

THE ROLE OF OPEN MARKETS IN COORDINATING AND DIRECTING ECONOMIC ACTIVITY*

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“. . . practically every individual has some advantage over all others because he possesses unique information of which beneficial use might be made, but of which use can be made only if the decisions depending on it are left to him or are made with his active co-operation.” F. A. Hayek¹

OPEN markets do an unbelievably detailed and effective job of utilizing information drawn from millions of individuals. They digest the information, signal the appropriate action to be taken in utilizing the available economic resources, and motivate individuals in the most remote corners of the world to take the necessary action.¹ Open markets are also the most democratic institutions operating in the world today. They minimize tyranny, maximize opportunity, and eliminate special privilege.² And open markets are the most efficient means for accomplishing these objectives.

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¹ Hayek, Friedrich A. “The Use of Knowledge in Society”, *AMERICAN ECONOMIC REVIEW*, September, 1945; reprinted in *INDIVIDUALISM AND ECONOMIC ORDER*, (Chicago: University of Chicago Press, 1948).

² Demsetz, Harold “Minorities in the Market Place”, *NORTH CAROLINA LAW REVIEW*, February, 1965. Friedman, Milton *Capitalism and Freedom* (Chicago: University of Chicago Press, 1962), Chap. VII.

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Rather than dealing with these propositions at a general level, this paper analyzes specific instances of the operation of the "invisible hand". These are drawn from American experiences, although the reader should keep in mind that other economies provide striking examples. Even the Union of Soviet Socialist Republics, once the great enemy of market methods, is rediscovering the efficiency of open markets in guiding economic activity. Determining which are the appropriate goods to produce, what is the appropriate technology to apply in production, and motivating the efficient production of the most efficacious goods is too complicated a task for central planning. The days of central determination of production quotas, of technology, and of pay and profit rates are beginning to fade in Russia because of the cumbersomeness and the ludicrous inefficiency of that system of coordinating economic activity.

The Russian attempts to motivate high productivity and output by rewarding output in excess of a quota of X pounds of nails, for example, led to a large output of spikes and roofless houses for want of shingle nails. A shift to a quota of Y number of nails resulted in a great output of tacks and loose rails for lack of railroad spikes. Also, the fiction produced as accounting records in order to earn bonuses became an open scandal.

Professor Frank Knight long ago prophesied the current move to reinstate a profit system in Russia, now that the Russians have become concerned with their growing inefficiency in attempting to coordinate economic activity in an increasingly complex by central direction and regulation. He said;

. . . any activity directed to change involves uncertainty as to its results and is inherently a gamble. It is in connection with initiative that management has meaning. An obvious consequence of the uncertainty of results is that managerial activities cannot be evaluated until after they are performed

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— and often a very long time afterward, and most vaguely and doubtfully even then. This is the fundamental reason for the specialization of entrepreneurship, or risk-taking, which is the central principle of the enterprise economy and the real meaning of the profit motive or principle. The socialistic state would have no objective or rational basis for fixing the remuneration of managers, the indeterminacy of their value being proportional to the degree of efficiency, along with adaptive flexibility, the socialistic state might well find itself compelled to revert to the enterprise principle of leaving remuneration of all final management — i.e. of innovators — to be determined by results actually realized. If so, the last important economic difference between socialism and capitalism would disappear.³

Open Market Coordination to Meet Unpredictable Needs

In this country, the extraordinary capacity of the invisible hand to coordinate economic activity, particularly where the coordination must occur in a complex and unpredictable situation, is implicitly recognized in some of our regulatory legislation. The transportation of agricultural commodities by truck is exempted from regulation. Only the free market provides the amount of service required at the times needed at minimum cost.⁴ For this reason, agricultural interests have insisted that their shipments by truck be exempted from regulation. They have learned from their nineteenth century success in putting railroads under regulation that service is worsened and rates increased by such controls.⁵

The regulated set of enterprises operating in agricultural transportation demonstrate by their behavior what enormous losses of produce would occur and what costs would be incurred if all agricultural commodity haulage were centrally controlled or regulated. Shortages of grain cars and the re-

³ Knight, F. H. "Socialism: The Nature of the Problem", *ETHICS*, July, 1940, p. 283.

⁴ The contrast between the costs of transportation under regulation and that in a free market is shown to be very marked indeed in an analysis of experience under the two sets of conditions by Stewart Joy, "Unregulated Road Haulage: The Australian Experience," *OXFORD ECONOMIC PAPERS*, July, 1964.

⁵ Hilton, George W. "Barriers to Competitive Ratemaking," *I.C.C. Practitioner Journal*, June, 1962.

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sultant necessity to store grain in the open with the consequential spoilage are a recurring phenomenon. This is a result of the regulation of railroads — a phenomenon which would not occur in the absence of regulation. If the price of rail transportation of grain, per diem car rates, and demurrage rates were determined in an open market, cars would move to those points where storage facilities are in short supply instead of frequently landing at points where storage is ample. They would be used for commodities in urgent need of transport instead of being applied to low priority movements of other goods whose transport could be postponed. It is fortunate that truck movements of agricultural commodities are exempted from regulation, or we would find ourselves in the Brazilian situation where one-third of the crops produced in the interior rot for lack of expeditious and adequate transportation.⁹

A crisis in the wheat harvesting season in 1952 illustrates how open markets can meet very short term emergency situations. The market did a job at that time which could never have been handled by central planning or by regulation as expeditiously or as efficiently. Unusual weather in late May and early June ripened almost all of the 15 million acres of Kansas wheat simultaneously by the middle of June. Usually, wheat ripens about the middle of June in south central Kansas. The custom cutting crews with their combines began harvesting there and move toward west and north Kansas in July, finishing in the northern and western areas in August and September.

With almost all of Kansas ready to be harvested by June 16, in 1952, it appeared that only a few farmers would be able to get their wheat in before losing their crop to hailstorms,

⁹ Dunn, J. K. "Grain Storage Needs in Brazil," *Brazilian Technical Studies* (Washington: Institute of Inter-American Affairs, 1955), p. 395.

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fire, wind, and other causes. "At this point, the pull of the price mechanism came into action, as the services of available machines were snapped up at rates of four to five dollars an acre [as compared to the usual three dollars an acre]. Across the prairies the long distance telephones were busy; . . . spot radio announcements of combines urgently needed in Kansas' . . . at generous prices [were sponsored].

"Unsold combines disappeared from dealers' lots all the way to Canada; and from Texas to the Dakotas farmer-operators dropped their farm work, loaded their machines, and set out for Kansas. Added to the solid core of some 3,500 full-time professionals . . . came almost 5,000 extra outfits eager to dig their cutter bars into wheat at four and five dollars per acre. They came just in time and in ample quantity. Almost no machines were to be seen waiting for jobs, yet in almost every field there was at least one big combine knifing its dusty way through the wheat."

The market mobilized equipment and manpower from the far corners of the country in an amazingly short time to meet the emergency. It mobilized those pieces of equipment and that manpower which occasioned the least sacrifice of alternative product. It avoided ordering equipment and manpower into the crisis area which would have entailed unduly large costs and sacrifices. Could any central planning bureau do anywhere nearly as well? Could any set of regulations of price or usage have done anything but reduce the expeditiousness and efficiency with which the job was done?

The story of India's attempt to improve agricultural practices illustrates the point by an opposite experience. In 1959, agricultural agents were sent out by the government to persuade farmers to adopt new practices to improve their yield.

⁷ Williams, C. M. "Enterprise on the Prairies," *HARVARD BUSINESS REVIEW*, March-April, 1953.

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The agents did an outstanding job of persuading farmers to prepare their fields for the use of new seed varieties and for the application of fertilizers. Unfortunately, the seed did not arrive on time and the fertilizer was delivered to the wrong places. Fields went unplanted with considerable damage to peasant income and the Indian food supply.

A complaint made during the late April floods along the Mississippi in Illinois illustrates the power of the market to coordinate activity. The city engineer of Rock Island complained that sand bags were being trucked into the area threatened by flooding and offered at 15¢ per bag. He felt that such profiteering should not be permitted since the price before the flood threat occurred was 12¢ per bag. One may wonder how he would have felt if no one had anticipated the great demand for sand bags or been motivated to truck them in? How would he have protected the property for which he was responsible if no sand bags had been supplied or if — in other words — the price of sand bags had been infinite?

While open markets succeed in coordinating activity even to meet short term, unpredictable emergencies, central planning often fails to meet predictable, longer term needs. The Indian situation cited above is one illustration. Another is that described in an April 28, 1965, U. P. I. story from Moscow based on information in Pravda. The newspaper lamented that several 16-story apartment houses in suburban Moscow were finished, but nobody could move in. No elevators. The situation was not unique to Moscow, Pravda said. "In many cities of the country tall buildings are being put up and everywhere there is a shortage of elevators."

Open Market Coordination in Changing Circumstances

However, let us turn to the co-ordinating and directing power of the market in a situation which is not a short-term harvest crisis or flood threat. Let us take the somewhat longer

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period from 1939 to 1946 when the American economy was dominated by the necessity of mobilizing for war and demobilizing on the return of peace. One group of industries was completely dominated by this set of circumstances. The munitions industries (as segregated by the Census of Manufacturers and the Bureau of Internal Revenue) doubled its capital in 1940, again in 1941, and in 1942 quadrupled its capital. In 1939, assets in the munitions industries were \$0.6 billion; in 1943, they amounted to \$13.4 billion. The subsequent decline was even more abrupt; within three years the capital of the munitions industries had fallen to \$2.4 billion.⁸

The magnificent response of the munitions industries to war demands and their subsequent rapid adjustment to the decline in demand was a result of the effectiveness of the profit incentive. Some may think that the directives of the War Production Board produced this result. These people should "talk to the men who staffed the War Production Board". The WPB found that the stick could slow production and asset formation in some lines of production, but the carrot had to be dangled to obtain increased production. The actual profit record — the incentives which produced this result — is shown in the table 1 on page 44.

As long as the rate of return in munitions exceeded that in all industries, the assets of the munitions industries increased. After 1943, when the rate of return in munitions fell below that in all industries, assets employed in these industries decreased.

Following World War II, the American economy shifted from war to peace with relatively greater ease than the European economies, despite the lack of direction from govern-

⁸ G. Stigler, *CAPITAL AND RATES OF RETURN IN MANUFACTURING INDUSTRIES*, (Princeton: Princeton University Press for the National Bureau of Economic Research, 1963), p. 15.

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TABLE I
AVERAGE RATE OF RETURN

Year	All Manufacturing Industries	Munitions
1941	8.56%	11.67%
42	7.30	12.12
43	7.30	9.65
44	6.59	6.18
45	5.43	4.39
46	8.13	-2.65

Source: Stigler, G. *CAPITAL AND RATE OF RETURN IN MANUFACTURING INDUSTRIES*, (Princeton University Press for the National Bureau of Economic Research, 1963), p. 36. Rates of return in the munitions industries are on mid-year assets except 1946.

mental authorities. England and other countries which used government boards to redirect resources, and price controls and rationing to prevent chaotic consumer markets, had much greater difficulties (aside from those caused by war damage).⁹ Areas in which governmental controls in the United States were continued, such as housing, suffered from the same difficulties common in Europe.

No one told the managers of U. S. enterprises which products they should produce. How, then, did we avoid the calamity of too many firms rushing into some industries and not enough into others in the shift from war to peace production? The market mechanism, profit, and other income incentives did for us the job which state planners attempted to do in other countries. Where products were in short supply relative to demand, prices went up, profits were attractive, and capacity was built or shifted to meet needs. Where products were available in relatively more than adequate quantities, prices dropped, profits declined or turned into losses, and labor and other capacity were released to alternative uses.

The incentives which guided the adjustment are graphically illustrated in Figure I. In 1946 a disequilibrium situation prevailed. Production rates had not yet been adjusted to provide the things preferred by consumers. The disequilibrium

⁹ Jenkes, John *Ordeal by Planning* (New York: The MacMillan Co., 1948).

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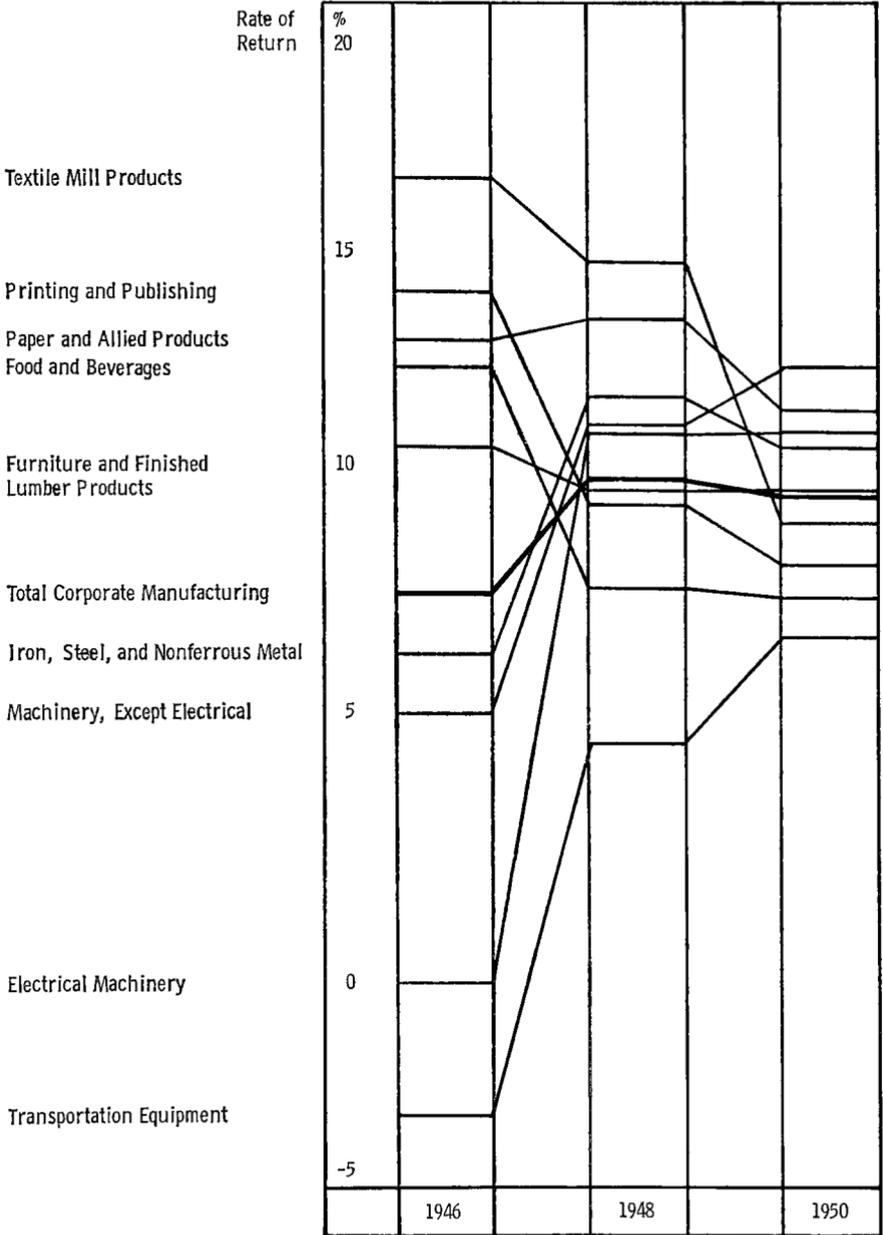


Figure 1 Rate of Return on Capital -- Corporate Manufacturing

Source: National Industrial Conference Board, The Economic Almanac

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manifested itself in the spread of over 20% between the rates of return on net worth in the least and most profitable manufacturing industries. Consumers and the government no longer wanted the products (the P-47's, B-17's, tanks, and liberty ships) which had been produced by the transportation equipment industry. On the other hand, they wanted far more at average cost prices than the textile industry was able to turn out in 1946. The loss of -3.8% in the transportation equipment industry goaded it into releasing resources and changing its output to more desirable goods. The 16.7% rate of return in the textile industry attracted resources and led the industry to increase output.

The rate of return in an industry exceeded the average obtainable in other industries when consumers wanted more product at average cost prices from that industry than the industry could supply. Owners of resources were attracted to the above-average-return industry. Contraction and product changes in below-average-return industries and expansion in above-average-return industries resulted in a decreasing spread between industries as they approached equilibrium rates of output (output of the goods relatively most preferable to consumers). The 20.5% spread in 1946 decreased to 9.7% in 1948. The spread decreased further to 5.8% by 1950. Re-conversion was accomplished at a minimum cost and with a speed which surprised the central planners. They predicted doom when civil servants were stripped of the wartime powers they had exercised.

Differences among rates of return on capital not only attracted capital from the low-return to the high-return industries; they also attracted labor. High-return industries attracting capital bid for labor to operate the additional capital equipment. Low-return industries producing goods for which consumers were not willing to pay much could not afford to

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meet the bids of the industries producing the preferred goods.

The manufacturing industries which grew most rapidly between 1948 and 1957 increased wage rates 17% more than did those which grew least rapidly. The upper quarter of manufacturing industries, ranked by growth in output, increased their production by 84%. To obtain the labor force required, they raised wage rates by 57%. On the average, manufactured output increased 30% in this period and manufacturing hourly earnings rose 51%. The lowest quarter of manufacturing industries gained only 10% in output. Since all the increase and more in the lowest quarter was taken care of by increased productivity, the lower quarter did not find it necessary to retain all its labor. To retain the amount required, these industries had to at least partly meet the competition of expanding industries. They raised wage rates by 40% to do this, which was inadequate to retain all their labor force in the face of a 57% rise in the upper quarter, but sufficient to retain a large portion.

The upper quarter of manufacturing industries grew by producing goods relatively more attractive to consumers in design and price. By improving design, raising productivity, and cutting price they made themselves profitable to both their suppliers of capital and to their labor force. As shown in Figure II, the more profitable industries were also high-wage industries. The four highest-return industries paid wages exceeding \$5,000 annually (1957). They were bidding labor as well as capital away from the industries producing less preferable goods. The four lowest-return industries paid wages under \$4,000 annually and were losing labor to the high-wage industries.

In a few industries, increased wage rates were the result of union power rather than of markets reflecting strong demand. In these industries, job opportunities were restricted by the

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RATE OF RETURN (% of net worth)		ANNUAL WAGE (per full-time employee)
14.7	TRANSPORT EQUIP. (NON-AUTO)	\$5,600
14.2	MOTOR VEHICLES	\$5,400
13.3	CHEMICALS	\$5,350
12.6	ELECTRICAL EQUIPMENT	\$5,120
12.5	TOBACCO	\$3,200
11.9	INSTRUMENTS	\$5,090
11.4	PRIMARY IRON AND STEEL	\$5,610
11.2	RUBBER	\$5,040
10.9	ALL MANUFACTURING	\$4,610
9.3	FABRICATED METALS	\$4,820
8.6	FOOD	\$4,350
8.5	FURNITURE	\$3,815
7.0	LEATHER	\$3,195
6.3	APPAREL	\$2,900
4.7	LUMBER AND WOOD	\$3,280
4.2	TEXTILE-MILL PRODUCTS	\$3,200

Figure 11 Rate of Return and Average Annual Wage-Manufacturing Corporations, 1957

Source: Bureau of the Census, Security and Exchange Commission

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over-pricing of labor. Coal-mining was a prime example of undue increases in wage rates with a consequent loss of jobs and movement of people out of high productivity work into low productivity occupations, the reverse of the movement which occurs in open markets. In the mid-forties, coal wage rates were 18% above factory rates and 380,000 men were employed. By 1960, wage rates had been pushed to 40% above now higher factory rates and job opportunities decreased to 170,000.

Regional Adaption

Higher incomes in open markets act as an incentive to owners of resources (labor and capital) to move their resources not only to the industries where they produce the most desirable products, but also to the regions where they will be most productive. As we can see in Figure III, per capita income in the Southeast United States in 1929 was only 52% of the national average. Evidently, people in this region were only about half as productive as the average U.S. resident. This was partly because of lack of capital for each industrial or other worker, partly because of regional handicaps such as poor markets and transportation. On the other hand, Mid-east U.S. per capita income was 137% of the national average. Evidently, there were very productive uses for labor in this area.

Workers migrated from the Southeast to the areas where their labor could be used more productively. This movement left fewer workers on the land. The increase in land per farm worker raised productivity. Proportionately, more investment was made in the Southeast than elsewhere since labor could be bid away from the inferior alternative uses at lower costs. As a consequence, per capita income in the Southeast rose to 75% of the national average by 1964 in spite of a great rise in the national average which occurred simultaneously.

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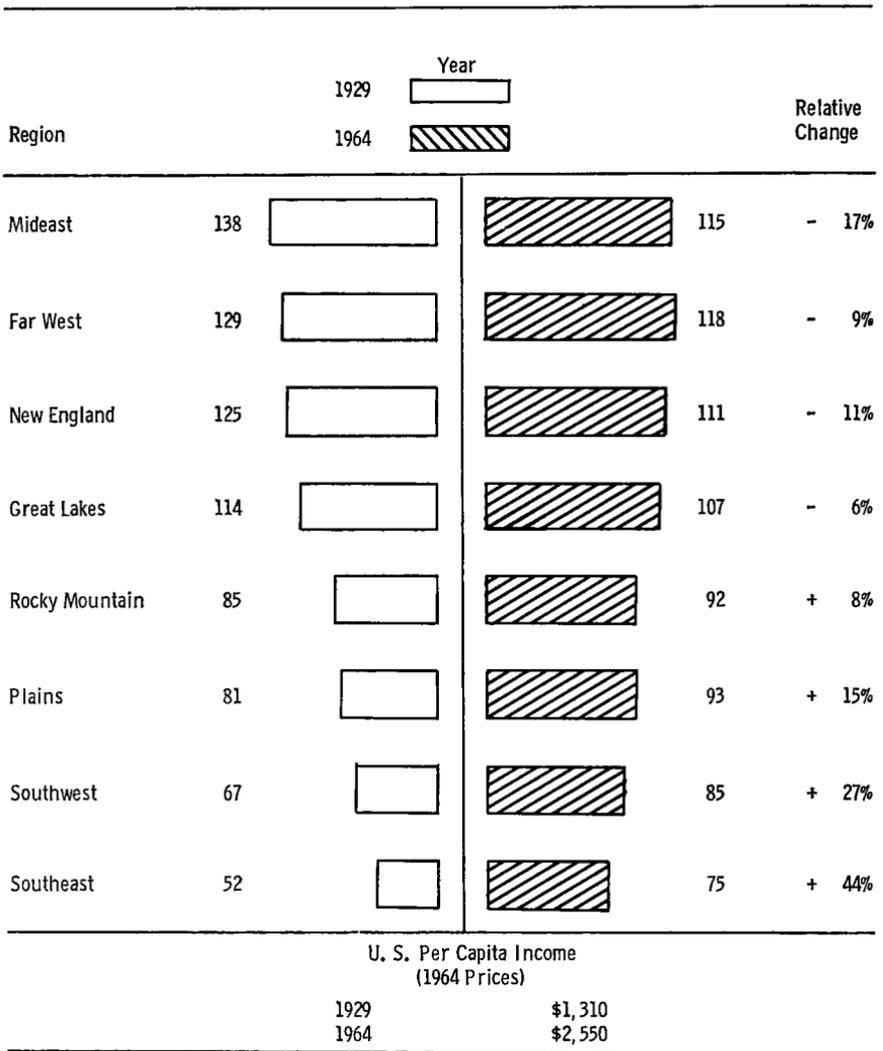


Figure 111 Changes in Per Capita Personal Income (as Percentage of U. S. Average)

Source: Survey of Current Business, April 1965

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Mideast and Far West per capita income rose between 1929 and 1964 but not as rapidly as the average for the nation since the average wage was being raised partly by decreasing the number of workers incurring low incomes in the Southeast and increasing the number receiving higher incomes in the Mideast and Far West. (This slower rise in the Mideast and Far West is simply a statistical oddity and does not indicate that these regions were failing to increase productivity and per capita income.)

The voluntary movement which has occurred out of Southeast U.S. and into regions such as the Far West may be contrasted with the involuntary movements forced upon people by the Resettlement Administration in the 1930's. An illustrative story is the experience of a group of Ozark tenant farmers. Their farms were bought by the Resettlement Administration. They were told the farms would no longer be rented to them. The Resettlement Administration was intent on moving people from low productivity areas where they produced little income to high productivity areas where they could produce higher incomes. The Ozark tenant farmers were in effect forced to move from the farm in Southern Missouri which provided them with little income to farms in Northern Missouri which provided much better incomes.

Within a few years, however, most of the people involved had drifted back to Southern Missouri. When asked why they preferred poverty in the Ozarks to better living in Northern Missouri, the replies summed up to "We missed the coon hunting and the hills."

The voluntary movement which has taken place has been of self-selected persons. The people who chose to move were those to whom higher income was more important than "coon hunting and the hills". Those who preferred their current surroundings did not have to move and did not. Yet, they did

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not lose by staying behind. Those who moved left behind capital and land which increased the resources per man of the stay-homes. This increased the income of the stay-at-homes.

The voluntary process of resettlement works better than the involuntary process. It selects, by self-selection, those people to whom the sacrifices or costs entailed by movement are minimal and to whom the gains are relatively more important. Usually, those who voluntarily move are those who can make relatively greater gains—who can do better in their new circumstances relative to the old. The voluntary response to the incentives of the open market does more to raise average productivity than managed moves of non-volunteers administered by a government bureau.

To the extent that greater gains can be made by moving higher productivity employment to where people are than by moving people to where higher productivity employment is, capital will and does move. If a plant can operate less expensively in the Southeast than in the Northeast, it will be built in the Southeast. If it is cheaper to export product than people, taking account of the compensation required to pay the cost of the move and offset the losses in moving to a less preferred location, then employers find it economic to locate their plants in the Southeast. To the extent that it is cheaper to move people, taking account of their preferences, then plants are built in the Northeast and employers bid enough to attract those willing to move — enough that the move to higher income areas is preferable to the gains of remaining and earning a lower income. Those who prefer additional income obtain what they want and those who prefer other values choose what they want. The additional income is in effect, an offer by employers to share with their workers the savings of locating in a less preferred location. If these shared

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savings are preferable to the nonpecuniary values of a preferred habitation, the individual has the opportunity to express and act on his preference.

Only in an open market is it possible for those individuals who prefer to share in the savings of a less desirable location, from the point of view of habitation, to take their share of the savings while others to whom the more desirable location for habitation is preferable can, in effect, purchase the opportunity to live in a more desirable location at a minimum cost.

The events I have described above should warn us to go slowly in enacting special aid and subsidy measures for low-income areas in the United States, as has been proposed in Congress and is being currently carried out. If these measures take the form of subsidizing people to stay put, the incentive to transfer resources to superior uses may be removed. As a result, per capita incomes—aside from subsidies—in distressed area may then remain low relative to the average for the nation.

This is perhaps best illustrated by analyzing the TVA area experience. Here is an area which has been and is heavily subsidized. Capital is provided by the Federal government (by the rest of the country) for many projects at a price of two and one half per cent. All the capital for some projects is provided at no cost to the TVA area. Electricity is furnished to many buyers in this area at substantially lower prices than in neighboring areas whose suppliers must bear a heavy tax burden. The power company in Arkansas pays out 24% of its revenues as taxes. The TVA makes payments in lieu of taxes, but these amount to less than one per cent of its revenues. That is quite a substantial difference in the tax burden aside from the direct subsidization of the capital supplied to the TVA.

Presumably in these circumstances, the people of the TVA area should have gained enormously.

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An analysis made by the Kentucky Utilities Bureau in this regard turned up a very surprising result. The Bureau was asked to determine whether it would be wise to invite the TVA to extend its operations further into Kentucky. In order to answer the question, it studied the TVA area and eight surrounding areas. It measured the change in various welfare indices such as per capita income, longevity, level of education, freedom from incidence of certain types of disease, etc. As a result of the study, Kentucky decided not to invite the TVA to further extend its area of activity. The surrounding areas had, on the average, done as well as the TVA area.

When I heard of the study, I was puzzled about the results. They seemed paradoxical to me or, to put it bluntly, I found them hard to believe. It was only after a number of students had done some further analysis that an explanation emerged which made the study credible. The data on migration made the pieces fall into place. What TVA does is to subsidize people to stay put who otherwise would migrate. Voluntary migration of people out and of capital in and a change in the rural-urban balance did for the surrounding areas what the subsidies did for the TVA area.

In essence, what TVA has done and is doing is to subsidize people to stay put in an area of lower productivity than the areas to which they would move. This means that we are keeping people in low productivity jobs instead of letting open markets work to move them to higher productivity jobs. To this extent, average productivity in the nation is lower and per capita income is lower than it would in the absence of the TVA. Also, income per capita in the TVA area is lower than it would be absent the TVA. The capital drain from the rest of the nation has kept per capita income from rising as rapidly as it otherwise would which has reacted to cause a less rapid rise in the TVA area.

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Open Markets Coordination of Research and Technology

Most of the analyses made of markets and their role has been in terms of how markets respond to given demands by moving resources to the production of more desirable goods from those less desired. Some analyses have also shown that socially optimum technologies will be selected by entrepreneurs guided and restricted by open markets. There has also been some work done which shows that non-optimum technologies are used when there is no open market guiding and controlling those who select techniques.¹⁰

At this point, I want to turn to a more difficult and less analyzed area, the role of open markets in directing research and development. I will do this simply by discussing some examples.¹¹

In 1950, we had an enormous rise in the demand for benzene. The price had been 14 cents a gallon. Since it was an ingredient in the making of certain explosives, the outbreak of the Korean War greatly stimulated the demand. Since the price was still free to move, price ceilings not yet having been imposed, the price moved to 50 cents a gallon.

The price rise was an expression of the great new demand for benzene for certain overwhelmingly important purposes. It also served as an incentive for people to conserve the use of benzene in less important applications and release it for the more important.

The price rise created an additional response. It presented an opportunity to obtain a pay off from the development of

¹⁰ Brozen, Y. "Determinants of the Direction of Technological Change," *American Economic Review*, May 1953. Also Y. Brozen, "Economics of Material Progress," *Revista Brasileira de Economia*, Setembro, 1954.

¹¹ See Brozen, Y. "The Role of Government in Research and Development," *The American Behavioral Scientist*, December 1962, for a general analysis.

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new technology for producing benzene from a new source. Benzene had been produced primarily as a by-product in the production of coal chemicals. Because of its by-product status, the elasticity of supply from the then available sources was very low. At the old price of 14 cents, it would not have paid to develop new sources by creating new technology and there was little need for new sources since the supply was ample. The 50 cents price was a signal that the supply was no longer ample and an incentive to develop a new source.

Universal Oil Products responded to the signal. They did some work on the plat-forming process for handling petroleum hydrocarbons. In three months, they developed a process for producing benzene from petroleum. The price of benzene then dropped to 25 cents, which provided the signal that further research and development was not needed unless it was likely to create a process more efficient than the plat-forming method.

The open market responded to the benzene scarcity. It directed research to do a job to the extent that resources devoted to research could do the task with a smaller requirement than putting resources into conserving benzene and substituting other materials.

The opposite of open market direction is exemplified by the reaction of the Federal Bureau of Mines and Congress at the same time. The Bureau of Mines said to Congress and the Defense Department, "We will be running out of petroleum soon. How are you going to move military equipment such as planes and tanks which depend on petroleum products?" The Bureau asked for a \$400,000,000 appropriation to work on the hydrogenation of coal and extraction of oil from shale. It almost frightened the Defense Department and Congress into pushing the appropriation through.

The oil industry is as much interested in providing liquid

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fuels for military equipment as the military establishment is in obtaining the fuels. To the extent that it would be cheaper to produce the fuels by coal hydrogenation and by extraction of shale oil, the industry would move in that direction. The industry had maintained a continuous program of research on a small scale to be ready to move when the state of science was appropriate and the scarcity of alternate sources of hydrocarbons made it necessary.

The time was not ripe, however, and the industry indicated this in Congressional testimony. Nevertheless, Congress did appropriate \$100,000,000 and the Bureau of Mines built a pilot plant at Carthage, Mo. and increased the scale of work at Rifle, Colorado. Both plants were shut down a few months later and have sat idle for well over a decade. We have wasted \$100,000,000.

There is the difference between the open market response and the controlled market response.³⁹ Those in the open market are forced to operate on the basis of economical use of resources since they cannot call on taxpayers to pay for their mistakes. The controlled market operated on the basis of scare headlines instead of the realities of resource availabilities and economy.

I should add that the futures market is enormously helpful in making research and development decisions. To illustrate, consider the copper scarcity with which we are faced. The price of copper is now 68 cents a pound in the London market. Is this a situation which calls for a long term or a short-term response? Should we launch research programs to develop new sources of copper and replacements for copper? Or should we simply use our available inventories of copper? Should we try to squeeze more out of existing mines? Or should we

³⁹ For other examples, see Brozen, Y. *The Role of Technology in Conserving Strategic Materials* (multilithed 1951).

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launch an extensive search for ore bodies and open up those now available in remote locations?

The fact that copper futures are selling for 40 cents a pound makes the current situation an obviously short term problem. It signals that the appropriate actions are primarily short term in character. If copper futures were much higher, then the signal would be flying that long-term responses are appropriate. To the extent that some long term responses are worth undertaking even to save or provide 40 cent and under copper, they are being signaled for and motivated currently. At the same time, the open market tells us not to undertake long term responses which are worthwhile only to save or provide 68 cent copper.

Conclusion

Central planning has been praised as a superior technique for organizing the use of resources, selecting techniques, and directing production because presumably it employs reason and is rational. However, this is an argument for planning as against no planning. The issue thus drawn is false.

Open markets are a method of co-ordinating the decentralized planning of many organizations and individuals. Each plan can be fitted to local circumstances employing local knowledge in such a way that the total is co-ordinated under the constraints imposed by total resources and total needs. The issue is not plan versus no plan. It is centralized versus de-centralized planning; limited initiative by a few or wide-spread initiative by many.

This nation has attempted to maintain wide-spread initiative and, at the same time, intervene in open markets with special programs to benefit politically powerful blocs and presumably worthy persons who are not receiving "fair shares." Where these interventions have changed the signals, such as wage rates and prices, or forced re-allocations of resources

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among areas or lines of production, such as the subsidization of certain activities like agriculture and certain areas such as the TVA region on Appalachia, the results are frequently the opposite of those intended.

One example of a result opposite the intent has been described (the TVA instance). In that case, the intended beneficiaries are worse off than if the intervention had not been undertaken. Additional examples which illustrate the same point can be named. The tariff, which is supposed to protect the levels of living of American workers from the competition of low paid foreigners, has simply monopolized low paying jobs for Americans and prevented them from obtaining better paid jobs which would have been available absent the trade barriers we have imposed.¹³ The imposition of the minimum wage and its subsequent increases have caused a loss of better paying jobs by many of the intended beneficiaries and forced them into lower paying jobs or unemployment.¹⁴ The subsidies provided for agriculture through such devices as the Rural Electrification Administration have depressed rural wage rates and increased poverty while enriching the already well-to-do.¹⁵ The federally sponsored and subsidized urban renewal programs which some believed would benefit poverty-stricken slum dwellers have forced them to pay higher rentals, reduced the supply of housing at their desired rental levels, and destroyed the livelihoods of hundreds of small business people.¹⁶

Open markets have done a magnificent job of eliminating

¹³ See Brozen Y. "The New Competition — International Markets: How Should We Adapt?" *Journal of Business*, October 1960.

¹⁴ Brozen, Y. "Minimum Wage Rates and Household Workers," *Journal of Law and Economics*, October 1962.

¹⁵ Johnson, D. G. "Output and Income Effects of Reducing the Farm Labor Force," *Journal of Farm Economics*, November 1960.

¹⁶ The Chicago Housing Authority, *Rehousing Residents Displaced from Public Housing Clearance Sites in Chicago, 1957-58*.

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poverty, of improving the status of Jews, Negroes, the Irish, and other minority groups, and of providing opportunities and outlets for the creative use of the energies of the most deviant persons who are frequently jailed or shot in less open societies. Such markets make it impossible for the few to monopolize power and tyrannize their fellow countrymen. This, of course, is the reason that those with a lust for power are the enemies of the open market and the encouragers of interventions and central planning. As Trygve Hoff remarked, in an editorial in the Norwegian weekly, *Farmand*, "The hallmark of the 'planned economy' is not planning. It is that it aims to concentrate . . . power in the hands of the State . . ."

THE ROLE OF OPEN MARKETS IN COORDINATING AND DIRECTING ECONOMIC ACTIVITY

DISCUSSION

CHAIRMAN MUTTI: Are there questions for Dr. Brozen?

SCHNEIDAU: Is the migration of labor, of people, to California an example of the open market in operation?

BROZEN: Well, an example of the response to incentive.

SCHNEIDAU: I would submit that much of what we are talking about is a response to the rise of income rather than to an open market. I think when we look at our economy, especially the rise in wages, the effects of the minimum wage and other things, there are a lot of factors exogenous to the structure of any of these industries that could have affected the changes in location of labor and/or the greater capitalization in an industry.

BROZEN: That was a point in part of the discussion on the TVA area. In effect, here is a government-provided incentive to *not* move. Now, if you have values in mind other than economic efficiency, O.K. If you would like to have a large population in the Tennessee Valley, you can certainly en-

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courage a migration out of areas where people would be more effectively and efficiently used into the Tennessee Valley by sufficient taxing of the rest of the country and subsidization of movement to that area.

But the point is that the open market works on the basis of, first of all, incentives. Secondly, the incentives are geared to economic allocation — and economic allocation causes the incentives to be what they are. To the extent that you distort those incentives so they are not in accord with the economic allocation, then you get something other than the economic allocation.

SCHNEIDAU: I agree with this. The only thing I was saying is that the illustrations used seem to me to have these external and institutional factors already built into them; that the example doesn't prove the point.

I don't think we have much of an open market system in this country, when you really get down to brass tacks.

BROZEN: You mean the incentives themselves have been corrupted?

SCHNEIDAU: Well, the open market really doesn't exist as such. Maybe the grain trade, but even that is affected by something outside the system.

BROZEN: What is the evidence?

SCHNEIDAU: Well, somewhere around 28 percent of all of our defense dollars are in California. Certainly this causes a maladjustment of resources, perhaps other than what would have occurred had the open market system existed in all sections of the economy.

BROZEN: What is your evidence that this is a maladjustment of resources? Presumably, the defense department in most cases awards contracts to the low bidders and the low bidders are those that presumably have lower costs of production. To that extent, insofar as the government is purchas-

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ing on a bid basis, rather than a cost plus basis — McNamara insists he is moving more and more contracts to a bid basis — to that extent, then, this is an economic allocation of the defense dollar.

You are saying, "Suppose the government allocates these contracts in terms of something called a distress area, and we give the contracts even though they are not the low bidder." To that extent, the government itself is not allocating economically, but nevertheless the movement of resources is taking place in response to incentives.'

SCHNEIDAU: Yes, I agree.

BROZEN: Perhaps there is some confusion in what is meant by an open market.

SCHNEIDAU: I think so. I think of an open market in terms of a free market.

BROZEN: I think you are arguing more than that, though. I think you are arguing that an open market is one in which consumers control how resources are used for their benefit. Then, certainly, the fact that the government is taking something on the order of 25 percent of our income and spending it for us, you might say that Congress and the government officials are making decisions for us as to how our money is to be spent, and to that extent, the market does not reflect consumer preferences.

The market may reflect some governmental and political preferences, but the open market does adjust to these signals which are the result of the preferences expressed.

Maybe the consumer isn't expressing his preferences because somebody else is spending his money. To that extent, the signals may not be allocating the resources to the uses that consumers preferred. They are allocating according to the preferences of those who have the power to vote. In a sense, we are talking about two different open markets.

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EHRICH: Government response to munitions was an example of response to market incentive, but what about price controls? The government has to plan what kind of purchases, which goods, will be most effective in winning the war. That is the main kind of planning that is done.

BROZEN: The War Production Board did have certain controls that it attempted to use. They had priorities and allocation systems. The result would be that, let's say, the munitions industries were able to obtain materials, when other industries were not able to.

Why would the munitions industries order those materials? Because of the chance to profit by putting assets into proper places — by using them to fill government orders.

EHRICH: Wasn't the chance for profit a function of holding down prices in other areas — price controls?

BROZEN: Well, there is a good deal of argument as to how effective price controls were. But price controls themselves, if you like, are a demonstration of the greater efficiency of a free market.

Remember, the price controls were operated by a number of boards throughout the country whose total staffing amounted to some 300,000 people. The firms submitting reports required for price controls had to spend something like \$5 billion a year to satisfy the governmental requirements for reports.

Or let's look at the situation from a different aspect. You have heard about the input-output tables. The biggest one has a 140-by-140 matrix that was completed in 1954. By the time that was developed, the data incorporated was from 1949 — it took them four years to assemble the necessary data.

So if one central source is trying to run industry on the basis of that input-output matrix, it is running on the basis of data already four years old.

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Nationwide, to do a satisfactory job, let's say you would have to have one equation representing each business firm in the country. Let's leave out agriculture, this is tough enough in itself. We have 4 million business firms in the country, so essentially, you would really need a matrix of about 4 million by 4 million.

A matrix of that kind would require a computer about the size of the Pentagon and require data that simply are not available; this minute's data are not available — data would be on the order of the other — four years old.

What the market does is act like that computer would act if it had absolutely up-to-the-minute data and does all the necessary calculations, and in addition, the market motivates the response. It doesn't have to try to write out orders to every business in the country. Think of that in itself: Trying to write daily orders to 4 million businesses in the country.

We don't need to with an open market. The open market provides you with the signals, does all the computing and provides the incentive necessary so people will do their own adapting.

Let me read to you a quotation from F. A. Hayek, "The Use of Knowledge in Society", which I think indicates all of the problems that would be involved here:

"Practically every individual has some advantage over all others because he possesses unique information of which beneficial use might be made, but of which use can be made only if the decisions depending on it are left to him or are made with his active cooperation."

How do you do that out of a central location? You just can't.

EHRICH: I agree.

BROZEN: With an open market, you can.

EHRICH: Your example still, to me, is an example of the

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need to control the free market to accomplish a certain social or welfare aim. Suppose that the welfare of the nation requires that we channel resources into munitions instead of automobiles.

BROZEN: Any purchaser has to plan what he is going to purchase, and presumably the Army, the Navy, the Air Force and the Marines, through their joint munitions board, planned what they were going to purchase; what is going to be most effective in carrying out the military business.

So you certainly need planning of that kind. Every business firm does take care of planning, as to what they are going to need to produce the product, what product they are going to produce; that planning has to be done.

But I take it you are making a further argument that you need controls in addition to that, of some kind?

EHRICH: I think we did have controls.

BROZEN: That isn't the question we are asking. Not whether we have the controls. It's whether we need controls. Whether those are the most efficient ways of carrying out the job.

Lord Beaverbrook had a problem in producing Spitfires and one of the problems was that he was tremendously short of copper.

One way to resolve it would have been to simply try and get an inventory of all the copper in England, and then proceed to confiscate the copper that was needed, with governmental power. If he had done that, he might have confiscated some copper of enormous importance which would have caused staggering losses of vital production, rather than taking copper which was of trivial importance.

He didn't know how to judge that, so he used the simple expedient of offering a high price for copper. People to whom it wasn't that important sold it to him for the Spitfires. Peo-

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ple to whom it was of enormous importance didn't sell him their copper. On the basis of individual decisions as to whether it was important enough to keep where it was or whether it was more important to get the price, Lord Beaverbrook got ample copper for his Spitfires without taking it from some very important places, while leaving it in trivial places.

Take our own production program. We proceeded to assign priorities in the destroyer and destroyer escort program, and in certain steam power plants programs. This resulted in the destroyer and destroyer escort people getting practically all of the valves in the country, while people producing steam power didn't get the necessary valves.

Suppose you just offered the price you thought was necessary to get the valves for the destroyer escort program. We would have then gotten valves from unimportant uses into the shipyards while leaving others to more important uses.

DIETZ: I am wondering whether you would comment on some of the other types of controls that we have in the economy, as it fits into your picture of the open market?

For example, the Federal Reserve Board and interest rates and margin requirements and so on.

BROZEN: I don't want to open up the whole monetary field. We've got a very special and unique product here whose value is much greater than the cost of production, which plays a key role in regulating the heart of the contract, so-to-speak.

I think by and large there is fair agreement — if not total agreement — that the job of determining how much money should be in circulation has to be in the hands of some central authority.

There are those who disagree. Jacques Rueff was in the country a few weeks ago, and disagreed strongly with me. "No," he insisted, "We should have a monetary unit which costs as much to produce as the bank pays for it. This would

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take care of the situation of limiting the stock of money to the appropriate amount.”

But assuming that you want to economize on the means that you use for exchange, then presumably we're going to be using a money that costs a lot less to produce than its value in the market. To that extent we can't allow a free market in the production of that item, and so we use a controlled amount of production, placing authority for controlling the amount of production in the hands of the Federal Reserve Board.

The second question you were asking is about controlling interest rates.

By and large, the Federal Reserve Board has very little control over interest rates. It has some control in the short run over level; but not in the long run.

The standard tools, presumably, would be that if you want a low interest rate, the Board sets a low interest rate and lends to whomever wants to borrow at that low interest rate, and this keeps the interest rate low. Then you soon find that the quantity of money starts rising rapidly. This means that the real interest rate at any given nominal level drops to zero or negative level. People don't like to make investments at negative levels, and you find that the market interest rate is soon going to adjust to the point where it is the natural rate plus the rate of depreciation, no matter what rate the Board tries to set.

Brazil, for example, is a country where bank authorities have set a 6 percent rate on loans. The short term rate in the open market is more on the order of 80 percent. They have had a 70 percent rate of inflation, and take a natural rate of about 6 to 8 percent interest. The Bank of Brazil goes on maintaining the fiction, but it has so many people trying to borrow from it that now it just rations its loans.

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There are people who are preferred borrowers, and they get the money, and the rest don't, but in effect the market rate is 80 percent.

HILL: Are there in fact market repercussions that come about from the structure and other sources, that require some regulation?

BROZEN: Well, when you say structure, you mean the kind of things to be affected by anti-trust laws? I have a somewhat heretical position on anti-trust laws.

As far as I can see, one of the main impediments in the structure right now was caused by anti-trust laws. Essentially, the way the anti-trust laws are being administered by the Anti-Trust Division at this point is primarily to prevent competition; not to maintain competition.

I would argue that our best anti-trust policeman would be an open market. Eliminate tariffs, and that would take care of the anti-trust problem for most commodities.

Maybe it wouldn't work very well for bricks. It is costly to ship bricks long distances. But that is one the anti-trust laws don't work well on, either.

HILL: Without tariffs would we create cartels or other situations that might result in greater inefficiency?

BROZEN: Well, so far as I can see, the only cartels that are successful are governmentally-supported cartels, like tobacco and milk and items of that kind.

I have seen very few private cartels succeed in the United States. Perhaps the exception is the carbide cartel in the 20's and 30's which was successful, but that was only three firms. If you get more than three firms, I say there's always someone who is going to undercut the cartel price.

There is an old saying that a cartel can always stand one violation, but the trouble is, there is usually more than one violator around.

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I remember one of my friends who was closely involved with the cottonwaste cartel. They met periodically. They agreed on the prices to be set for cotton waste, then ran as fast as they could to telephone their customers to tell them the price would go up. The cartel agreement was broken within ten seconds after it was made. I am baffled as to why they went through those negotiations for so long a time, because they were unsuccessful.

Then you had three periodic "white sales" in the electrical apparatus industry, and prices would break 30 and 40 percent. They'd book lots of business at those prices, then when they reached capacity, all the prices went up again.

