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Theory and Practice in Economics

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Theory and Practice in Economics 1/

The limitations of theory

The academic world prides itself on its theoretical knowledge, and justly so. However, the practicing economist is likely to find that much of the theory that has been developed in recent years is of no use in solving problems and formulating economic policies in the real world. This was pointed out recently by a mathematical economist who is now a high official in the Department of Defense. He said that contrary to some stories that have circulated, the new economic approach to defense policy is based on very simple economic theory, and that no attempt is made to use such things as linear programming, queuing theory, game theory, concave programming, etc. These, he said, were fine for intellectual training, but they had no practical application in the formulation of our defense policies. This is no less true in the formulation of policies for promoting economic development, though one can find practicing economists who have yet to realize this.

To give an illustration, one of the devices recommended for use in theoretical programming is shadow pricing. When market forces are checked by government controls, prices, including the price of money (interest rates) and the price of foreign money (exchange rates), lose much of their usefulness as efficient allocators of resources. Many economists appear to believe that this difficulty can be gotten around by building their models on the basis of assumed realistic prices which may differ substantially from the prices actually prevailing. These are known as shadow prices. However, efforts to apply shadow pricing have not worked out well in practical situations. It is not hard to see why. Nor is it hard to see why economists who have not had their noses rubbed in experience have been misled. The villain is that old devil, *ceteris paribus*. The theoretical economist always recognizes, at least as an aside, that the real world is subject to all kinds of changes, but he often fails to take this into account adequately in his theorizing.

This can be best illustrated with a case from actual experience. Up until 1949 Japan had a system of multiple exchange rates. At the end of 1948 the rates ranged from ¥100 to ¥600 to the dollar. In April 1949 the rate was unified at ¥360 to the dollar, which is where it stands today. There were economists at the time who feared that the rate unification would prove disastrous to the Japanese economy. They foresaw a large segment of Japanese industry being wiped out as a result of the removal of the subsidy it was getting through the exchange rate. What if greater weight had been given to these fears and instead of actually adopting the 360 rate, the shadow pricing technique had been used? Plans could have been made on the assumption that the rate of exchange was 360 to the dollar, while maintaining the multiple rate system. Would this have achieved the same allocation of resources as was achieved by actually making the change?

1/ Remarks delivered to the Economics Club of Howard University, April 3, 1963.

The answer is that it would not. The a priori calculations showed that important industries had such high costs that they could not export or compete with imports at the 360 rate. On the basis of this evidence the planner, using shadow pricing, would have to decide whether he would put the industry out of business or find some excuse to justify its continued operation in spite of the fact that it appeared to represent a poor use of resources. Presumably he would in most cases opt for continued operation. Otherwise there would be little point in not adopting a realistic exchange rate. For the same reason, he would presumably assume that there would be no great change in the amount of raw materials, labor and capital that the various industries would require. This is where ceteris paribus leads him astray. What actually happened in Japan after the rate was changed to a realistic level was the emergence of a tremendous improvement in efficiency in industry. In the year following the exchange rate change, labor productivity rose 65 per cent in ceramics, 64 per cent in metal industries and 39 per cent in the chemical industry. The quality of the products improved markedly, and raw material consumption dropped sharply. For example, the amount of coal required to produce an ingot of steel fell 30 per cent, the amount of coal per ton of cement dropped 20 per cent, and the amount of steel to produce a bicycle dropped 10 per cent.

These were changes that could not have been predicted and which would not, in fact, have occurred under a shadow pricing system. One might assume that there would be substantial economizing of coal if the price were substantially increased, but one could not assume that coal consumption would decline when the only increase in the price was in the shadow pricing structure, not in the real world.

The need for empirical observation

The economist, no matter how brilliant a mathematician or theoretician, is in danger of going badly astray if he is not familiar with the way in which the real world actually operates. He has to know not just about the possibility of other things not remaining equal, but something of the actual cases in which conditions changed dramatically and unexpectedly. He has to have some feel for the infinite complexity of the machinery of production and distribution in a modern industrial economy. One weakness of the modern economist is the proclivity for thinking excessively in terms of aggregates--GNP, national income, disposable consumer income, industrial production, etc. There is a strong tendency to assume that these aggregate indicators are all we need to measure our progress and well-being, and even to control and direct it. An economist who thinks this way might well get considerable satisfaction out of the figures for investment and production for a country and be completely oblivious to the fact that a substantial part of that investment was technologically obsolete and the production represented a waste of resources.

There has perhaps been no peacetime period in human history when scarce economic resources have been so carelessly employed in the world as during the past decade. Sad to say, trained economists have often condoned and even encouraged the uneconomic use of resources. The tendency to think in terms of aggregates and to overlook the quality of the output that the figures represent partially explains this.

Alice in Sovietland

This appears most clearly in the case of a centrally planned economy such as the Soviet Union. In the absence of competition and any concern about the marketability of the products of industry, the chief measure of achievement for Soviet industry is gross output. Those enamored of aggregate figures are very impressed with Soviet performance, and a few years ago high government officials were deeply concerned about what was said to be a growing possibility that the Soviet Union would pass the U.S. in industrial production. The situation looks rather different when one probes beneath the gross figures and discovers that the U.S.S.R. has truly an Alice-in-Wonderland economy. The absurdities of the system were thoroughly aired in a series of articles published in the Soviet newspaper, Izvestia, last year. One illustration will suffice.

A writer of one of the articles tells of taking two blown-out tires to be repaired. When he went to get them, he found that they had been completely ruined by having heavy boots vulcanized to the inside. Tires repaired in this way were very bumpy and could not be expected to last for more than 500 kilometers. According to the manual on the repair of tires by F.K. Miller, they should have been repaired by replacing the cord inside the tread. The author complained to the director of the plant, showing him what Miller's manual said. The director smiled and sent him to see the chief engineer. Again he showed him the manual.

The engineer looked at the cover and said, "I am Miller. I wrote this book."

"Well," said the author, "why don't you repair tires the way you recommend?"

"It is easier to write than to do," was the reply.

The author agreed, but pointed out that by charging more and doing the job correctly the tire would serve much longer.

Then came the explanation. "If we repair the tires properly the plant can repair only 5,000 tires a year. But we have been given an assignment to repair 13,500 tires a year. No matter how much we tried to explain to our administration that we must have a realistic program, they did not agree with us. Therefore, we actually ruin tires instead of repairing them."

The writer concludes, "I talked at length with the chief engineer about what should be done, but we could not think of anything."

This is but one of a number of illustrations of the nonsensical situation that develops when attention is riveted on gross output without consideration of cost and quality. It is interesting that in the article summing up the series, the author, who happened to be an aircraft designer, not an economist, took note of the fact that not one of the 320 doctors of economics working at Moscow's universities responded to the questions raised by these articles. The economists, he charged, were more interested in such things as the economic views of the Decembrists and questions of terminology, "essentially scholastic arguments that do not bring us a step closer to improving the organization of production."

Illogic elsewhere

The Soviet economic system is an extreme case of economic illogic, but the rest of the world is not without its examples. We have our mountains of surplus agricultural products for which we can find no use. Brazil has enough coffee in storage to supply the entire requirements of the world for a year. Argentina has squandered capital in the development of 21 plants to build or assemble automobiles when the country's total production of cars does not exceed 85,000 vehicles a year. Some of the expensive specialized machinery which has been installed can be used for only two hours a year, since that is all the time it requires to produce a year's supply of the part it is designed to make. Sugar plantations in Peru are being equipped with expensive mechanical cane cutters even though one of the resources in excess supply in Peru is unskilled labor which ought, logically, to be utilized in such occupations as cutting cane.

In countless underdeveloped countries the domestic production of a wide variety of products is justified on the ground that it saves foreign exchange without any concern for the economic cost of this alleged saving. Even the U.S. has a foreign exchange saving program. We now require that the Department of Defense buy only American goods as long as the cost of procuring in this country is not more than 50 per cent above the cost of procuring abroad. Since the adoption of this policy in July 1962 through March 1963, the Defense Department placed \$60 million in contracts in the U.S. that would have been placed abroad had this rule not been applied. Procurement of these goods in the U.S. cost \$60 million, 46 per cent more than it would have cost had the goods been purchased abroad. This represents the economic cost of our efforts to "save" foreign exchange.

Unlike the Soviet case, it cannot be said that western economists have remained silent and unprotesting in the face of massive violations of economic logic. Critics of the accumulation of agricultural surpluses have not been scarce in the profession, for example. However, the profession does not have a very good record when it comes to trying to correct the tendency of governments, especially those in underdeveloped countries, to promote uneconomic activities in the name of foreign exchange saving and economic development. This is probably in part the fault of the tendency to be concerned with the aggregates and ignore the tiresome details. It is fairly easy for an economist to find statistics on the rate of growth of GNP or industrial production in most underdeveloped countries. It is almost impossible to find statistics that might cast light on the question of how much uneconomic industry has been developed in these areas over the past decade. This is something which just hasn't been very well explored either by local or American economists. The lack of facts helps explain the lack of interest, and the lack of interest helps explain the lack of facts.

Back to theory

However, there is another reason for the lack of interest in this subject which points up the important role that economic theory does play in practical analysis and policy formulation. Policies which result in economic waste and inefficiency must necessarily be grounded in bad theory. In science the empirical results constantly test the hypotheses and theories. In economics there tends to be an excessively emotional attachment to theories, and this inhibits learning

from experience. All too often, when bad policies produce bad results the responsible authorities try to conceal that fact. They seldom, if ever, take the view that they have a solemn duty to inform the world of their failures, as well as their successes, in order that the body of empirical economic knowledge may be enriched and the science of economics advanced. Generally the facts must be laboriously ferretted out.

When this is done it is very often found that the underlying theoretical error stems from a failure to comprehend one of the simplest and most basic of economic laws--the law of comparative advantage. Strangely enough, this lack of understanding is not confined to the layman or the politician. It is found even among economists with graduate degrees from the best schools in the country. This, at least, is what I have concluded from interviews with a substantial number of Ph.D.'s or Ph.D. candidates in economics from several different universities. These interviews turned up one teacher of economics who not only admitted that he did not understand the law, but said that it was not taught at the college where he was teaching because the faculty felt it was too complicated. Another said that he accepted the law in theory, but doubted that it had any practical application. The evidence of widespread misunderstanding clearly indicates that where comparative advantage is being taught, it must often be taught badly. This conclusion has been supported by evidence obtained from replies to a questionnaire that has been filled out by some 40 students in economics classes in two different universities in Washington, D. C.

If the law of comparative advantage is sound, economic policies which are based on a misunderstanding of it and which flout it are almost certain to produce unsatisfactory results from an economic point of view. The unsatisfactory results, as has been noted, can be found in abundance.

If policies are to be improved, policy makers' understanding of economic theory must be improved. It appears that one area in which an improvement is urgently needed is with respect to the law of comparative advantage. How does it happen that such a simple and fundamental principle has come to be so badly misunderstood?

Ricardo made the point that England and Portugal might carry on trade in cloth and wine to their mutual advantage even though it might require less labor to produce both of these articles in Portugal than was required in England. It would be advantageous to Portugal, he said, to specialize in that commodity (in his example, wine) which she could produce with the least labor, exchanging with England for that commodity (in his example, cloth) which England could produce with the least labor. This classical statement of the law of comparative advantage was subsequently refined to include other elements of cost besides labor, but the principle remained the same: countries would benefit by specializing in the production of those goods which they could produce most efficiently.

This seems simple enough. However, one finds writers on economic subjects who attack the concept of comparative advantage on the ground that an underdeveloped country may not have any comparative advantage because it may not be able to find any product which it can produce more efficiently than the advanced countries! These

people simply miss the vital point that Ricardo tried to make clear, i.e., that the relevant comparison is not the efficiency of production in the different countries, but the efficiency of production of all the various products which a given country might produce. Obviously it is nonsense to say that a country, no matter how underdeveloped, may not have any comparative advantage, since this would mean that the country had the capability of producing all products equally efficiently, or inefficiently.

Where misunderstanding emerges most often is when one goes beyond the comparison of labor or factor inputs and presents the problem in terms of market prices. How can an exchange of goods take place when the money costs of all the goods produced in Urbania are higher than the money costs of those same goods in neighboring Ruritania? I have listened to bright Ph.D.'s from some of our best schools trying manfully to prove that businessmen would find it to their advantage to import goods from abroad at higher prices than they would be obliged to pay for identical goods produced in the home market. Similarly, they have argued that the merchants in the high cost country would refrain from importing goods from abroad even though the imported goods were priced lower than the same goods produced domestically.

On some occasions, after the absurdity of this position has been pointed out, the interviewee has confessed, "I can't explain how the exchange would take place, but I know that it would." This demonstration of faith in economic doctrine would be touching if the abdication of reason were not so tragic.

Both Ricardo and Mill went to some pains to show what would happen to trade under the circumstances described. Ricardo wrote,

"Thus, cloth cannot be imported into Portugal unless it sells there for more gold than it cost in the country from which it was imported and wine cannot be imported into England unless it sells for more there than it cost in Portugal."

If neither wine nor cloth were cheaper in Portugal than in England, then Portugal would experience an adverse balance of trade, which would have to be settled by the payment of gold. This would cause prices to fall in Portugal and prices to rise in England until the point was reached where Portugal was enabled to export enough to pay for her imports. Ricardo pointed out that in the first instance the impact of the adverse balance would fall on the exchange rate, but in the days when the bulk of a country's money consisted of gold, the movements of the exchange rate were severely limited by the gold points. Today a fundamental disequilibrium in the balance of payments may be more swiftly solved by a devaluation of the exchange rate than by relative price movements.

One way not to solve the problem is for the countries concerned to try to get the goods to flow by some artificial means, such as the conclusion of a barter agreement, which is what many of the respondents to my questionnaire have affirmed as desirable. Apart from being cumbersome, barter is likely to have uneconomic consequences. It suffers from the same difficulty as shadow prices and multiple exchange rates. A change in the exchange rate, or pressure on prices

through a tightening of money, may have pervasive effects on efficiency. Costs, including comparative costs, may change to an important degree and in ways that are impossible to foresee. We have no way of knowing a priori where all of a country's comparative advantages lie. Arrangements such as barter agreements which make it unnecessary for competitive adjustments to be made, may well result in a country operating on a less efficient level than might be possible, at a considerable cost to economic progress and welfare. The danger is compounded when both parties to the agreement suffer from prices that are not competitive in world markets, as is usually the case. As Arthur Marget was fond of saying, barter deals between such countries generally involve the two parties mutually agreeing to cheat each other.

Another step that clearly should not be taken by the country having a payments problem is the imposition of duties and quotas which deny it the benefits of free international trade and the international division of labor. The fact that the economics profession has generally been less than forceful in pointing this out to the less developed countries, probably stems in part from the imperfect grasp that many economists have of the theory of comparative advantage. They have been willing to an amazing degree to substitute foreign exchange saving for economic efficiency as the main criterion for deciding upon the allocation of resources. This would not be tolerated, much less advocated, by economists with a real understanding of comparative advantage. It would be hard to devise a more illogical and pernicious criterion for economic decisions than that of foreign exchange saving. It is diametrically opposed to the whole concept of comparative advantage, which holds that a country will grow and prosper in the greatest degree if it concentrates on efficiency and capitalizes on the savings to be made through international trade. The foreign exchange saving concept throws both efficiency and the advantages of foreign trade out the window. The result, observable throughout the world, is the development of productive ventures that are neither efficient nor, in the long run, savers of foreign exchange. Countries that have concentrated on trying to save foreign exchange by developing import substitute industries without consideration for efficiency such as Argentina, Brazil, Korea, Indonesia and India have achieved worsened balance of payments problems and inefficient high cost industries. They contrast unfavorably with countries that have hewed more closely to policies which permitted development along the lines of comparative advantage such as Peru, Japan, Malaya and Hong Kong.

It is important to realize that comparative advantage does not guarantee that all countries which hew to the law will attain the same standard of living or the same rate of economic growth. The wealth of nations is bound to vary because they will have different resource endowments, differences in labor skills, and different objectives. A country which follows policies based on the law of comparative advantage will not necessarily enjoy any dramatic improvement in living standards. It will certainly not progress if productivity does not increase, whether the reason be because of exhaustion of natural resources, or backwardness on the part of its inhabitants, or an excess of featherbedding. Freedom of international trade is not a panacea for such handicaps. If a country finds that it is losing export markets because of factors beyond its control, such as a shift in taste, the rise of more efficient producers, or a change in technology that renders the product obsolete, it may very well have to suffer a marked decline in standards of living. Whether the adjustment of the resulting payments imbalance is made through the exchange devaluation or through the deflation of prices and wages, the country may not be able to avoid a real reduction in income. What adherence to comparative advantage accomplishes in

this situation is merely the minimization of the reduction in living standards, not its complete avoidance. Of course, if the country is lucky it may hit upon new lines of activity that will pay as well or even better than its previous line. Not all the changes in the world are disadvantageous. The chances of this happening, as well as the minimization of the harm that is done, will be increased if the pressure for adaptation is allowed to exert itself and if freedom of opportunity to explore and experiment with new lines of activity is maximized.

A few examples may illustrate this point.

Bolivia has been largely dependent on tin mining, but the tin mines have been depleted and are now much less productive than they once were. Assuming that there was no way this decline in productivity could have been avoided, is there any way in which a decline of incomes could be avoided? Since Bolivia was not able to control the world price of tin, she could not offset the decline in productivity by increasing the price. Foreign exchange earnings declined as tin output fell. The volume of tin exports fell nearly 50 per cent between 1953 and 1958. This situation might have been met by cutting the miners' wages or increasing their hours of labor, or the intensity of their labor. If this had been done and if there existed alternative uses of labor that offered a better return than mining, some of the miners would have been attracted into these occupations. In this way the reduction in income would have been reduced by stimulating labor to move from a less efficient to a more efficient line. However, Bolivia tried to prevent the decline of incomes without offsetting the decline in productivity. This accomplished two things. It kept employment in the mines high, excessively so, preventing any possible transfer to more productive uses. It also placed the burden of supporting the income of the miners on the rest of the economy. This also constituted an obstacle to the development of alternative lines of activity and the accumulation of capital which might have been used to raise productivity. The result was that a well-intentioned effort to keep the poor miners from suffering a deterioration in living standards has resulted in the magnification of the loss to the economy.

On the other hand, Hong Kong shows how a country may roll with the blows of fate and come out on top. The communist takeover of mainland China threatened Hong Kong's profitable business as a middleman in the China trade, and at the same time the colony was flooded with refugees from the mainland. The Hong Kong Government refused to change its traditional policy of free trade. No subsidies and no tariffs were provided to nourish and protect infant industries to fill the void and give new employment to the growing population. Nevertheless industries mushroomed. The hours of labor were long and pay was low. This had to be, for prices had to be held to levels that would permit the products to be exported.

The result has been a remarkable industrial development, and in 1962, three-quarters of Hong Kong's record-breaking exports were products produced in Hong Kong. With the U.S. and Europe imposing restrictions on imports of yard goods from Hong Kong, there was some pessimism at the beginning of 1962, since textiles are the colony's main industry. However, the economy rolled with the blow, and a 12 per cent decline in textile exports was more than offset by a one-third rise in the exports of clothing. If garment workers are paid less than textile mill hands, this may have represented a shift to a less productive line of activity, with a consequent reduction in total incomes. However, the loss of income was minimized and the economy was spared any serious unemployment.

Several years ago when the miracle that was taking place in Hong Kong began to attract attention, there were many pessimists who pointed out that while the industrial growth might be impressive, labor conditions were bad and there was little welfare legislation in this old-fashioned free-trade, laissez-faire economy. Happily, as productivity has improved in Hong Kong's industry, real wages have risen and working conditions have improved. By following policies which forced the development in lines that were comparatively the most efficient, Hong Kong has maximized her productive potential. This has proven to be of genuine benefit to her 3 million people, while the welfare legislation of Bolivia, which has hindered improvements in productivity has had the reverse effect.

In summary, theory as well as experience tells us that real welfare is maximized by policies which maximize productivity, and productivity is maximized by adhering to the law of comparative advantage.