Adam Smith on comparative advantage

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Adam Smith is credited with a theory of international trade based on absolute advantages. My reading of *Wealth of Nations* leads to think otherwise. In my view, Adam Smith already has a theory of comparative advantage that derives from what he sees as a main motor that drives productivity growth, namely, the progress of the division of labor. His theory is hence based on acquired advantages, rather than on natural advantages that are exogenously given as in Ricardo's theory of comparative advantage. Furthermore, while Ricardo's has a blackboard example where Portugal is more productive than England both in the production of cloth and wine, Smith's example in chapter 1 of Book I on Poland, France and England is instead consistent with the historical facts of his times.

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I. Introduction

Adam Smith is typically credited with the idea of absolute advantages as the basis for international trade, while David Ricardo is credited with the idea of comparative advantage (see, e.g.,, Das 2007).

Ruffin (2005) analyzes the claim that Torrens anticipated in 1815 Ricardo's theory of comparative advantage, which was published in 1817, but he dismisses that claim. This paper analyzes a different claim: that the theory of comparative advantage is already in the Wealth of Nations. It is not spelled out as clearly as Ricardo later did, but it is there. And it has a clear empirical motivation. We analyze this claim in what follows.

II. Comparative advantage in Ricardo

David Ricardo has the classic presentation of comparative advantages. In a beautiful passage in chapter 7 of his *Principles*, he writes:

> Under a system of perfectly free commerce, each country naturally devotes its capital and labour to such employments as are most beneficial to each. … 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.
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> …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.
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> England … to produce the cloth may require the labour of 100 men for one year; and if she attempted to make the wine, it might require the labour of 120 men for the same time. To produce the wine in Portugal, might require only the labour of 80 men for one year, and to produce the cloth … the labour of 90 men … It would therefore be advantageous for her to export wine in exchange for cloth … because it would be advantageous to her rather to employ her capital in the production of wine, for which she would obtain more cloth from England, than she could produce by diverting a portion of her capital from the cultivation of vines to the manufacture of cloth. (*Principles* 1817).

While this is a beautiful passage, it is inconsistent with the facts of the Industrial Revolution, where England had taken a head start in manufacturing and the production of textiles. Is there any potential factual inspiration for this passage? Well, it names corn in Poland and hardware and cloth in England, something which we encounter in the passage from Smith. We turn to this now.

III. Comparative advantage in Smith

Adam Smith starts the *Wealth of Nations* discussing in Book I, chapter 1, the division of labor and presents his famous case study of the pin factory. Shortly after that, this passage appears:

> The division of labour, however, so far as it can be introduced, occasions, in every art, a proportionable increase of the productive powers of labour. … what is the work of one man in a rude state of society, being generally that of several in an improved one. … This impossibility of making so complete and entire a separation of all the different branches of labour employed in agriculture, is perhaps the reason why the improvement of the productive powers of labour in this art, does not always keep pace with their improvement in manufactures.
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> 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. In agriculture, the labour of the rich country is not always much more productive than that of the poor … 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. … The corn-lands of England,

> however, are better cultivated than those of France, and the corn-lands of France are said to be much better cultivated than those of Poland.
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> 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. … the hard-ware and the coarse woollens of England are beyond all comparison superior to those of France, and much cheaper too in the same degree of goodness. In Poland there are said to be scarce any manufactures of any kind, a few of those coarser household manufactures excepted, without which no country can well subsist.

Unlike Ricardo later, the analysis is not based on a stark distinction between domestic prices determined by labor inputs and international prices where that relationship does not hold. Smith does not draw a strict distinction between home trade and international trade, but rather stresses that the division of labor must be thought of in terms of a world market.

His reference to the prices of goods on the international market sounds a bit confused, but Smith basically believed in that arbitrage would lead to the law of one price holding not only in the long run but also in the short run. In this regard, see Humprey (1981), who points out that Smith disagreed with Hume on the price-specie flow mechanism precisely because he thought that the adjustment would not be via prices but rather through capital flows (Ricardo, on the other hand, cites Hume's mechanism approvingly).

IV. Theoretical basis for comparative advantage in Smith

The above passage is noteworthy because Smith has an endogenous theory of comparative advantage. Instead of taking comparative advantage as exogenously given as in Ricardo, here comparative advantage is a product of the progress of the division of labor.[1]

In this passge there appears the international division of labor, where less advanced countries specialize in agriculture and more advanced countries specialize in manufactured goods. This would lead to heated debate in the XVIIIth and XIXth century on protectionism as a way for the late starters like the United States or Germany to industrialize. However, the passage in Smith is compatible with a completely different view, because it is a dynamic process: as participation in the world market grows, other countries can gainfully take part in the international division of labor also developing their manufacturing sector. Nobody is predestined to rmain committed to producing agricultural products, which around 1800 represented about 95% of the economy.

Since Adam Smith discusses comparative advantage (without using that name) as a side product of the unequal evolution of productivity in agriculture and manufacturing, it is very simple to formalize his argument. Productivity ρ can be seen as a consequence of the size of the market μ, where the growth of division of labor leads to a growth of productivity, but the increase of productivity in agriculture A is smaller that in manufacturing M:

$$0 < \rho_A(\mu)' < \rho_M(\mu)'. \tag{1}$$

[1] Negishi (2004: 30) states that "Smith's theory can explain endogenously the comparative advantages between similar countries", but his argument is different because he emphasizes disequilibrium processes. Negishi mentions increasing returns to scale, but he does not spell out the details.

If all nations have a common starting point, Poland does not have an absolute advantage in the production of either corn or hardware. Its smaller market and division of labor leads England to be more productive in both sectors because μ^{Poland} is smaller than $\mu^{England}$:

$$\rho_A(\mu^{Poland}) < \rho_A(\mu^{England}) \text{ and}$$
$$\rho_M(\mu^{Poland}) < \rho_M(\mu^{England}). \tag{2}$$

However, from (1), it follows that a nation like Poland, where the integration to the world market is smaller than in England, will have a comparative advantage in agriculture:

$$\frac{\rho_A(\mu^{England})}{\rho_A(\mu^{Poland})} < \frac{\rho_M(\mu^{England})}{\rho_M(\mu^{Poland})} \Rightarrow \frac{\rho_A(\mu^{Poland})}{\rho_M(\mu^{Poland})} > \frac{\rho_A(\mu^{England})}{\rho_M(\mu^{England})}. \tag{3}$$

This view that a country that has a higher relative productivity in one sector has a comparative advantage in international trade accords with Smith's comment that the country that is more productive can (afford to) sell things more cheaply. In other words, the natural prices of goods is determined by their requirements of inputs, so the cheaper something is to produce, the cheaper it will be in a competitive setting.

V. Conclusion

Adam Smith has been linked to a view of absolute advantages in international trade. This seems overly restrictive, given the passage that Smith writes in chapter 1 of book I of the Wealth of Nations, where he argues that Poland can be competitive exporting corn despite the fact that it is less productive than England (and, he adds, France).

Furthermore, the logic in Smith is based on an endogenous mechanism, that of the increase of productivity with the progress of the division of labor, which depends on the extent of the market.

Smith does not distinguish sharply between domestic and international trade, nor does he point to the lack of mobility of factors of production across international borders as Ricardo does, so Ricardo certainly clarifies the point of comparative advantages. However, though not spelled out explicitly, it is clear that Smith believed that a country with no absolute advantages, like Poland in his time, could nevertheless take part in international trade gainfully.

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