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The Incidence of Import Duties

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were and are still known as mining contractors. It is said that these contractors sometimes earn money very easily, but they are expected to give presents to the mine officials in return. This evil is, I believe, less rampant to-day than it was a few years ago. And it is this pernicious practice, formerly carried on by a few, which the foreigners are now employing in a more wholesale fashion.

It is a common observation for the miner to make in conversation that the foreigner has been the cause of reducing his wage. This to a great extent is true, because the vast majority of the Poles who have come to Scotland have drifted into the mining industry. The problem of the distribution of labour, which the working miner has, as a rule, had little time or desire to consider, is being forced more and more upon his notice. But whilst knowing very little about the theory he can generally explain very clearly that he has to produce more now than he had formerly to do, and that his increased produce only enables him to earn the same as before. And thus in his own way he tells how the fresh labour coming into the country is not being properly distributed. This is a very important though much neglected aspect of the Polish labour question.

What I have here stated is, I believe, a fairly accurate account, from the miner's point of view, of the advent of the foreigner into the Scottish mines. In passing I have tried to give some idea of the alien's characteristics as they have appeared to me; and in concluding I have just hinted at the economic effect that his coming has had upon the mining community of Scotland.

FRANCIS McLAUCHLAN

THE INCIDENCE OF IMPORT DUTIES.

IN the course of a review of my book on "Protective and Preferential Tariffs" in the March number of the *ECONOMIC JOURNAL*, Mr. Bickerdike raises an interesting theoretical point. In the book the following thesis was maintained. It was postulated that a given revenue had to be collected in respect of some commodity that was both imported and produced at home. Two alternative plans of raising the revenue were suggested—first, a customs duty alone; secondly, a customs duty accompanied by a corresponding excise duty upon home production. Apart from

the divergent influence of these plans upon distribution, a comparison between them involved two elements, (a) the direct gain and loss in respect of the taxed commodity itself, and (b) the indirect gain and loss in respect of other commodities. Under both these heads I argued—and up to this point Mr. Bickerdike agrees with me—that *some* effect would be produced alike by plan (1) and plan (2). But—my argument continued—the effect under head (a) is “the chief element that has to be considered.”¹ That under head (b) involves quantities of a lower order of magnitude, and is, therefore, in general, outweighed.² This proposition the reviewer does not accept. “Mr. Pigou,” he writes, “seems to minimise unduly the indirect effect.”³

I do not propose to follow Mr. Bickerdike’s reasoning in detail. A part of it seems to be directed, not so much to rebut my conclusions as to support conclusions on a different point which he has himself advanced elsewhere. I will only observe that the mathematical expression for the net advantage of trade, upon which he relies, implicitly assumes that a *supply curve* can be treated as equivalent to a *particular expenses curve*. This, as Professor Marshall has pointed out, is not legitimate in general, though it may be in certain special cases.⁴

I am anxious, however, to argue positively rather than critically. Mr. Bickerdike’s paper has suggested to me that the method of approximation employed in my book is more questionable than I had supposed, and demands more careful investigation. This I shall now attempt to supply. A starting-point is furnished by the accepted doctrine of consumers’ surplus. If the cost of producing an article of home manufacture is augmented, the amount of that article consumed in the country is altered, and, as an indirect consequence, the amount of many other articles consumed is in general altered also. Provided, however, that the demand or supply of the taxed article is not correlated with that of other things, and that the expenditure diverted from it to other things by the tax is small relatively to the aggregate expenditure of the purchasers, the effect in respect of these other things is of the second order of small quantities, and may, therefore, be neglected. The alteration caused in the marginal utility of money may also be neglected. Hence the total effect of the change is approximately equal to its effect on the money measure of the consumers’ and producers’ surplus

¹ “Protective and Preferential Tariffs,” p. 25.

² *Ib.* p. 30.

³ *ECONOMIC JOURNAL*, March 1907, p. 99.

⁴ “Principles of Economics,” p. 521, n.

yielded by the taxed commodity itself. Furthermore, unless that commodity is one in the production of which land plays a considerable part, the effect on producers' surplus may be left out of account. These general propositions are not, I imagine, any longer open to serious dispute. If a formal proof is required, Signor Barone's articles in the "*Giornale degli economisti*" for September and November 1894 or Mr. Sanger's summary of them in the *ECONOMIC JOURNAL* of March 1895 may be cited.

The situation is, however, essentially different when the commodity whose conditions of supply have altered is obtained by importation from abroad. The various commodities that foreign countries send to us are correlated on the side of supply. Foreigners require our exports, and, to obtain them, send to us several sorts of imports. If it becomes less advantageous to them to send one sort, they may divert the main part of the energies set loose from that sort to making and sending other sorts.

These preliminary generalities in themselves present no difficulty. I proceed at once, therefore, to apply them to the particular problem in hand, that, namely, of determining the relative importance of the direct and the indirect effects produced by an import duty. I am not concerned with purely hypothetical cases. Of course, if a country's imports consist of two sorts of things only in about equal amounts, the indirect effects in respect of the other, due to the imposition of a tax on the one, are in general far from negligible. They are in almost all cases exceedingly important. Actual countries, however, import not two sorts, but many sorts, of commodities. The significant question is how far and under what conditions this multiplicity relieves us of the need of investigating indirect effects.

If, after the change, the aggregate amount of foreign resources that are employed in the manufacture of goods for exchange with England is unaltered, it is evident that the resources devoted to making the exports that are not subjected to taxation will be increased by an amount equal to that by which those devoted to the taxed export are diminished. If the foreign resources employed for exchange are diminished on the whole, those devoted to the non-taxed exports are increased by an amount less than that by which those devoted to the taxed export are diminished. If, finally, the foreign resources employed for exchange are increased on the whole, the opposite result comes about.

For the realisation of the last of these three cases, it is necessary that the foreign demand for English exports in

general should have an elasticity less than unity. As a matter of fact, however, since there are rival sources of supply in respect of nearly all our products, the foreign demand for our goods, so far from being inelastic in this way, is in the main exceedingly elastic. It is practically certain that to make it more difficult for foreigners to obtain our goods would cause them to devote less, and not more, of their resources to the purchase of them.

Hence, in practice, the imposition of a tax upon one sort of import would cause the foreign resources devoted to making other imports for England to increase by a smaller amount than that by which those devoted to making the taxed import diminished.

Under these circumstances, if there are n imports, the conditions of demand for which in England and production of which abroad are respectively similar, England's consumption of the taxed import is likely in general to be diminished not less than $(n-1)$ times as much as her consumption of each of the others is increased.¹ Suppose that the decrease of consumption in the one case is equal to y , and the increase in each of the other cases to $\frac{y}{n-1}$ units. It is easily shown that the loss of consumers' surplus due to the decrease of the one commodity approximates to $\frac{1}{2}y^2K$, while the increase in respect of each of the other imports approximates to $\frac{1}{2}\left(\frac{y}{n-1}\right)^2K$. Hence, the decrease exceeds the aggregate increase in respect of all untaxed imports together in the proportion of $(n-1)$ to 1. If, therefore, n is large, the latter may be neglected in comparison with the former.

The two assumptions upon which this conclusion depends should be carefully noted. First, it is assumed that the conditions of production abroad of England's n imports are similar. If the production of the taxed import is much less elastic than

¹ This matter may be expressed more clearly in mathematical language.

Let $w_1, w_2 \dots$ units of foreign resources, be devoted to making each of n imports for England: and let $w_1, w_2 \dots$ be all equal.

Let the number of units of each commodity that result from these resources be $fw_1, fw_2 \dots$, again all equal.

When a tax is imposed on the importation of goods made from w_1 , w_1 becomes $w_1 - \Delta w_a$: and w_2 and each of the other w 's increase by Δw_b .

Then the taxed import falls in quantity from fw_1 to $f(w_1 - \Delta w_a)$, and each of the other imports increases from fw_1 to $f(w_1 + \Delta w_b)$.

Therefore, the decrease in the taxed import stands to the increase in each of the others in the ratio of Δw_a to Δw_b (approximately).

But *ex hypothesi* $\Delta w_a > (n-1) \Delta w_b$.

$\therefore$ the decrease in the taxed product is more than $(n-1)$ times the increase in each of the others.

that of the other imports, a given quantity of foreign work diverted to the manufacture of these imports will increase their quantity much more than it decreases the quantity of the import from whose manufacture it is withdrawn. In this case the effect on consumer's surplus in respect of the untaxed imports will be much more than $\frac{1}{n-1}$ th part of that in respect of the taxed import, and cannot legitimately be neglected.

Secondly, it is assumed that the conditions of demand in England for the n imports are similar. If the demand for the taxed import is much more elastic than that for the other imports, a given charge in amount consumed will alter consumer's surplus much less than an equal change in respect of one of the other imports. In this case also the effect on consumer's surplus in respect of the untaxed imports will be much more than $\frac{1}{n-1}$ th part of that in respect of the taxed import, and cannot legitimately be neglected.

The latter of these two qualifications seems at first sight to be of great practical significance in a problem which centres about an import tax on a commodity which is also produced at home; for the demand for imports of such a commodity will in general be more elastic than that for other imports. This consideration would carry much weight in a country where only one imported commodity was also produced at home. In real life, however, the multiplicity of such imports can be shown, on the line of reasoning pursued throughout this paper, to reduce it to insignificance.

We are thus left with the general proposition, applicable to revenue and protective duties alike, that, apart from exceptional inelasticity of production or exceptional elasticity of demand, the indirect effects which a tax upon one import produces upon the consumer's surplus derived from other imports is negligible in comparison with its effect upon the consumer's surplus derived from the taxed import itself.

In the special case in which the taxed import to England obeys the law of constant return,¹ this proposition leads immediately to the conclusion that the indirect effects in respect of the untaxed imports are negligible relatively to the effect in respect of the taxed import itself. For, in this case, the only effect in

¹ It should be noticed that the supply curve of the taxed import can only be drawn as a simple price-amount function on condition that the prices of the other imports are temporarily taken as constants.

respect of the latter import is just the diminution of consumers' surplus.

If, however, the taxed import obeys the law of increasing or diminishing return, the total effect in respect of that import involves, besides a loss of consumers' surplus on the consumption that is destroyed, a further effect on the consumption that is maintained. Those who buy the import have to pay, in the one case something beyond, in the other case something below, the sum that the Treasury receives. In the case of increasing return, the payment is additional. Therefore, the total effect in respect of the taxed commodity is greater than the effect on the consumers' surplus yielded by it. It has already been shown, however, that the indirect effects in respect of other commodities can be ignored relatively to this latter effect. Hence, *a fortiori*, they can be ignored relatively to the total effect in respect of the taxed commodity.

In the case of diminishing return, however, those who maintain their consumption *escape* a payment. The total effect in respect of the taxed commodity is, therefore, equal to the difference between the advantage which accrues to them and the loss of consumers' surplus. If the supply is highly inelastic, this difference is almost certain to be greater than the loss of surplus; if the supply is highly elastic, it is not likely to fall short of it by more than a small amount. In certain intermediate cases, however, with a tax of appropriate magnitude, the difference will be much smaller than the effect on surplus; in the limit, of course, it becomes equal to zero. In these cases the indirect effects in respect of the untaxed imports are not negligible relatively to the total effect in respect of the taxed import.

Hence, it is true that cases can be found to which the method of approximation suggested in my book would not be appropriate. That qualification ought to have been set down. The method is valid, not universally, but generally. It *generally* yields an adequate measure of the effects of a small customs duty upon a single import. Hence it is *generally* legitimate to make use of it in comparing the effect of such a duty with those of a customs plus excise duty designed to yield the same revenue.

A. C. PIGOU