balance of imports and exports of each country to and from *all* the others, which would be transformed into that of the balance of the several bilateral accounts by adding to both members some properly selected quantities. Therefore, as far as the ratios of trade and exchange rates go, the system of equilibrium would allow the same solution as in the case of multilateral trade, the only solution that is changed being that relating to the quantities imported and exported by each country.

In short, on the supposition that indirect trade does not entail higher costs for carriage than direct trade does, the system that secures an international equilibrium under a system of multilateral trade is determined *as regards the quantities imported and exported* by each country, only, if the possibility of arbitrage transactions is excluded. Otherwise, it is undetermined and among the infinite number of possible solutions any number can be imagined as would satisfy the condition of the balance of the bilateral accounts, which is after all a case of multilateral trade.

The final conclusion we come to is that made evident in the analogy with which we started, i.e. that the equilibrium level obtained in the three containers is independent of the modalities that characterise the communications between them and of the process by which the equilibrium is obtained.

If we take into account the heavier charges for carriage that indirect exchanges entail as compared to direct ones, the equilibrium is more or less modified, but in each case the trend will be towards a static equilibrium in which the exchange rates will be congruous.

It should be remembered that the complicated procedure that a system of bilateral trade calls for and the possible difficulties from the dynamic standpoint of carrying it out, may contribute to prolong the incongruence of exchanges rates; nevertheless it is ascertained that this incongruence can only be considered as a contingent dynamic disequilibrium.

A Reply

by

Professor C. BRESCIANI-TURRONI

Only a few words so as not to weary the reader.

Prof. Gini and Dr. D'ippolito have shifted the question from the position taken by the International Monetary Fund and in my two articles.

The argument advanced by the International Monetary Fund is the following:

(a) under a system of bilateral exchanges and of inconvertible currencies, discrepancies arise on the free markets of the several countries between the cross rates and the official parities fixed by the Fund;

(b) these discrepancies lead to arbitrage transactions on goods that are injurious to some countries. For instance, traders in countries outside the sterling area buy sterling on the free market, with which they purchase raw materials in the sterling area and export them, thus depriving that area of dollars. It was England herself that raised the problem of the differences between the cross rates and the official parity for sterling;

(c) to avoid these unfavourable results the discrepancies between cross rates and official parities must be suppressed by the action of the several Governments which should fix cross-rates in keeping with the official parities fixed by the Monetary Fund.

The criticisms contained in my two articles relate to point (c). I show that an attempt to impose the general equilibrium of exchange rates (i.e. concordance between cross rates and official parities) under a system of bilateral trade means placing a number of « conditions » exceeding the number of the « unknown quantities », and that this makes it impossible for all the conditions to be satisfied simultaneously. This leads to a disequilibrium which manifests itself above all in the bilateral trade balances. We have evidence of this in the very heavy deficit of England's bilateral trade balance with Italy, which arose after the Italian Government agreed to impose on the foreign exchange market the rate of 4.03 dollars for one pound sterling. Should the Governments wish to take action to reestablish the balance of bilateral trade accounts, this action would entail (this was the main contention of my second article) the establishment of a series of burdensome controls which would lead the market ever further away from that commercial and monetary freedom which is one of the purposes the Fund aims at securing.

Prof. Gini and Dr. D'Ippolito should have turned their attention to that which, according to my two articles is the crux the question. But instead of that Prof. Gini, starting from some considerations on « marginal utility », endeavours to show that even under a system of bilateral trade a general equilibrium of exchange rates is quite possible. In my second article I have criticised the demonstration that Gini tries to give; as Dr. D'Ippolito makes no reference to it I suppose he accepts my criticism.

Dr. D'Ippolito supports the same proposition as Gini, but with other arguments. Unfortunately for my two critics *their arguments are contradicted by facts*, which show beyond all shadow of doubt that under a system of bilateral agreements a discrepancy immediately arises between cross-rates and the official parities of the several currencies. The same thing occurred before the second world war, when Germany developed the system of bilateral agreements. The result was that the German mark had a different value on different markets. The most recent and best known example is that of the dollar-sterling rate above mentioned. It is quite useless to try to deny this discrepancy. Do not the criticisms of Prof. Gini and Dr. D'Ippolito remind one of that famous character of Manzoni's who tried to prove by his dialectis that the plague did not exist?

A Rejoinder

by

Dr. G. D'IPPOLITO

If facts suffice to prove a theory it would be enough to quote facts without demonstrating the theory, and it would, therefore, be unnecessary for Bresciani-Turroni to trouble to demonstrate his theory, already so amply proved by facts, and to clinch his demonstration by stating: « *I show that an attempt to impose the general equilibrium of exchange rate (i.e. the concordance between cross rates and official parities) under a system of bilateral trade, means placing a number of "conditions" exceeding the number of "unknown quantities" and that this makes it impossible for all the conditions to be satisfied simultaneously* ».

I do not consider that I am shifting the terms of the problem when I resolve the proposition above quoted into its logical component parts, as follows:

(a) *hypothesis*: a system of bilateral exchanges;

(b) *thesis*: the exchange rates cannot be congruous;

(c) *demonstration*: it follows from the hypothesis that the number of *conditions* exceeds the number of the *unknown quantities* (congruous exchange rates): hence the impossibility that the conditions be satisfied.

Now, I affirm:

(1) that the hypothesis (a) does not give rise to the thesis (b), but to the opposite one;

(2) that the demonstration (c) is a mistaken one, because it is not true that the number of conditions exceeds the number of the unknown quantities; on the contrary, the system of equilibrium, which is determined as regards the

exchange rates and the ratios of exchanges; is undetermined as regards the quantities exchanged.

This does not mean a denial of the facts themselves, but a denial of the thesis advanced for explaining them, and of the respective demostration. In other words, it does not mean a denial of the existence of the plague, but a denial, for instance, of the theory that the plague was caused by the « greasers », and a demonstration of the groundless character of the arguments used to support that theory.

I have admitted moreover that I consider that, should hypothesis (a') of the absence of arbitrage transactions between countries be added to hypothesis (a), the thesis (b) generally speaking holds good (provided, that is to say, that the special cases considered by Gini be excluded); but nevertheless the demonstration is defective.

What apparently escapes the attention of Bresciani-Turroni is the fact that without the additional hypothesis (a') he *cannot* write the equations:

$$E_{ab} = I_{ba}\ k_{ab}$$
$$E_{ac} = I_{ca}\ k_{ac}$$
$$E_{bc} = I_{cb}\ k_{bc}$$

in the unknown quantitites k_{ab}, k_{ac}, k_{bc}, even after the integration that I suggested, and this for the simple reason that in this case the system of conditions that defines the equilibrium cannot be made « explicit » with regard to the quantities imported and exported, because the said quantities are « indeterminate ».

It probably could, if arbitrage transactions be excluded; but this would evidently have to be demonstrated, and Bresciani-Turroni has not done so. Indeed, as the reader can see, we cannot perceive from the demonstration given by Bresciani-Turroni what is the logical bearing of the possible hypothesis of the absence of arbitrage transactions. At no point has he felt the need of introducing this hypothesis into his demonstration which allows us to presume that he considered the hypothesis superfluous. But it is not superfluous, as I think I have clearly shown, and it is evident that if a theory can only be demonstrated on the basis of a given hypothesis, any line of argument that claims to prove it apart from that hypothesis cannot but be vicious.

I think that the critical part of my article was sufficiently exhaustive and so I have nothing to add to it. In the constructive part I limited myself, for the sake of simplicity, to illustrating by an example the line of argument that leads to the demonstration of my assumption. In any case, I intend to supply, if necessary, an exhaustive mathematical presentation of the problem of bilateral trade exchanges, which will give an unequivocable demonstration of my assertions.

I have abstained from discussing the specific question of economic policy for, as I noted in the introduction to my article, I consider it is above all advisable to try to arrive at a stricter formulation of those theoretical propositions that provide the essential premise for an adequate solution of the problem when it comes to translating theory into practice.

A Comment

by

Professor C. GINI

The attention drawn to some parts of my article *Bilateral and Multilateral Trade* (1) first by Prof. C. Bresciani-Turroni (2); and then by Dr. G. D'Ippolito (3), may leave the reader under the impression that the exclusive or the main purpose of that article was to discuss the criticisms made by Bresciani in a previous article of the policy of the International Monetary Fund (4) and this impression might be confirmed by some phrases in the Reply that Bresciani has made to D'Ippolito's article.

As a matter of fact, the purpose of my article above referred to was different and broader, and — so it seems to me — also more important.

My purpose in writing it was to state that the system of bilateral trade has been forced on countries by circumstances, and that under the circumstances in which it has been given effect it has represented a lesser evil; that under those circumstances, as also in those that followed, it has rendered appreciable services; that it cannot be done away with until conditions that will allow of multilateral trade are reestablished; that moreover the drawbacks of bilateral trade should not be exaggerated, and that therefore one should not expect more from the reestablishment of multilateral trade than it can give. In particular, I showed that under the hypothesis of free market « the bilateral system makes the attainment of equilibria in trade exchanges and international exchange rates more costly — and therefore less accurate — and delay them but do not ultimately prevent them ».

These conclusions — which it seems to me are not unimportant — are but a special case of the broader theory which I think I have adequately demonstrated and illustrated in *Prime linee di Patologia economica (First Outlines of Economic Pathology)*, (4th Edition Milan, Giuffrè, 1935), that holds that the economic organism in abnormal periods operates on lines in keeping with its vital requirements in conformity with rules — which I have endeavoured to explain and illustrate — that are in some respects essentially different from those characteristic of its normal mode of operating. As long as abnormal conditions persist, it is vain and harmful to try to force the economic organism to adopt normal rules of life. The article *Bilateral and Multilateral Trade* will supply the matter for a chapter in the 5th edition, revised and enlarged, of the *Prime linee di Patologia economica* to be published shortly by the U.T.E.T.

Among the charges brought against the system of bilateral trade that I examined in that article was not only but also that of determining the incongruences which now occur in the rates for the currencies of some countries, with the result that cross exchange rates differ from the direct ones, and in this connection I examined the statement made by Bresciani-Turroni according to which *« in a free marked this discrepancy between direct and cross rates derives necessarily from the existence of bilateral trade relations »*. « Thus — he went on to say — we see that an international balance of exchange rates and bilateral trade are two opposing terms, each excluding the other. This principle is of fundamental importance for the monetary policy of the International Fund ». And, after illustrating that policy, he came to the conclusion: *« The international monetary system formulated at Bretton Woods, is incompatible with a system of bilateral trade agreements »* (5).

Without passing judgment on the degree in which the International Monetary Fund's policies have responded to needs, I maintained, in opposition to the above statement of Bresciani's, that, under a system of bilateral trade, direct exchange rates *may differ* from cross-rates (and this shows how arbitrary is the statment now made by Bresciani that I deny the actual existence of such divergencies, just as the character in Manzoni's novel denies the existence of the plague), but that *they do not necessarily differ*, and that moreover if, in a first stage, such divergencies should occur, arbitrage transactions on goods — always on the supposition of a free market — will gradually reduce them, and will tend to reestablish the concordance of the exchange rates.

I have no amendments to make to this position which Dr. D'Ippolito has since confirmed, examining in detail Bresciani's statement of the case, and comparing it with that used in dealing with another question by Wal-

(1) See No. 8, January 1949, of this Review; Italian version in « Moneta e Credito », No. 4, 1948.

(2) *The Cross-Rates of Exchange Once More*, in the « Review of the Economic Conditions in Italy », September 1949; Italian edition with some additions in « Rivista Bancaria », July-August 1949.

(3) *On the congruence of exchange rates under a system of bilateral trade*, in this number of this Review; Italian version in « Moneta e Credito », No. 8, 1949.

(4) *The Problem of the Cross-Rates of Exchange*, in « Review of the Economic Conditions in Italy », May, 1948; Italian version in « Rivista Bancaria », May-June 1948.

(5) See « Review of the Economic Conditions in Italy », May, 1948, pp. 151 and 153 and « Rivista Bancaria », May-June 1948, pp. 17 and 19.