of the most beneficial trade pattern between countries. Ricardo did not make use of them for this purpose in the *Principles* nor in any other document he wrote, at least as far as I know. For the determination of the interest of a particular country in a certain exchange he always used the classical rule of specialization.¹⁴

The classical rule of specialization stipulates that it is beneficial for a country to import commodities whenever it can obtain them in exchange for exports whose production entails less real cost compared to the domestic production of the same amount of the imported commodities (Viner, 1937, p. 440). The economic gains of any international exchange can be measured for each of the participating countries by calculating the difference between the real costs of the exported commodities that have been sent in exchange for the imports, and the expected real costs of producing the imported commodities at home. The mutually beneficial nature of international trade is secured by the prevalence of this rule in each country simultaneously. If the terms of trade or the real costs of production change in a way that the classical rule of specialization cease to be valid in one of the countries, this country would ultimately withdraw from this particular exchange and start producing the imported commodities at home.

¹⁴ See, for example, Vol. 1 p. 295 and p. 319, and Vol. 8 pp. 102-103. This rule was already well-known and repeatedly used by this fellow classical political economists. Thus, I have proposed to call it the classical rule of specialization instead of other popular denominations like the eighteenth-century-rule or the gains-from-trade proposition (Morales Meoqui 2011).

In his famous numerical demonstration of the comparative-advantage proposition in chapter seven of the *Principles*, Ricardo is absolutely clear with respect to the preponderant role of the classical rule of specialization in defining the interest of each country in the exchange of a certain quantity of English cloth for Portuguese wine. He applies the classical rule for specialization in the second paragraph of page 135 to establish England's interest in importing cloth without even taking into consideration Portugal's real labor costs. He proceeds then to apply the very same rule to Portugal in the third paragraph. Only after he has established the interest of England in importing wine and that of Portugal in importing cloth — interests which are mutually independent — does he proceed to compare the real labor costs between the two countries in the second part of the third paragraph. The purpose of this cost comparison between countries is to prove the main proposition that the law of value for domestic transactions — and therefore his labor theory of value — does not hold for international exchanges as well as the corollary about comparative advantage (Morales Meoqui, 2011).

James Mill, a close friend and collaborator of Ricardo, reaffirms with clarity the relevant cost comparison for international specialization when he states the following in his *Elements of Political Economy* (1826, p. 123):

“When a country can either import a commodity or produce it at home, it compares the cost of producing at home with the cost of procuring from abroad; if the latter cost is less than the first, it imports. The cost at which a country can import from abroad depends, not upon the cost at which the foreign country produces the commodity, but upon what the

commodity costs which it sends in exchange, compared with the cost which it must be at to produce the commodity in question, if it did not import it.”

So when it is said that the international pattern of trade is determined by comparative costs, the relevant cost comparison is invariably the one within a country for the respective amounts of commodities subject to exchange – the real costs of obtaining the commodities imported vs. home-production –, and not the real cost comparison between countries.¹⁵ For a particular international exchange to continue over a period of time, the classical rule of specialization must prevail in each country simultaneously.

This further strengthens Viner’s assessment (1937, pp. 440-441) that the comparative-advantage proposition is indeed an addition to and possible implication of the classical rule of specialization.¹⁶ In order to prove this implication, though, one has to assume, as Ricardo did, that the labor theory of value does not hold for international exchanges. Viner is also correct when he states (1937, p. 440) that the comparative-advantage proposition adds nothing to this rule as a guide for policy. This is precisely why Ricardo stated his support for free trade based on Smith’s productivity theory (Vol. I, pp. 133-134) prior to the enunciation of the comparative-advantage proposition (Vol. I, p. 135).

¹⁵ Ricardo (Vol. II, p. 383) explicitly considered the comparison of real costs between countries as irrelevant for the interest of a country in importing commodities.

¹⁶ Ironically, Viner’s assessment of the relationship between the classical rule of specialization and the comparative-advantage proposition makes more sense under Ruffin’s correct interpretation of Ricardo’s four famous numbers than under Viner’s traditional interpretation as unitary costs (Viner, 1937, p. 439).

Sources of real cost differences among countries

For a voluntary exchange to take place and/or continue between two countries, it has to be of mutual interest. This means that although the pattern of trade is not determined by the comparison of real costs between countries, the existence of real cost differences in the production of commodities between them is a *conditio sine qua non* for international trade. In order to prove this affirmation rather easily, I will slightly modify Ricardo's famous numerical example in order to accommodate the assumption that the amounts of cloth and wine traded between England and Portugal have to be produced with the same amount of labor in the two countries:

	Number of men working for a year required to produce a given quantity of cloth and wine traded	
	cloth	wine
England	100	120
Portugal	100	120

Table 1: Ricardo's modified numerical example without real cost differences in the production of the amounts of cloth and wine traded.

If England and Portugal, who had been exchanging cloth and wine for some time, were supposed to start producing the amounts of cloth and wine contained in a typical trade bundle as indicated in the above table, such an exchange of English cloth for Portuguese wine might not continue for a very long time, since it is in England's but not in Portugal's

interest. Portugal would gain the labor of 20 men if she starts to produce the amount of cloth at home instead of importing it from England.

Now let us assume that Portugal only needs 80 men working for a year to produce the amount of wine traded, as Ricardo wrote in his numerical example:

	Number of men working for a year required to produce a given quantity of cloth and wine traded	
	cloth	wine
England	100	120
Portugal	100	80

Table 2: Ricardo’s modified numerical example with real cost differences in the production of the amount of wine traded.

Under these terms the exchange of English cloth and Portuguese wine between these two countries would continue, since each country gains the labor of 20 men. So what factors may enable Portugal to produce the amount of wine traded with the labor of only 80 men, i.e., 40 men less than England?

The relative facility of a country to produce certain commodities can be explained based on a variety of factors, including natural conditions — such as soil, climate and geographic location — and acquired or artificial advantages, for example education, production skills, economies of scale and historical development. These factors are usually labeled in the literature as sources of comparative advantage.

Ricardo named in the following passage of the *Principles* several sources of comparative advantage:

“It is quite as important to the happiness of mankind, that our enjoyments should be increased by the better distribution of labour, by each country producing those commodities for which by its situation, its climate, and its other natural and artificial advantages, it is adapted, and by their exchanging them for the commodities of other countries, as that they should be augmented by a raise in the rate of profits (Vol. I, p. 132).”

In the above paragraph he explicitly mentions two natural sources of comparative advantage, namely the climatic conditions and the geographical location of the country. His reference to other natural advantages may imply, for example, the abundance of fertile land and raw materials. Probably not a single economist would deny that these natural advantages are indeed important sources of real cost differences between countries, and that they certainly play a determining role in explaining the pattern of international trade. More controversial seems to be his general reference to artificial advantages. Artificial means of course the product of human endeavor. For example, demand-side differences like taste and cultural traditions in specific countries, economies of scale and historical accident — all of these may be considered as artificial sources of comparative advantage.

Ricardo apparently sees no need for elaborating more specifically what he considers to be artificial advantages. Moreover, he does not even bother to differentiate between natural and artificial sources as the basis for an international division of labor. At the first look, his approach seems to be a bit careless, because it ignores the fact that people are much more

willing to accept natural rather than artificial differences. The explanation for his undifferentiated treatment of natural and artificial sources of comparative advantage has to be found in the following paragraph of the *Wealth of Nations*:

“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 neighbor, who exercises another trade; and yet they both found it more advantageous to buy of one another, than to make what does not belong to their particular trades” (WN, IV.ii.15, p. 458).

Smith states in the above paragraph that the specific causes of the real cost differences — whether natural or acquired — are irrelevant for grasping the benefits from internal as well as international trade. Contemporary economists have concentrated on a narrow set of factors in order to explain why a country has greater facility in producing certain types of commodities and services than others, such as consumer tastes, a superior technology, economies of scale or the relative abundance of certain factors of production. Mainstream international trade models usually highlight a single factor and exclude all others by assumption. Such a modeling approach seems inappropriate for explaining the trade pattern, since comparative advantage is often the result of several factors working simultaneously.

In the *Wealth of Nations* there are actually a very interesting examples of how Smith combines natural and artificial sources of comparative advantage in order to explain the

optimal pattern of trade and specialization for the North American colonies and China. His recommendations are based on an accurate analysis of factor supplies and relative prices of the factors of production.

The North American colonies, whose Declaration of Independence in 1776 coincided with the publication of the *Wealth of Nations*, were accurately characterized by Smith as having abundant land and relative scarcity of labor and capital. In correspondence with its factor supply, rents would be generally lower and wages and profits higher in the North American colonies than in Europe. Therefore, the comparative advantage of the North American colonies would be in the production and exportation of agricultural products and raw materials rather than in the home-production of refined manufactures.

“Agriculture is the proper business of all new colonies; a business which the cheapness of land renders more advantageous than any other. They abound, therefore, in the rude produce of land, and instead of importing it from other countries, they have generally a large surplus to export. In new colonies, agriculture either draws hands from all other employments, or keeps them from going to any other employment. There are few hands to spare for the necessary, and none for the ornamental manufactures. The greater part of the manufactures of both kinds, they find it cheaper to purchase of other countries than to make for themselves” (WN, IV.vii.c.51, p. 609).

Imperial China, on the other hand, had abundant labor densely settled, resulting in low wages and high rents. In opposition to the economic policies of the Chinese government,

which favored agriculture more than all other employments¹⁷, Smith identified China's comparative advantage in the production and exportation of manufactures. Furthermore, he warned that China was approaching economic stagnation, having acquired the amount of wealth that its actual institutions and economic policies permit it to acquire. The expansion of foreign commerce, which China had neglected, could however give a fresh impetus to her economic development.¹⁸

By taking into account the relative abundance of land and labor, as well as the corresponding relative prices of these factors in the North American colonies and China, Smith clearly preceded Eli Heckscher and Bertil Ohlin in explaining the international trade pattern based on factor endowments and relative factor prices. However, instead of assuming the artificial factor endowments of a country as exogenously given, Smith was able to treat the broad pattern of changes in the factor supplies and their relative prices as a part of the process of long-run economic development (Myint 1977, p. 235).

It is therefore a well-documented fact that the two highest authorities of the classical theory of international trade explicitly acknowledged plenty of sources of comparative

¹⁷ Consequently, Smith analyzes the economic policies of China in the chapter about Physiocracy. See Smith (WN, IV.ix.40, pp. 669ff.).

¹⁸ Smith wrote: "The home market of China is, perhaps, in extent, not much inferior to the market of all the different countries of Europe put together. A more extensive foreign trade, however, which to this great home market added the foreign market of all the rest of the world; especially if any considerable part of this trade was carried on in Chinese ships; could scarce fail to increase very much the manufactures of China, and to improve very much the productive powers of its manufacturing industry. By a more extensive navigation, the Chinese would naturally learn the art of using and constructing themselves all the different machines made use of in other countries, as well as the other improvements of art and industry which are practised in all the different parts of the world. Upon their present plan they have little opportunity of improving themselves by the example of any other nation; except that of the Japanese (WN, IV.ix.41, p. 681)."

advantage. The simultaneous operation of natural and artificial sources explains the persistent differences in real as well as monetary costs that give rise to the international division of labor and the observable pattern of world trade.

Moreover, Ricardo did not view comparative advantage and increasing returns to scale as two separate and mutually exclusive explanations of the pattern of trade, as it is proclaimed by the New Trade Theory (Krugman, 2011). On the contrary, he considered increasing returns as an integral part of a multifactorial explanation of trade patterns based on comparative costs, whereas the relevant real cost comparison is invariably stated in accordance with the classical rule of specialization.

Reassessment of Smith's Contributions to International Trade Theory

The main results of this papers – the solid evidence regarding Ricardo's adherence to Smith's productivity theory; the reconciliation of the comparative-advantage proposition with the latter; and the reintegration of increasing returns into a multifactorial explanation of the pattern of trade provided by Smith and supported by Ricardo – offer new arguments for the ongoing reassessment of Smith's contributions to international trade theory.

Smith has been underrated as an international trade theorist because he failed to discover the comparative-advantage proposition. Ricardo's own demonstration of this proposition, though, does neither contradict nor invalidate Smith's productivity theory. On the contrary, the accurate interpretation of the numerical example in the *Principles* confirms Viner's assessment that the comparative-advantage proposition is indeed an implication of the classical rule of specialization, although a very important one. Consequently, Ricardo's new

proposition should be seen as a valuable addition rather than a point of disruption with respect to Smith's productivity theory.

This means of course that Smith's valuable contributions to international trade theory cannot be belittled anymore on the basis that he failed to discover the comparative-advantage proposition. Although Smith's productivity theory remains incompatible with the neoclassical theory of static comparative advantage, there is no reason for considering the latter as the high point of free trade thinking.

Before the accurate interpretation of Ricardo's numerical example, the match-up between Smith's productivity theory and the neoclassical theory of static comparative advantage was already shifting gradually in Smith's favor. In this respect, West (1990, p. 41) argued:

"It is now arguable that Smith's total analysis is the more comprehensive because it goes well beyond the neoclassical reasoning. For whereas the latter simply takes as a datum an existing structure of comparative advantage, Smith's approach affords opportunities for going behind and beyond it to explain its very foundation. Manufactured instead of "natural" differences stem from incentives that prompt inherently identical individuals (or countries) to make "sunk cost" investments in an almost accidental variety of skills. In this light, many comparative advantages are man-made and the incentive for trade is an obvious development after this fact."

Smith did not only preceded Eli Heckscher and Bertil Ohlin by including natural and artificial factor endowments and relative factor prices in the explanation of the pattern of

trade, but one can argue that Smith's approach was superior, since he was able to offer an endogenous explanation for the artificial factor endowments and their relative prices in particular countries, whereas the neoclassical trade theory treated them as exogenously given. Moreover, his multifactorial explanation of the pattern of trade is able to explain all sorts of trade, inter-industry as well as intra-industry.

On top of that, Smith clearly anticipated the main propositions of today's New Trade and New Growth theories. Any meticulous reader of the *Wealth of Nations* would hardly find anything completely new or particularly innovative in these two currently fashionable economic theories. The recent renaissance of Smith's insights in contemporary economic thought can be seen as a further proof for the continued relevance of his main propositions on international trade and economic growth.

After the reinsertion of Ricardo's comparative-advantage proposition into the framework of Smith's productivity theory, the match-up with the neoclassical theory of static comparative advantage seems to be overwhelmingly in favor of Smith. This might have important consequences for the mainstream theory of international trade. It may lead to a reinstatement of Smith's insights regarding the division of labor and specialization as the foremost explanation regarding the origin and benefits of trade in contemporary economic thought.

A crucial advantage of Smith's productivity theory over the neoclassical theory of static comparative advantage is that the former offers a unified analysis of foreign trade and the domestic economy, oriented towards the problem of long-run economic growth (Myint

1977, p. 246). In classical political economy there are indeed no inherent differences in the underlying principles between domestic and foreign trade. That does not mean, however, that classical political economists ignore the existence of institutional differences between domestic and international trade like, for example, different national currencies, sanitary and custom regulations or other types of administrative rules on cross-border trade. Ricardo in particular is certainly aware of the differences in the degrees of factor mobility within and between countries, and the resulting implications for his labor theory of value. Notwithstanding the importance of these differences between domestic and foreign trade, they do not modify the underlying logical foundation of trade.

In more practical terms, a future preeminence of Smith's productivity theory over the neoclassical theory of static comparative advantage would bear important implications for the contemporary political debate on free trade and economic globalization. As Buchanan and Yoon (2002) have pointed out, Smith's productivity theory lends to universal support for extending the division of labor and specialization beyond political borders, since such an international extension of the market would boost labor productivity at home. Moreover, the case for free trade based on Smith's productivity theory does not rely on unrealistic assumptions like perfect competition and constant return to scale associated with the general economic equilibrium paradigm and neoclassical theory of international trade. Critics of free trade like Graham Dunkley (2004) and Ian Fletcher (2011) have pointed to these unrealistic assumptions as a proof for the inherent weakness of the current mainstream neoclassical case for free trade. Their critique does not apply to the classical case for free trade.

Conclusions

There are three major claims in this paper: First, there is enough evidence for affirming that Ricardo adhered to Smith's productivity theory; second, Ricardo's original demonstration of the comparative-advantage proposition is indeed compatible and complementary with respect to the latter; and third, that Ricardo agreed with Smith's multifactorial explanation of the pattern of trade, which includes increasing returns and economies of scale.

The contrary notion that Smith and Ricardo had incompatible theories about the origin and benefits of trade is largely a consequence of the widespread misinterpretation of these numbers as unitary labor costs, and the presence of the constant labor cost assumption in the textbook trade model wrongly denominated as the Ricardian model of international trade. Ricardo did not make this assumption in the numerical example or anywhere else in the *Principles*, for that matter. On the contrary, he agreed with Smith's assessment in the *Wealth of Nations* regarding the importance of the international division of labor and specialization for increasing labor productivity and production.

The textbook trade model is also responsible for the erroneous notion that Ricardo proposed a new law of international specialization called comparative advantage. The accurate understanding of the numerical example in the *Principles* proves beyond doubt that Ricardo relied upon the same rule of specialization as Smith and other classical political economists for defining the interest of a country in a particular exchange as well as measuring the gains from trade.

Finally, Smith's productivity theory, in conjunction with Ricardo's additions and corrections, might be the proper basis for the formulation of a contemporary case for free trade which does not rely on unrealistic assumptions like constant returns to scale or perfect competition. The presence of these as well as other unrealistic assumptions in the current mainstream neoclassical case for free trade has given the numerous critics of free trade an easy target to rally against.

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