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Lerner's Contribution to Economics

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I want to thank Milton Friedman, Bent Hansen and Richard Musgrave for helping me to identify Lerner's role in originating certain concepts and policies, and Evsey Domar for letting me quote from one of his letters. My special thanks go to David Colander for his extensive help not only in making available Lerner's hard-to-get papers, proofs of The Selected Economic Writings of Abba P. Lerner which he edited, and his own and other people's writings on Lerner, but also for patiently and promptly answering my many questions, and for commenting on a draft of this paper. If there are errors and omissions they are my responsibility. Let me add that many of Lerner's papers, discussed or mentioned in this survey, have been reprinted in Colander's The Selected Economic Writings of Abba P. Lerner: They are marked with an asterisk in the References.

ABBA P. LERNER was one of the most original and imaginative economists of his generation. He initiated more of the concepts, theorems and rules that today constitute our profession's workaday tools than anyone else. Lerner introduced the idea that monopoly is a matter of degree, measured by the ratio in which the divergence between price and marginal cost stands to price; he was the first to establish the "Lerner-Hotelling condition" that marginal-cost pricing is a universal welfare-maximizing rule, which extends even to decreasing-cost industries; he and Oskar Lange were the main architects of the theory of market pricing in socialist economies; and he was the one to base the ethical argument for greater income equality on a logical footing.

In the field of international economics, Lerner was the first to assert and prove

the complete equalization of factor prices by free trade in products; he established definitively that export and import duties have identical consequences; he seems to have been the first to raise the question of what might be the optimum currency area and what factors determine it; he was among the earliest advocates of variable exchange rates, probably being the first to advocate them in conjunction with counterspeculation (market intervention) by monetary authorities to smooth excessive fluctuations.

In the area of macroeconomics, Lerner provided the logical framework (functional finance) for Keynes's policy recommendations; he noted and expressed concern over the intolerably high unemployment needed to assure price stability, decades before the rest of us did and many years before Milton Friedman

presented the idea of a natural rate of unemployment; he introduced the concept and stressed the importance of sellers' inflation; he was probably the first to argue that only unexpected inflation has harmful effects, and the first to advocate the indexation of bonds.

Many of Lerner's contributions were so fundamental that today all economists know and constantly use them without knowing or caring who introduced them. Also, the sheer variety and range of subjects to which he contributed spread his fame not only wide but also thin, which partly explains why an economist of Lerner's stature and originality has received such scant recognition. As if his many new ideas on so many disparate subjects had left him no time to develop and elaborate any to the extent that would indelibly stamp them with his authorship. Another partial explanation was, perhaps, his footlooseness. All his life, he was on the move from university to university, never staying in the same place long enough to acquire a following of younger colleagues and graduate students who would use, test, spread and extend his ideas.

Another reason for his lack of recognition may have been his exceptionally sharp logic and undue faith in its power. He rightly trusted the rightness of his logic, however far it took him off the beaten path; unjustified was his trust in the power of logic to influence action and of *his* logic to convince others. Few economists dare to venture out of the security of the conventional wisdom to follow the dictates of logic more than one cautious step at a time; and the few who do want the reassurance of mathematical reasoning to vouchsafe its correctness. Because Lerner's logic was honed on rabbinical, not mathematical studies, his arguments did not have the persuasive power of mathematical reasoning—a serious lack at a time when mathematics were fast becoming the language of economics. Yet,

he was a wonderful expositor, who excelled at geometrical proofs and scientific writing, and he was a master at reducing arguments and policy recommendations to bare essentials, thereby clarifying their logic and exposing their full implications. Not only was Lerner's writing a model of clear, succinct, and rigorous scientific prose, he also preached what he practiced: almost single-handed, he started a journal, the *Review of Economic Studies*, to provide an outlet for short, substantive papers with no excess verbiage.

Combined with his gift for exposition was Lerner's willingness to use it. He was always ready to help students and colleagues who, trapped in established habits of thought, had difficulty in grasping an unfamiliar argument; and he took great pains to devise means that would help them out of that trap.

But, however helpful he was in making difficult arguments simple, Lerner was utterly unwilling to modify the presentation of his ideas and policy recommendations for the sake of making them look less revolutionary and so cushioning the shock they so often administered to his listeners' and readers' preconceived notions. For Lerner believed in presenting new ideas in their starkest, most paradoxical form, to shock students into thinking for themselves, thereby forcing them to examine and reconsider traditional ideas they had unthinkingly accepted. That pedagogical device could be very effective with the young, but it frequently misfired with the not-so-young, in whom the profession's conventional wisdom was often too deeply ingrained to be examined afresh. They were merely alienated by Lerner's paradoxes and deceptively simple ideas and quite frequently looked upon him as a crank. That was all the easier, because he dressed the part, with his open neck, bare toes and (later in life) his prophet's beard. In short, Lerner was a great teacher but a bad salesman.

That, in a sense, was a surprising shortcoming for so ardent a believer in democracy, who ought to have known that if ideas are to be accepted and become effective, they not only must be correct but persuasive and attractively dressed up as well. He considered salesmanship and the translation of logical rules into practical policies the task of politicians, not economists, somehow forgetting that for a politician to sell an idea and translate it into practical terms, he himself must be sold on it first—usually in ways and by arguments not much different from those he will need to persuade others. To make matters worse, Lerner's logic and the stark way in which he presented it often offended not only the ruling conventional wisdom but the conflicting conventional wisdoms of several contending ideologies all at the same time.

Lerner called himself a socialist but believed, not in the *socialist means* of the public ownership of the instruments of production, only in what he thought of as *socialist ends*: democracy, individual freedom, a fair income distribution, full employment, and an optimal resource allocation. He must have shocked his fellow socialists when he extolled private enterprise on the ground that “alternatives to government employment are a safeguard of the freedom of the individual.”¹ They were probably even more shocked when he argued against minimum wages, because they interfered with the price mechanism, which he considered “one of the most valuable instruments of modern society.” Again, he was a devotee of free enterprise but would have astonished his co-devotees had they known that he de-

finied it as “the freedom of both public and private enterprise to enter any industry on fair terms which, in each particular case, permit that form to prevail which serves the public best.” Lerner was also the most ardent of Keynesians, to judge by all he did to clarify, extend and spread Keynes's ideas; yet he must have dismayed other Keynesians when he “spotted the fatal flaw in the Keynesian schema” and warned against the inflationary consequences of full-employment policies two decades before the rest of us did. That insight, however, let me hasten to add, led him to try developing a means of reconciling price stability and full employment rather than advocating stability at the cost of unemployment.

Lerner's utter reliance on logic hindered acceptance of the man himself as well as of his ideas. It goes a long way, I think, to explain his loneliness and why he had few friends. Most people form emotional attachments not only to family and friends but also to ideas, ideologies and institutions; and they feel closest and friendliest to those who share those attachments. Lerner's unrelenting logic, however, overruled whatever loyalties he started with, and that made him seem like a cold fish to just about everybody: people on the left, on the right, to socialists, Manchester liberals, and to Keynesians alike. His one abiding passion was the good society and whatever policies would bring it closer, which placed him in direct succession to the classic figures of political economy but earned him few friends among contemporary economists, to whom most of his policy recommendations looked like gimmicks. His interest was in normative, not positive economics: how the economy ought to and could be made to work, not how it actually works. Most of his thinking and writing was policy-oriented. He wanted to improve the economy, not economics—and that, I think, was yet another, perhaps even the most important

¹ Throughout this paper, I have tried to use Lerner's own terminology and language as much as possible. Passages in quotation marks are taken verbatim from his writings. I used no quotation marks when the requirements of style made me change his grammar or word order. It seemed unnecessary and unduly cumbersome to give references for the quotations.

reason for his failure to win the recognition he deserved. For, at the beginning of his career in the 1930s, when he was only flexing his mind, Lerner made many contributions to economic theory, which economic theorists were quick to appreciate, for which he got plenty of recognition. Only from the 1940s onwards, when he focused almost exclusively on policy recommendations, was he denied recognition and that for two reasons. First, policy recommendations are addressed not to thinkers but to doers: politicians and economists involved in policymaking, who for obvious reasons, are the slowest and most reluctant to abandon standard policies for the sake of new, untried ideas. They are the ones who distrust or even suspect pure logic, which was Lerner's strength, and need to be converted by salesmanship, which is what Lerner lacked.

The second reason why Lerner's policy recommendations cut so little ice was his lack of interest in and limited knowledge of how real economies actually operate and what individual motivations influence them. That often made him blind to political realities; and his overly simple picture of economic reality led him to prescribe overly simple cures for its woes. That, together with his inability or unwillingness to sell his ideas by means more persuasive than their inherent logic probably explains why so able and imaginative an economist saw so few of his policy recommendations put into practice.

It is quite obvious from Lerner's writings that he was fully aware of why his policy recommendations made so little headway. He must also have known that he could have advanced his career and fame far more effectively by sticking to the purely theoretical writings of his early years with which, he knew, he could win instant acclaim. But Lerner was a singularly selfless man, all of whose work seems to have been motivated not by personal ambition but by a desire to serve the pub-

lic good. That explains, for example, why such an imaginative and original thinker spent so much time and effort writing purely expository articles (at least six) to explain another's ideas (Keynes's): at that time, the profession's and the general public's acceptance of those ideas seemed most important to him. At the same time, he was quite negligent about publishing his own original contributions to pure theory. Two of his theoretical papers (1952b and 1983a) were published with delays of two and five decades, respectively, and then only at other people's urging. The first is one of his most brilliant (see below: p. 1554). The same desire to promote the public good also explains Lerner's single-minded preoccupation with the problem of inflation during the last quarter-century of his life. None knew better than Lerner the doctrine of comparative advantage and his own comparative *disadvantage* in the art of formulating economic policies; but he was not the man to let go by default what he considered the economist's most urgent task.

Welfare Economics and Socialism

Lerner's first three articles, written while still an undergraduate, are little more than exercises in economic geometry with one exception of which more will be said later. However, "The Concept of Monopoly and the Measurement of Monopoly Power" (1934a), one of five papers he published while a first-year graduate student, is among his most brilliant. Also, it is the first of a series that culminated and were summarized in his best-known book, *The Economics of Control*. Today, a half-century after its publication, that article, however simple and simple-minded, still reads like an exceptionally clear and comprehensive exposition of what the social optimum means, why marginal-cost pricing is its necessary and sufficient condition, how competition assures and monopoly prevents its attainment,

and what role the related concepts of rent, consumer's and producer's surpluses play. All that is elementary to present-day economists, but only because Lerner has made it so.

The first clear, rigorous and definitive statement of Pareto optimality also comes, not from Pareto's *Cours* or *Manuel*, where, according to Paul Samuelson (1964, p. 172), it is "obscure and a bit confused," but from Lerner's article. When Lerner opts for marginal-cost pricing and marginal-product-value costing as the conditions of optimality instead of the then more orthodox and more generally accepted equality of average receipts and average costs, he is not setting up a straw-man just to knock it down but is referring to the authoritative opinions of the day. To quote Samuelson (1964, p. 173) once again: "I can testify that no one at Chicago or Harvard could tell me in 1935 exactly why $P = MC$ was a good thing;" and the situation was no different in England, as will appear presently from the debate on socialism.

Lerner's paper was written (though not published) before Edward Chamberlin's and Joan Robinson's books on monopolistic and imperfect competition became available: at a time therefore, when only the limiting cases of perfect competition and pure monopoly were known to the profession. Accordingly, Lerner's discussion of *degrees* of monopoly and his proposal to measure them by their distance from the $P = MC$ optimum introduced a continuous spectrum between the previously known limiting cases—a device Lerner often used, as we shall see below.

The economists of the early 1930s were helpless in the face of the Great Depression and regarded it as a major malfunction of capitalism, which probably explains the lively debate in the contemporary English periodicals on the feasibility of the alternative: a socialist economy. Participants in the debate came from the whole

ideological spectrum. On the extreme right, Ludwig von Mises argued the logical impossibility of efficient resource allocation without market transactions between private participants. Friedrich v. Hayek and Lord Robbins, impressed by Enrico Barone's brilliant 1908 mathematical paper, "The Ministry of Production in the Collectivist State," conceded the conceptual possibility of efficient resource allocation under socialism but questioned the practicality of the ministry's bureaucrats solving—and solving in time!—the millions of equations that the market solves by trial and error in our economy. The socialist contributors to the debate² accepted the Hayek-Robbins position and focused their efforts on formulating a model that would use market prices for a trial-and-error approximation to the economic optimum in the socialist economy. The idea for such a solution was proposed already in Fred M. Taylor's presidential address to the 1928 December meetings of the A.E.A., but it was worked out in detail only during the 1930s by a group of able young economists.

Most of them proposed rules of behavior for socialist planners and plant managers, the observance of which would replicate one or another feature of the perfectly competitive economy. Lerner, in his five contributions to the debate (1934c, 1935, 1936c, 1937 and 1938) never worked out a full set of rules but confined himself to reviewing and criticizing the contributions of others, correcting their mistakes, amending their proposals, and standing up for consumers' freedom of choice. In that disjointed fashion, however, he made one of the two major contributions to what is now known as the economic theory of socialism (the other is Lange's). He pointed out that perfect competition is not a goal but merely a means to an end: effi-

² They were, in addition to Lerner: Henry D. Dickinson, Maurice H. Dobb, Evan F. M. Durbin, Oskar Lange, and F. M. Taylor.

cient resource allocation, whose only necessary condition is $P = MC$. As he put it, price or average revenue, marginal revenue, average total cost and marginal cost all tend to equal one another in perfectly competitive long-run equilibrium; but of the six equalities between those four variables only one, $P = MC$, is the necessary and sufficient condition of optimal resource allocation—the other five are merely the consequences of everybody's behavior being optimal. Accordingly, Lerner could fault Taylor's full-cost pricing rule ($P = ATC$), Lange's prescribing the output that minimizes costs ($MC = ATC$), and Durbin's fall-back rule that plant managers maximize profits ($MR = MC$).

Lerner's contributions to the subject, along with some of his other work, were restated, integrated and greatly expanded much later, in his 1944 book, *The Economics of Control—Principles of Welfare Economics*. Though written in the style of a handbook for use by socialist planners and plant managers, with its propositions presented as rules for planners and managers to follow, the book is more accurately described by the second than by the first half of its title. For most of those rules are nothing but the first-order conditions of welfare optimality, presented with great care, in meticulous detail, taking into account all cases and every conceivable exception but without a hint of the practical obstacles to observing them. A typical rule is: "If the value of the marginal (physical) product of any factor is greater than the price of the factor, increase output. If it is less, decrease output. If it is equal to the price of the factor, continue producing at the same rate. (For then the right output has been reached.)" It reads like a recipe from *The Hopeless Cook's Cookbook* but its simplicity is deceptive because the practical problem of estimating a factor's marginal product is nowhere mentioned. True, Lerner's excellent and detailed discussion of indivisi-

bilities, later in the book, makes clear to the careful and observant reader the virtual impossibility of estimating marginal product and marginal cost in any but the simplest cases. But the reader must be careful and observant, indeed, because Lerner never put the two things together; and, apart from introducing and discussing the concept of *net* marginal product, he gives no advice on how best to estimate the marginal product or marginal cost from real-life data. In short, the book was addressed to thinkers, not doers, however clear and simple its language. As Keynes put it, in a 1944 letter to Lerner: "It is a great book worthy of one's hopes of you. A most powerful piece of well organized analysis with high aesthetic qualities, though written more perhaps than you see yourself for the cognoscenti in the temple and not for those at the gate." Indeed, the book is a wonderfully clear, nontechnical and helpful guide to lead thoughtful readers through most problems of welfare economics, the simplest and deepest alike.

The exposition begins with the simple exchange economy, proceeds to production, first with one and then with several factors, for both fixed and variable proportions between factors and products, with special attention to allocation problems when factors, products and/or productive processes are indivisible. As the discussion of indivisibility is broadened to include factor indivisibility over time (i.e., fixed factors), it leads into the separate problems of efficient allocation in the short and the long run, into the discussion of rent, economic surplus, taxation, analysis of production over time, investment and, ultimately, of the macroeconomic welfare problem: how to avoid both unemployment and inflation.

Lerner's *Principles of Welfare Economics* therefore goes far beyond the original meaning of that subtitle. As perhaps it should, it includes the welfare-economic principles not only of resource allocation

narrowly defined, but of taxation, macro-economic policy, international-trade and international-finance policy as well.

By comparing Lerner's book to Pigou's *Economics of Welfare*, one realizes how narrow and one-sided was Pigou's interpretation of that term, and what enormous progress has been made in one generation. Had Lerner written his *Economics of Control* fully footnoted with a complete set of references, one would also realize the magnitude of his own contribution to that progress. The only thing that is strangely missing from this book is any mention of externalities.

At the same time, it contains some other interesting material, whose inclusion is explained by the fact that *Principles of Welfare Economics* is only its subtitle whereas its main title defines it as a handbook for socialists on how to run their economy. Since a socialist economy, for Lerner, meant the use of private enterprise in some sectors, nationalized plants in others, depending on which was the more efficient in each, the book discusses not only all aspects, limitations, conditions and extensions of Pareto optimality but also why and when perfectly competitive behavior leads to optimality and why and when real-life competition falls short of being perfect. Finally, the book was the first to go beyond mere Pareto optimality by also introducing into welfare economics a logically-based judgment on distributional optimality, which needs some discussion because it is the most remarkable and most controversial contribution of the book.

Lerner's 1934 monopoly article was the first to recognize the serious limitation of Pareto's definition of optimality that consists in its compatibility with any and every distribution of income. That made him the natural person to tackle the problem of an optimal income distribution. As a first step in that direction, Lerner asked what income distribution would maximize

the sum total of individual satisfactions if the size of the national income were independent of its distribution and if the distribution of the ability to experience satisfaction were unequal, uncorrelated with income distribution, and unknown. Assuming the law of diminishing marginal utility to hold, and employing the Bayesian equal ignorance argument (i.e., assuming that a move away from equality is as likely to increase as to diminish total satisfaction), he obtained the answer that an equal distribution of income would maximize society's probable total satisfaction.

Milton Friedman's 1947 review article criticized both Lerner's use of the equal ignorance argument and his acceptance of the utilitarian approach, which regarded the sum total of individual satisfactions as the proper measure of social welfare; and he offered an alternative proof of Lerner's result that made no use of the equal ignorance argument. That review started a controversy that took the edge off Friedman's critique, generalized Lerner's conclusion and may have been partly responsible for the emergence of inequality as an important new area of study. Samuelson (1964, p. 175) defended Lerner's use of the equal ignorance argument and reasoned that Friedman's alternative approach was no better. Valid and unassailable, however, was Friedman's critique that Benthamite utilitarianism, which considers the sum of individual utilities the measure of social welfare, was not only NOT the egalitarian criterion for which Lerner (along with Marshall, Pigou, Dennis Robertson, Jan Tinbergen and many others) mistook it but was, on the contrary, a very anti-egalitarian criterion.³ Amartya Sen, however, has shown (1973,

³ It implies that if some people were known to have a greater capacity for enjoying life than all others, they would have to be given more income than all others in order to maximize the sum total of utilities—a conclusion that goes counter to one's sense of justice.

pp. 83–85) that Lerner's conclusion (viz., an equal income distribution is best when the distribution of the ability to enjoy income is unknown) holds true not only on the questionable utilitarian definition but also on any other definition of social welfare that makes it a symmetric concave function of concave individual welfare functions. That is an important generalization and vindication of Lerner's original argument which, of course, has great intuitive appeal.

International Trade

A main topic of Lerner's early work was international trade, his papers on which were the most celebrated at the time and show best his skill with geometry. His first paper, "The Diagrammatical Representation of Cost Conditions in International Trade," written as an undergraduate in 1932, brought together for the first time Pareto's indifference map, Marshall's offer curves and Gottfried v. Haberler's production possibility curves into an integrated geometrical apparatus for demonstrating the free-trade optimum in the two-country, two-commodity case and also showed the geometrical addition of production possibility curves.

In that paper, Lerner still used collective indifference curves; but already two years later, in "The Diagrammatical Representation of Demand Conditions in International Trade," (1934) he showed the possibility of dispensing with community indifference curves in the welfare analysis of international trade. The argument and geometry of those two papers have become standard in modern textbooks on international trade only partly displaced, twenty years later, by James Meade's use of his trade-indifference curves.

Lerner's next contribution to the field was the celebrated Samuelson factor-price equalization theorem. The classical economists realized that factor mobility would equalize factor prices; Bertil Ohlin

showed that product mobility is a substitute for factor mobility and so tends to diminish international differences in factor prices; and Samuelson published a geometrical (1948) and a mathematical proof (1949) to show that on the assumption of no transportation costs, identical constant-returns-to-scale production functions and no factor-intensity reversals, free trade would equalize not only product prices but factor prices as well—in all cases except the limiting cases of complete specialization between the trading partners.

The paper was one of Samuelson's most celebrated contributions; but Lord Robbins, on reading it, remembered having heard the argument in his seminar fifteen years earlier from Lerner, a copy of whose paper he still had. On Robbins's urging Lerner published his "Factor Prices and International Trade" (1952a) as originally written—and it is a very elegant, clear and succinct version. Why it was not published in 1934 may be explained by a story, current among Lerner's students when I was one of them in 1935. A student had offered to type one of Lerner's manuscripts for submission to a periodical but on her way home she left it on the bus and could never recover it. That was Lerner's only corrected copy and because he was working on several other papers at the time⁴ he could not be bothered to reproduce the lost manuscript.

Lerner's next important paper on trade was his 1936a "The Symmetry between Import and Export Taxes." The classical economists, down to Marshall and Pigou, stressed that foreign trade was essentially barter and took it for granted that taxes on imports and exports were symmetrical, in the sense of having identical effects: After all, what difference could it make whether a tax on foreign trade was levied

⁴ Lerner published 29 articles and notes between 1933 and 1939.

on the imports bought or on the exports that paid for them? Francis Y. Edgeworth, however, in his important and otherwise wonderfully clear and rigorous "The Theory of International Values" (1894), slipped up on that point. He showed, correctly, that the effect of duties on trade depended on whether they affected the demand for imports or the supply of exportables and illustrated the one case by a vertical shift (parallel to the import axis), the other by a horizontal shift (parallel to the export axis) of the duty-imposing country's offer curve. He then interpreted the two cases, wrongly, as representing the effects of an import duty and an export duty, respectively. Charles Bastable (1897, p. 116) soon pointed out the mistake but Edgeworth did not quite recant. Not until a generation later, when Lerner came along, was the controversy resolved and the matter fully clarified.

Lerner's paper may still be the clearest and most comprehensive discussion of the subject. He vindicates the classical position that export and import duties are symmetrical and have identical effects; but he also accepts Edgeworth's reasoning as showing the differing effects, not of how the duty is levied but of how its proceeds are spent. The less spent on imports out of the duty's proceeds, the more favorable its impact on the terms of trade. Lerner uses the elegant geometry of inserting between the trading countries' offer curves a pencil, whose width, position and intersection with the two offer curves depict the size of the duty, the apportionment of its proceeds between imports and exportables, its impact on the terms of trade and the resulting volume of trade. Where Edgeworth's argument and diagram can be made to apply only to the limiting cases in which all the proceeds are spent either on exportables or on imports alone, Lerner's geometry illustrates the realistic intermediate cases as well. His paper was also important for reminding modern

economists of the need to pay attention to the spending of tax proceeds when analyzing the economic effects of taxation. Ricardo was fully conscious of that need, always having a macroeconomic general equilibrium model at the back of his mind; but later economists lost the habit and Lerner was probably the first modern economist to bring back the practice by stressing and demonstrating its importance.

Lerner's other contributions to international economics are to be found in his *Economics of Control*, whose last chapters discuss the international trade and finance aspects of the economic optimum. They deal, among other things, with the possible conflict between the interest rate and income level that are necessary to maintain the fixity of exchange rates and those required for pursuing the goals of full employment and adequate growth. Since Lerner attaches a higher priority to those goals than to the convenience of fixed exchange rates, he wants to make foreign-exchange values subservient to the maintenance of full employment, and favors "currency autonomy," as he calls variable exchange rates.

That, in turn, leads him to discuss two related questions. First, if currency autonomy makes it easier to maintain employment and growth, why restrict it to countries; why not give currency autonomy to every region, district and village? Lerner's answer to his own question is that the free movement of people, investment and goods into other regions of the same country diminishes the social loss inflicted by regional unemployment and stagnation to such an extent as to reverse the priorities and give top priority to the convenience of a common currency.

The second question Lerner raises concerns the stability of the balance of trade. If price elasticities of demand for other countries' products are low, reducing the exchange value of a country's currency

may do little to improve its balance of payments or may make it worse. Accordingly, Lerner would leave to an exchange stabilization board, not to market forces, the task of determining the country's exchange rate and, by the device of counter-speculation, of preventing manipulators and small fluctuations in demand and supply from disrupting the even course of foreign trade.

The whole discussion is probably the first modern argument in favor of variable exchange rates; the part concerning the size of the optimum currency area and its determinants is undoubtedly the first discussion of that problem, which was revived and carried forward by Robert Mundell (1961) and Ronald McKinnon (1963). Lerner's derivation of the condition of stability in the balance of trade and his discussion of the attending problems probably explain why it is so often called the Marshall-Lerner condition, although earlier and more complete statements of it have been made by Bickerdike (1920) and Joan Robinson (1937). Official counter-speculation, however, at least for the purpose of offsetting the impact of monopolistic manipulators on market price, was definitely first suggested by Lerner.

Keynesian Theory

Lerner was probably the first economist outside of Keynes's inner circle to grasp the nature and importance of the *General Theory*. He immediately realized that the loss of welfare due to the involuntary unemployment of labor and equipment was much greater potentially than that due to the misallocation of employed resources. From then onwards the greater part of his economic writings revolved around Keynesian macroeconomics. Within eight months of the publication of the *General Theory*, he wrote a summary for noneconomists (1936b); in 1951 he published his *Economics of Employment*, which went considerably beyond Keynes

and contained what was probably the first detailed exposition of the nature and danger of stagflation; and he wrote many articles to explain seeming paradoxes in the *General Theory*, to elucidate some of its obscurities, and to carry the argument further.

Let me start with Lerner's elucidation of the paradoxes. Perhaps the most revolutionary aspect of the *General Theory* was its use of macroeconomic theorems that flatly contradicted the profession's established habits of thought, which at the time were exclusively microeconomic. There was plenty of discussion of macroeconomic problems before Keynes, in such fields as money and banking, business cycles, public finance, international trade; but those discussions hardly ever made use of arguments that went counter to what seemed common sense on the basis of a person's or business firm's own experience.⁵ Such macroeconomic arguments that the desire to save more is NOT likely to increase society's saving, or that a general wage reduction is NOT likely to diminish unemployment were totally new in the *General Theory*; and most people, including most economists, found it difficult to switch from their accustomed microeconomic thinking to Keynes's macroeconomic arguments, which seemed to fly in the face of common sense.

To help them make that switch and understand Keynes's reasoning, Lerner (1962) bridged the gulf between micro and macroeconomics and reconciled their seemingly contradictory conclusions by presenting them as limiting cases of a continuous spectrum, leading up to them after first discussing intermediate cases within that spectrum.

Thus, he showed how the decision of

⁵ One of the very few macroeconomic theorems that predated the *General Theory* was the credit multiplier: viz., the idea that the banks are not passive recipients of their customers' deposits but create them.

a group of people to save a fraction, q , of their income, Y_g , affects the group's actual saving, S_g , defined as the difference, $Y_g - E_g$, between their income and their expenditures. Expressing the size of the group by, r , the ratio in which their income stands to national income, $Y_g = rY$, he showed that their expenditure declines by:

$$\Delta E_g = qrY,$$

their income declines by:

$$\Delta Y_g = r\Delta E_g = r(qrY),$$

so that the change in the group's actual saving becomes:

$$\Delta S_g = \Delta E_g - \Delta Y_g = (1 - r)qrY.$$

It is apparent from the last equation that, for a small group and a small value of r , the group's actual saving approximates the reduction in its members' expenditure; whereas at the other extreme, where the group comprises the whole economy and r equals 1, actual saving becomes zero. Lerner avoided the use of even such simple algebra but his verbal exposition and numerical examples are models of clarity and simplicity.

Lerner used a similar approach in the same paper, also, for showing the continuous spectrum between the very different ways in which employment and output respond to a change in wages on the microeconomic and the macroeconomic level. After explaining and distinguishing the substitution, income and cash-balance effects of the wage change, he first showed how all three were effective in the microeconomic case, with the substitution effect predominating. He then showed how the substitution effect became smaller as the number of firms affected by the wage change increased, and how it tended to zero as the wage change extended to all competitors. At that stage the income effect became the dominant force, until it too was eliminated as the wage change

extended to the entire labor force and so led to an almost proportional change in incomes as well. At that stage, the macroeconomic case was reached, where the change in wages could affect employment and real output only through its cash-balance effect—and even that was eliminated if either wage rigidities caused the wage changes to engender the expectation of further wage changes in the same direction, or if a rising demand for money (brought about by the rise in wages) created irresistible political pressures for an accommodating rise in the supply of money, also.

Time and again Lerner used that technique: taking two contrasting cases and exploring the ground between them, thereby both facilitating and deepening one's understanding of them and bringing into focus a whole new range of intermediate cases. His first use of it came already in the monopoly article, which was discussed above on pages 1550–51.

Let me now proceed to the second category of Lerner's papers dealing with the *General Theory*, those which elucidate some of the obscurities. I only want to mention his 1943 note, "User Cost and Prime User Cost," which renders Keynes's user-cost concept much simpler to understand and to use; and his 1936–1937 "Capital, Investment and Interest," (essentially repeated in Lerner 1953) which clarifies the meaning of Keynes's marginal efficiency of capital, its dependence on both the stock and rate of accumulation of capital and its relation to the classical concept: the marginal productivity of capital.

The most important, however, in that category is Lerner's "The Essential Properties of Interest and Money" (1952b), which explains Keynes's notoriously obscure and difficult Chapter 17, of the same title, in the *General Theory*. Many readers, perhaps most, have despaired over and given up on that chapter; all the more

so, because its object and the usefulness of the concept it introduced (own rates of interest) were far from clear, and because omitting that chapter did not seem to create any gap in one's understanding of Keynes. That, at any rate, was my attitude. Yet, Lerner's clarification of Chapter 17 contains the key to an issue that even today, a half-century after the *General Theory* was published, is still alive and unresolved—at least in the minds of those who have not read Lerner's paper.

I am referring to whether underemployment equilibrium hinges on the downward rigidity of wages and whether greater wage and cost flexibility would resolve the unemployment problem. Lerner's paper is clear, succinct and full of insights; but since the argument is complex, with many ramifications, I would perform a disservice by trying to summarize it. Let me, however, list his conclusions and say a few words about one of them.

1) Downward wage rigidity keeps unemployment from setting equilibrating forces into motion by preventing the fall in wage and price levels that would increase the real value of an unchanged money supply and so stimulate investment and consumer demand.

2) Limited downward wage flexibility, by causing reductions in wages and prices to be gradual and spotty, would engender expectations of further wage and price reductions that are likely to offset, or more than offset, the stimulating effect on effective demand of the increase in real cash balances.

3) For falling wages and prices NOT to engender the expectation of a further fall, they would have to fall instantaneously and to the extent needed fully to restore full employment; but such perfect flexibility of money prices and wages is incompatible with a monetary economy, since imperfectly flexible prices are an essential property of money. Chapter 17 of the

General Theory tried, and Lerner's article managed to substantiate that last statement.

The argument revolves around the medium-of-account function of money. Market operations involve an accounting cost: the mental effort of learning and retaining the prices of commodities that one wants to buy and sell as those prices change during the period of one's marketing horizon. The superiority of a money economy over a barter economy consists in its greatly reducing accounting costs, because n commodities in a market economy have only $n - 1$ prices at any moment in time, against their $n(n - 1)/2$ prices in a barter economy. For a money economy to get established, however, it is not enough for the public to recognize its advantages: people must also agree on which commodity to use for the unit of account. That choice is not arbitrary but is determined by their desire to minimize the number of prices to be learned and remembered. For efficient marketing requires one to know not only the $n - 1$ prices of the moment but, also, how those prices have changed in the past and are likely to change in the future. To minimize accounting costs, therefore, one must choose for use as money the commodity in terms of which the prices of other commodities are the least changeable over time. In other words, the stability or rigidity of prices saves accounting costs and so is a great advantage for every buyer and seller; and their desire to secure that advantage automatically assures as much of it as can be obtained by a suitable choice of the monetary medium.

Lerner's argument is clear and convincing; and since I never could get any of it from Keynes's Chapter 17, I am crediting it to Lerner. Note that in 1978, a quarter of a century later, Jürg Niehans seems independently to have developed the same argument, which he spells out in more detail but he, unlike Lerner, does

not use it as a part-explanation of under-employment equilibrium.

Keynesian Policy

The conflict between Keynes's policy recommendations, contained and implied in his *General Theory*, and the conventional wisdom reflected in the principles of sound finance was every bit as great as the conflict between his macroeconomic theorems and such microeconomically rooted conventional beliefs that a wage reduction would increase employment and an increased desire to save would increase saving. At the same time, however, that Keynes stressed and made much of the conflict between his and the classics' thinking on those two points, he advocated deficit spending in depression without so much as saying a word as to how that related to and conflicted with the tenets of sound finance. That task was undertaken and carried out by Lerner in "Functional Finance and the Federal Debt" (1943) and in restatements and elaborations of that paper's argument in both his *Economics of Control* and *Economics of Employment*.

It is true that Keynes was anxious to see his policies adopted and would not have found it politic to make too explicit, let alone stress, the conflict between his policies and what everybody else regarded as sound finance in those days. But Keynes seems to have been not so much hiding that conflict as to have been genuinely unaware of it, or at least of its full extent—to judge by his initially hostile and shocked reaction to Lerner's exposure of it.

The principles of sound finance are microeconomic in origin, derived from what seemed appropriate for the individual household and applied, by analogy, to the public household. Thus, the argument for a balanced budget may be traced to Shakespeare's "neither a borrower nor a lender be," or the earlier: "to cut one's

coat according to one's cloth." The rule of keeping the public debt within some reasonable limit is just a retreat from that too-austere position to a second line of defense.

Lerner argued that the subject had to be placed in a macroeconomic setting and then examined anew.

[His] central idea [was] that government's fiscal policy, its spending and taxing, its borrowing and repaying of loans, its issue of new money and its withdrawal of money, [should] all be undertaken with an eye only to the *results* of these actions on the economy and not to any established traditional doctrine about what is sound or unsound . . . The principle of judging fiscal measures by the way they work or function in the economy [he called] functional finance.

Lerner formulated three laws of functional finance. First: use and adjust government spending and taxing in a way that will keep the economy's total spending at a level that is neither less nor more than what will buy the full-employment output at current prices, thereby avoiding both unemployment and inflationary pressures. Government must not and need not be concerned if, in the process, it spends more than its tax receipts or collects more in taxes than it is spending. Taxing therefore must never be undertaken solely because government needs money to make its payments.

Second, government should borrow money or repay debt only as a means of changing the proportions in which the public holds money and bonds when, by changing those proportions, it wants to raise or lower interest rates, thereby curbing or encouraging investment and installment buying. Accordingly, government should never borrow merely to finance a deficit. That purpose is better served by printing money, unless it is desired to raise interest rates and so curtail investment and installment buying at the same time.

The third law of functional finance is subsidiary to the first two. Government

should print and put into circulation or withdraw from circulation and destroy the amount of money necessary to reconcile policies instituted in observance of the first two laws.

Those laws of functional finance certainly seem to fly in the face of the traditional principles of sound finance, yet the conflict between them is more apparent than real. For, as Lerner pointed out, the evils that the principles of sound finance are supposed to ward off are either guarded against more effectively by the laws of functional finance, or they are imaginary evils.

To start with the former, deficit financing and financing by the printing press are feared primarily for their inflationary implications. But when they exert inflationary pressures, they exert them exclusively through their influence on effective demand, whose inflationary impact, however, is fully prevented when the first law of functional finance is observed. A second legitimate fear, engendered by a too large or too rapidly accumulating public debt, is that by raising interest rates investment will be curbed unduly, thereby slowing economic growth. That danger, however, is again guarded against when the *second* law of functional finance is observed. In other words, while functional finance seems, at first blush, to throw all restraint on reckless spending and borrowing to the winds, in reality, it substitutes specific and selective restraints for the general, vague and flexible warnings of caution, embodied in the principles of sound finance.

As to imaginary evils that sound finance guards against, Lerner had in mind the fear that a large public debt, whose service requires heavy taxation, diminishes the reward for risk-taking and thereby diminishes the inducement to invest. He allayed that fear by pointing out that "the same high income tax that reduces the return on the investment is deductible for the loss that is incurred if the investment

turns out a failure. As a result of this, the *net* return on the risk of loss is unaffected by the income tax rate, no matter how high that may be." Surprisingly enough, neither Lerner nor any of his critics (with one exception) thought of another and possibly real danger of the high income-tax rates needed to service too large a public debt: the diminished incentive to work. Apparently no one in those days could imagine workers owning enough financial assets or drawing enough unearned income from other sources for high taxes to affect their willingness to work.

Functional finance was not, of course, a policy prescription, only a framework of guidelines for government's fiscal policy. But Lerner's repeated discussions of what he expected its consequences to be leave no doubt as to what he hoped it would achieve. While allaying fears about the supposed dangers of a growing public debt, he also stressed that functional finance was no license for the indefinite accumulation of debt because he expected anti-inflationary restriction to reduce both spending and debt by orders of magnitude similar to those by which expansionary policies increased them. Lerner was no believer in secular stagnation and consequently no advocate of offsetting policies for achieving secular expansion. His picture of the economy, painted in his celebrated 1941 parable, "The Economic Steering Wheel," was a driverless car, without a steering wheel, running on a straight, wide highway whose edges turn up. "As [the car] approaches the rising edge of the highway, its front wheels are turned so that it gets back onto the road and goes off at an angle, making for the other side, where the wheels are turned again." In other words, he envisaged a business cycle with underemployment and inflationary overfull employment alternating, and Keynesian fiscal and monetary policy as a short-run anticyclical policy, a kind of balancing wheel to dampen

the amplitude of business-cycle fluctuations. The purpose of functional finance was to remove the unnecessary trammels that so-called sound finance might impose on such a policy; but its substitution of pre-announced rules of fiscal and monetary behavior for discretionary policies also fits into the rational expectations framework. However, of the practical obstacles to making policy responses sufficiently prompt to be truly anti-cyclical, Lerner was blithely oblivious.

To return now to Lerner's laws of functional finance and his proposal to substitute them for the principles of sound finance, they so outraged conventional wisdom that at first they shocked just about everybody. Evsey Domar recalls:

. . . on having read the statement in [Lerner's] Functional Finance article that income taxation did not discourage risk-taking because losses could be offset against other income, I became so enraged that I dashed out of my office (at the Federal Reserve Board) towards Musgrave's who in turn was running to mine for the same reason. We decided to write a paper together disproving Lerner and ended up . . . proving that not only was he right, but that he had not gone far enough.⁶

Keynes's reaction was like most others': initial shock, followed by complete acceptance—except that Keynes expressed his shock by publicly shaming Lerner, criticizing his ideas in language so intemperate that he later felt moved to retract his words publicly and to substitute for them the highest admiration. The episode is recounted in Colander's note in this issue of JEL on pp. 1572–73.

Once Keynes became an enthusiastic convert, his followers followed suit and Lerner's functional finance soon became the generally accepted framework within which many, perhaps most, economists think and argue about fiscal and monetary

policy—including, of course, those who take it for license to engage in unlimited deficit financing. For that Lerner is partly to blame. To begin with, the simplicity of his first law of functional finance was even more deceptive than the simplicity of the rule to equate marginal product or marginal cost to price, because the dividing line between unemployment and inflation is not a line at all but a fairly wide band, as Lerner soon discovered and stressed. Second, he often argued that the economic and human costs of unemployment are much greater than the cost of inflation; apparently not realizing until later the unstable nature of inflation, which renders inadmissible static comparisons between the relative costs of a given level of unemployment and a given rate of inflation. He soon became aware of those problems, however, and they and their implications became his next preoccupation, setting the direction in which he tried to extend and carry forward Keynes's ideas.

Inflation

Lerner was not only the person who, in his theory of functional finance, provided a logical framework for Keynesian demand management, thereby bringing into the open its full implications; he was also probably the first to recognize its inflationary dangers. According to him, he went to see Keynes in 1935 or 1936 to raise the question whether full-employment policies might not start an inflationary process before assuring full employment, but Keynes did not get his point. By the mid-1940s, Lerner's question became a conviction, voiced in many of his writings. His article, "Money," in the *Encyclopaedia Britannica* (1946) says that "The experience of high employment during World War II has shown that reductions in the volume of unemployment result in inflationary tendencies *long before* unemployment has been reduced to a sat-

⁶The quotation is from a personal letter of Domar's. The paper mentioned is Domar and Musgrave (1944).

isfactory level" [my italics]. In 1949 he wrote: "The maintenance of full employment without inflation depends on the acquiescence and cooperation of labor organizations in permitting collective bargaining to be superseded by other techniques for determining wage rates."

When the editor (Seymour Harris) of a series of economic handbooks invited him to contribute "a lucid, elementary account of Keynesian economics," his *Economics of Employment* devoted four chapters, almost 60 pages, to inflation and its problems. After that, he wrote many more articles as well as a book on inflation, but most of his ideas on the subject were already contained in his *Economics of Employment* (1951).

That is where Lerner first speaks of "a region between depression and inflation where we have both depression and inflation," calls the two limits of that region "low full employment" and "high full employment," estimates their positions in the United States to be around 10 percent and 3 percent unemployment rates, respectively,⁷ and warns that *only temporarily* can a level of employment above the low full-employment level—that is, with less than 10 percent unemployment—be maintained. All that may sound familiar and commonplace today but Lerner wrote it seven years before Phillips launched his Phillips curve and seventeen years before Friedman introduced the concept of a natural rate of unemployment in his presidential address to the A.E.A.

To Lerner, who was so very conscious of the high social cost of unemployment, a long-run equilibrium unemployment rate of that order of magnitude seemed totally unacceptable; yet he saw no way out at the time. Given the kind of person

he was, passionately interested in improving the economy rather than just economics, that probably explains why, from then onwards, so much of his time and energy was devoted to the study of inflation and ways to contain it.

To explain inflation, Lerner focused attention on the people who change prices, on their motivation for changing them, and on the circumstances that keep undiminished both their ability and the force of their motivation to keep changing prices despite the price changes that have already occurred. He distinguished three different kinds of inflation, according to the motivating forces behind them; and since he believed that each required a different remedy, he put great stress on the nature of those differences.

To begin with, he made a sharp distinction between what he first called "buyers'" and "sellers'" inflation but renamed "overspending" and "administered inflation" in his 1972 book, *Flation*. Buyers' or overspending inflation is, of course, the classic form of inflation, which comes about when buyers are trying to buy more than 100 percent of what the available labor force can produce with the aid of the available equipment. That is the kind of inflation whose only cure is a reduction in total spending to equality with the value of the producible output at existing prices; therefore it is also the kind of inflation that can be prevented or stopped by enforcing the first law of Lerner's functional finance.

Very different, according to Lerner, is sellers' or administered inflation, also known as "cost-push," "markup" or "wage inflation". Its first mention in the economics literature seems to have been in Keynes's *Treatise on Money*, under the name "income inflation" but Lerner was the first to note its crucial feature: excessive claims of income, instead of excessive demand for output, as its motive force. Lerner put it this way: "the owners of the

⁷ Actually, he speaks of six million and two million unemployed as the two limits; but, given the size of the labor force at that time, they correspond to the above percentage rates of unemployment.

factors of production claim, as their respective shares of the product, payments that add up to more than 100 percent of the value of the product." Since the excess of claims to income over the income generated does not depend directly on whether and to what extent those claimants *spend* their income shares, sellers' inflation is compatible with a wide range of levels of unemployment and degrees of capacity underutilization.

Lerner's inventing and introducing the name "sellers' inflation" and the later term, "administered inflation," instead of using one already established, illustrates how carefully he always chose just the right words, which enabled him to express complex ideas in simple, often strikingly simple, language. By speaking of "sellers' inflation," he stressed one crucial feature of that kind of inflation: the symmetrical role and equal responsibility of the sellers of factors (especially labor) and of the sellers of products in pushing up prices and keeping inflation going. The use of such terms as "cost-push," "wage" or "markup" inflation would inevitably have suggested that one or the other party plays the dominant role.

Equally significant is his subsequent switch of terminology from "sellers'" to "administered inflation," which had two purposes. First he wanted to stress that while overspending inflation is driven by impersonal market forces, which exert their inflationary pressure whatever the nature and degree of competition, administered inflation only comes about in the presence of market imperfection and monopoly power. Excess claims cannot even arise without price and wage administrators as Lerner called them: people who can consciously set prices (and wages), either unilaterally or in agreement with other price administrators. To use Lerner's language: their monopoly power enables the price and wage administrators to overrule market forces and raise prices

even when market forces call for no change, or to keep them unchanged when market forces would lower them. Since he believed that to arrest a rise or initiate a fall in administered prices required altogether different policies from those that influence the movement of market-determined prices, he laid great stress on continually keeping his reader aware of the kinds of prices and inflation he was considering.

Lerner's other reasons for his terminological switch seems to have been the following. While, originally, he believed that collective bargaining between employers and organized labor was a necessary condition for the unholy combination of inflation with unemployment (see the quotation from a 1949 paper, p. 35) he gradually came to change his mind. Already in his *Economics of Employment* (1951) one reads: "The tendency for wages to rise may be due not merely to *collective* bargaining but to the determination of wages by bargaining, whether individual or collective." Elsewhere in the same book: "Even if there were no trade unions at all, the mere idea that a certain wage rate is reasonable or right or proper or fair . . . can make a low level of full employment [i.e., 10 percent unemployment] a stable position."

Much later, Sir John Hicks's *The Crisis in Keynesian Economics* (1974) takes up or independently reaches Lerner's insight that the employer's desire to be fair to, and to be considered fair by, his employees gives them implicit bargaining power. Later, still, Arthur Okun's work on implicit wage contracts documented and analyzed the idea in some detail. So here again, Lerner was ahead of his time. By using his new terminology, Lerner made clear that administered inflation still depends on there being wage administrators, able and motivated to raise wages, but they are not always on the selling side of the labor market.

When the precepts of functional finance are applied and give full rein to administered inflation, "tripartite administered inflation" results. Wage administrators raise wages, because prices are rising; price administrators raise product prices, because costs are being raised by the increase in wages; and the total-spending administrators, as Lerner calls the fiscal and monetary authorities, take steps to increase total spending in order to prevent depression, which would otherwise overwhelm the economy. Each set of administrators can quite honestly believe that it is only the fault of the others that it has to participate in the inflationary process.

Administered inflation therefore renders functional finance, not wrong, but insufficient, because not applying its precepts or applying them in reverse leads to a situation even more objectionable. If fiscal and monetary authorities fail to maintain spending at the high full employment level; or, fearing inflation more than unemployment, actively restrain spending, they lower output and employment before slowing the rise in prices and create an inflationary depression. Sufficiently drastic and prolonged restrictive policies would stop inflation completely if government were willing to accept the severe unemployment and depression necessary to deprive price and wage administrators of their power to go against market forces.

Lerner considered all three alternatives unacceptable and set out to develop some other anti-inflation policy that would contain administered inflation by fulfilling the difficult condition of stabilizing the *average* price level while keeping *relative* prices and wages flexible. However, at the time when he wrote *Flation*, Lerner had not yet developed his anti-inflation plan, and it was characteristic of him never to give a thought to the practical problem of what to do in the interim, what second-best solution to advocate when the first-best is unattainable. It is true that he made

a detailed static comparison between the welfare losses inflicted by each percentage point of unemployment and each percentage point of annual price increases and convincingly argued that the first was more than a hundred times greater than the second; but, by stressing the instability of the inflation rate, he clearly implied that such static comparisons cannot serve as the basis for policy recommendations.

For Lerner distinguished and stressed the existence, also, of a third kind of inflation: expectational inflation, engendered when one of the other two kinds persists long enough to lead to an expectation of future inflation. Expectational inflation, like administered inflation, also depends on the presence of price and wage administrators;⁸ but its distinguishing feature is that it is self-perpetuating (because the expectation is self-fulfilling) and tends to accelerate the rate at which prices rise. The important role Lerner assigns to expectations as a source of inflation and of the escalation of inflation leaves no doubt that he was far from belittling its dangers and the need to contain it.

Another important difference that Lerner stressed between his second and third kinds of inflation was that administered inflation is aggressive, because the parties aim at the unattainable when they claim income shares whose sum exceeds the total income generated; whereas expectational inflation is defensive, because the parties would be content to keep on getting (in real terms) the shares they are actually getting, and raise prices and

⁸ I would distinguish between expectational over-spending inflation and expectational administered inflation, according to whether the expectation of future inflation leads consumers to increase their spending in an effort to reduce their holdings of money and other financial assets (the Germans call that "flight into real assets"), or whether it leads wage and price administrators to raise wages and prices. Before Lerner, the economics literature dealt only with the former type of expectational inflation; Lerner, in most of his writings, concentrates on the latter type.

wages merely to forestall expected future losses. Lerner used that difference to explain why, in his opinion, an incomes policy is doomed to fail when inflation is the administered kind but can keep the inflation rate from escalating when inflationary expectations are its main motivating force; for he believed that the acceptance and success of an incomes policy depends not only on whether it is but also on whether it seems just, and on whether it promises and delivers what the parties want.

While the sharp, analytic distinctions he draws among the different kinds of inflation render Lerner's approach quite different from Friedman's, some of his argument resembles Friedman's. For he, too, believes that only a very low employment level (Friedman's natural rate, his low full employment) is compatible with a steady (including a zero) rate of price increase. Any attempt to increase employment leads to unexpected and therefore accelerating inflation. Accordingly, there is no tradeoff between inflation and unemployment of the kind implied by the Phillips curve.

Unlike Friedman, however, Lerner refuses to accept that state of affairs even as a temporary institutional framework within which to make policy recommendations; and he deplors his own earlier (1951) carelessness in naming an unacceptably low level of employment "low full employment". For Lerner, again unlike Friedman, does not regard the whole 10 percent unemployment implied by the low full employment level as voluntary unemployment, because he does not identify the revealed preferences of wage administrators' with the preferences of the workers themselves, many of whom are unemployed or newly employed, and most of whom do not belong to unions.

Because overspending, and therefore also overspending inflation, can be guarded against effectively by applying

the laws of functional finance, Lerner's *Flation* is focused on the problems of containing administered and expectational inflation. That is why more than half the book deals with non-fiscal and non-monetary measures for controlling inflation. Lerner sets out the aims of policy (keeping the increase in average wages within the limit set by the increase in average productivity while keeping relative prices and wages flexible), lists the conditions of the parties' and the public's acceptance of it (referred to on this page); and then discusses what was or went wrong with the wage-price freeze, wage-price guideposts and related policies tried by the Nixon Administration, and why incomes policies in some other countries (especially Brazil), with their different political structures, were more successful. His discussion is insightful and incisive, although that was probably Lerner's first attempt to face up to the clash between economist-designed ideal policies and practical, political reality.

Flation, however, despite the many interesting new concepts and discussions it contains, is an unsatisfactory book. For one thing, it is a somewhat incomplete treatment of its subject. Unlike Lerner's *Economics of Control* and *Economics of Employment*, which consolidated and rounded out his earlier writings on those subjects, *Flation* neither repeats nor supersedes several of his relevant and important earlier contributions; for example, his (1949) distinction between expected and unexpected inflation and his argument that only the latter inflicts a welfare loss. For another thing, inconsistencies in the book point to a confusion in the author's mind between accelerating and nonaccelerating inflation. Lastly, the book leaves one unsatisfied, because one senses that it left its writer unsatisfied. Lerner was used to providing solutions, often brilliant if not always practical, to economic problems. He must have felt frustrated

not to come up with a solution to what he considered the most pressing economic problem of the time. His anti-inflation plan, which will be discussed below, was worked out many years later.

Reform

Lerner's economics had a strong welfare orientation, because he was a reformer at heart, always hatching schemes to improve the economy or the world. He clearly had a messianic streak in his character, which perhaps originated in his Talmudic training. No economist understood better nor appreciated more than Lerner the workings of the market economy; but given his messianic streak and his awareness of the market's shortcomings as well as of its achievements, his appreciation was the hands-on, not the hands-off variety, forever bent on improving the market's performance or extending its scope.

His best-known reform proposal, the only one actually adopted (by central banks in foreign-exchange markets), was governmental counterspeculation, proposed in the *Economics of Control* (1944) to nullify the socially harmful effects of monopolists' aggressive speculation, while leaving unhindered "productive speculation" and its beneficial effects.

The example I propose to discuss here, however, is Lerner's 1980 plan to diminish OPEC's monopoly power, thereby to resolve the oil crisis. The plan called for oil-importing countries to levy on the sale of oil a variable excise tax (he called it "extortion tax") whose amount would equal OPEC's monopolistic markup over the "fair" price and would be adjusted in a way to keep matching that markup whenever OPEC changed its price. The proposed extortion tax would have greatly increased the price of oil of course, but its proceeds would be used to compensate those on whom the price increase imposed too great a burden. The imposition of such a flexible tax would have roughly the same

effect as a doubling of the price elasticity of demand facing oil producers, because, by making the price changes consumers face twice as large as those decreed by producers, it would also double the response of the volume of sales to the change in producers' prices. That would halve producers' monopoly power and, with it, their inducement to stay within the coalition (as well as the inducement of others to become free riders by charging OPEC's price without joining the coalition).

The idea seemed brilliant when I first saw it in the mimeographed typescript, handed out personally by Lerner to the audience at the 1979 A.E.A. meetings as they entered to hear Solow's presidential address; and hindsight confirmed that judgment when we saw how vulnerable the OPEC coalition was to every fall in its sales.

As to Lerner's plans to extend the scope of market forces, the earliest, I believe, dates from the outbreak of World War II, when he wanted to replace the army's standard TOE (table of organization and equipment), with its rigid and uniform assignments of personnel and equipment, by a flexible system that would give every commander a budget of ration points with which to "buy" all types of specialists, ranks of personnel and kinds of equipment, in order to assemble officers, NCOs, privates; weapons, tanks and other equipment in whatever combination he regarded as the most effective for accomplishing his assigned task.

Lerner's friends, however, (myself among them) seemed to have more faith in the army's collective wisdom than in the judgment of its individual commanding officers and dissuaded him from writing the book in which he wanted to publish and elaborate so fanciful an idea, fearing that it would worsen rather than improve his chances for professional advancement. Yet, if some such plan had been in force in the 1930s, it might have

enabled the allied armies to prepare for fighting the next instead of the last war. In France, the young Colonel de Gaulle might have been able to demonstrate the need for a mechanized army instead of unsuccessfully pleading for it, and, who knows, he might have changed the course of history.

The Market Anti-Inflation Plan

Lerner's best, most impressive plan, however, which he developed gradually, in the course of several publications, is his market anti-inflation plan (MAP). Written jointly with David Colander and published in its most complete and final form as a book (1980), it is a model of clear presentation and meticulous attention not only to detail and special cases but also to start-up difficulties and problems of administration, enforcement, auditing and acceptability. Since Lerner had always disdained mundane matters of that kind in his earlier work, I would give Colander the lion's share of credit for that part of the plan. My summary must be short, however, and will, also for that reason, concentrate on the aspects that carry Lerner's unmistakable imprint.

Individual price changes are essential for the working of our economy but all too often create an externality as well: they may affect the general level of consumer-goods prices. They may raise it or lower it and, accordingly, we distinguish upward and downward externalities. I use the word *may*, not *will*, advisedly, because certain increases in factor prices leave the level of product prices unchanged, in view of the secular rise in productivity.

Since we want individual prices to be flexible but the general level of consumer-goods prices to be stable, we want the upward and downward externalities to exist because they are manifestations of price changes, but we want them to exist in such proportions that they mutually offset one another's impact on the cost of living. Ac-

cordingly, the values of the two kinds of externalities must somehow be made equal. Since upward externalities always exceed downward externalities in our economy, their values have to be made equal by discouraging the former and encouraging the latter.

The best means of doing that is to internalize externalities by putting a price on them: exacting payment for price changes that raise, and paying a reward for those that lower, the cost of living. The way to establish the price whose levying and paying will fully balance the upward and the downward thrust of individual price changes on the cost of living is to give creators of downward externalities the right to create equivalent upward externalities and let them sell those rights at their market price, in a market organized for the purpose, to whoever wishes to exercise them.

That, in half a page, is the idea behind Lerner's plan. To implement it requires direct constraints; but those may be imposed only on global quantities if the flexibility of individual prices is to be fully preserved. The price level, however, is a statistical construct, not a global quantity; but it can, at least, be expressed as the ratio of one global quantity to another: of total spending or total sales to the total physical volume of goods sold.

Functional finance (i.e., monetary and fiscal policy) can constrain the total spending of consumers and businesses on final goods; but since they are quantity adjusters with no direct control over prices, constraints on their spending have more impact on quantities than on prices, which is why they are appropriate safeguards only against overspending inflation. To contain administered and expectational inflation, created by the actions of price administrators, who are price adjusters with no direct control over the quantities they sell, it is the value of total sales that has to be rationed—and rationed in pro-

portion to the total quantity of goods sold.

That is what MAP proposes to do. It calls for legislation to turn the freedom to sell into rights to generate a limited amount of sales. Since each firm buys inputs from other firms, the limit would apply only to its value added, here called net sales. Each firm's allowance of transferable rights to make net sales would be set to equal its actual past net sales but corrected for changes in its input of labor and capital and for the estimated percentage increase in the economy's average productivity, in order to make adjustment for the probable change in its output. The firm's allowance of sales rights therefore is based on a rough estimate of what its current net sales will be worth at pre-existing prices. The estimate is rough, because the firm's productivity may rise by more or by less than the national average, because the change in its labor and capital inputs may have more to do with its investment or R&D operations than with current production, and also because the output it sells may not change by the same amount as the output it produces.

The sum of allowances, summed over all firms, is the estimated worth of the economy's total sales at pre-existing prices. If the total of actual sales is kept within the limit set by the sum of allowances, the average level of product prices cannot rise, except to the extent that the estimate is too high. The estimate of total sales, however, is bound to be much more accurate than the individual estimates of which it is the sum, because most of the above-mentioned possible errors in the individual estimates are randomly distributed and so cancel out when they are summed. Even so, the authors expect the enforcement of MAP to stabilize the price level only on average, over a number of years, rather than from one year to the next.

So much for the stability of the general level of product prices. How about the

flexibility of individual prices? To begin with, the constraint is not on factor prices but on the net sales or value added; the share of wages and profits (which are the components of value added) would continue to be determined by bargaining between labor and management. For example, if the expected productivity increases were 2 percent, wages and profits could both rise by 2 percent or one could rise by more at the expense of the other's rising by less or not at all.

Secondly, each firm can add to its rights to increase net sales beyond its allowance by buying other firms' unused rights. That allows plenty of freedom for relative prices, wage rates and profits to move, provided that the market price of those rights remain reasonable. To satisfy that proviso, the authors stress the need for a well-organized, well-integrated market to bring buyers and sellers of sales-rights together; and—what is even more important—they call for supplementing MAP by functional finance; that is, by restrictive fiscal and monetary policies to contain the overspending part of inflation.

The advantages of the former are self-evident. As to the latter, restrictive policy diminishes the excess of the demand for unused sales rights over their supply and so lowers the market price that will equate them. Lerner believed that restraint on spending is the only remedy for overspending inflation; MAP was designed to deal only with expectational and administered inflation. In practice, of course, different kinds of inflation may be inextricably intertwined, the more so because expectational inflation may have both overspending and administered components. (See footnote 8, above.) An attractive feature of MAP as an anti-inflationary device, however, is its close substitutability for that other anti-inflationary device: fiscal and monetary restriction. Each lightens the task and the social cost of the other; their combined costs may well be

minimized by their simultaneous application.

One advantage of MAP, alluded to earlier, was that it cannot be accused of bias against labor because it limits increases in net sales, not in wages; but that advantage is obtained at the cost of including profits along with wages in the limitation. That raises the question whether MAP would not militate unduly against venture capital. The spectacularly successful new firms of the electronics industry are the engine of growth in our economy. Had MAP been in effect when they started in business, would not they have been discouraged by their need to buy a lot of sales-rights, whose cost would have transferred part of their profits to their less successful brethren?

The answer to that question is reassuring. First, a new firm would begin to earn sales-rights on the day it made its first investment and hired its first workers. Since it takes months, even years, before a saleable output is produced, the firm would begin its sales with an accumulated stock of sales-rights, enabling it to recoup its initial expenses on labor and the interest on invested capital while providing an extra allowance for entrepreneurial profits as well. Second, the reduction of a successful innovator's initial high profits, by his need to buy additional sales-rights, is counterbalanced by the reduction of the unsuccessful innovator's losses by his ability to sell his unused sales-rights. Therefore, the inducement to innovate is not much diminished because the size of the risk is reduced by almost as much as the reward for taking it. The argument resembles Lerner's 1943 argument (page 1560, above) that income taxes do not discourage risk taking when losses can be offset against other income, because in that case, taxes diminish the net profits obtainable and the potential net losses in equal proportions.

Apologia

My account of Lerner's lifetime contribution to economics is unavoidably incomplete and unbalanced. It is incomplete, because his 160 papers and eight books contain many more new ideas on many more subjects than I am able and competent to survey. For example, I have no judgment, and am therefore silent, on his contributions to such subjects as spatial competition, duopoly, or the theory of price index numbers, even though I know from Samuelson's 1964 review that Lerner's paper on the last-mentioned topic carried forward the work of others. I have also refrained from discussing his many proposals for avoiding nuclear war: they are outside the purview of this article.

My account is unbalanced because I naturally need much more space to present his lesser-known works than those that, however new and revelatory when first presented, have since been thoroughly incorporated into the established doctrine of the new generation of economists so that they now seem commonplace or mere common sense. Yet, the latter appear to be the more important if we judge by their readier acceptance. Nevertheless, my focus on Lerner's less-well-known works also has advantages. First, they are his contributions that still retain some novelty and so are better able to convey the freshness, originality and elegant logic of their author's mind. Second, some of his unorthodox ideas are gaining and may continue to gain acceptance. Lerner's logic was the more compelling for his refusal to obscure it or water it down for the sake of expediency. His friends used to despair over his blindness to political realities, which they knew would diminish his influence on policy in the short run. The long run, however, is different. Initial resistances to the unusual wear off with time; also, when problems prove intractable by orthodox methods, unorthodox

remedies become more acceptable. At that stage, the clear and impeccable logic of Lerner's arguments and recommendations makes them more convincing precisely because they were presented in an uncompromising fashion.

There are several instances of the gradual acceptance of Lerner's initially shocking or outlandish ideas. The one already discussed is functional finance. However shocking it was at first, by now it is the framework of many economists' thinking about macropolicy, without their even being aware of it. A second instance is governmental counterspeculation to counter aggressive speculation by monopolist manipulators, designed to keep the market functioning as it should. Even Meade (1945), the most favorable reviewer of Lerner's *Economics of Control* (1944), where counterspeculation is first presented, saw "serious difficulties" connected with the idea; yet it is one of the few of Lerner's policy recommendations to pass into general practice.⁹ Another idea, decried as absurdly unrealistic when Lerner first presented it, was the notion that socialist planners should opt for private or public enterprise, depending on which is more efficient in which industry. A few years ago, something closely resembling that had been adopted in socialist Hungary and seems to explain much of that country's economic success.

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* Reprinted in Lerner (1983b).

⁹The Bank of England's Exchange Equalization Account of the 1930s antedates Lerner's recommendation, but the market interventions of today's central banks serve a different purpose, which comes much closer to what Lerner had in mind.

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