

Theory for
Economic
Efficiency

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and
Rotwein,
editors

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**Theory for Economic
Efficiency:**
Essays in Honor of
Abba P. Lerner

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Preface

This festschrift is dedicated to our colleague and friend, Abba P. Lerner, on the occasion of his seventy-fifth birthday. The volume has been assembled by his colleagues at Queens College as a tribute to a great economist who has made significant and long-lasting contributions to many fields of economic theory and policy.

The quality of the contributions in this volume and the eminence of the contributors to it are fitting tribute to the esteem with which Abba Lerner is regarded in the economics profession. In a piece written on the occasion of Abba Lerner's sixtieth birthday, Professor Paul Samuelson noted: "Abba Lerner has been a great theoretical economist in a vintage epoch for theorists. This last third of a century he has poured out one brilliant paper after another—in micro theory and macro, in pure thought, and in the realms of policy. At every public gathering of the field, it is his dynamic wit that brings up the house, and at any age he is still the glorious wunderkind of our guild."¹

Professor Milton Friedman, in an extensive review of Lerner's *Economics of Control*, while generally critical of the book, nevertheless had this to say: "The book throughout reveals Lerner's very considerable gifts—his acuteness as a theorist and dialectician, his skill and patience in exposition, his flexibility of mind, his profound interest in social welfare, and his willingness to accept and courage to state what seems to him right social policy, regardless of precedent or accepted opinion."²

Lerner's work and activities over the past fifteen years (which include his election in 1974 as a Fellow of the National Academy of Sciences) demonstrate a continuity of the same characteristics noted by the two Laureates. It remains as true as ever that "the drum beat Abba Lerner answers to is that of science, and when he plays his pipe we economists of all ages become like the little children of Hamelin."³

This volume is not intended to serve as an assessment of Lerner's place

in economic theory. Rather it is an outpouring of creativity from his friends and colleagues, perhaps the greatest birthday celebration one can receive from one's peers.

For making this volume possible, our most sincere thanks go first to the contributors. Their enthusiastic support and cooperation was most gratifying. We are sorry to note here that Harry G. Johnson died before he could complete a piece for this volume, but we know from Professor Jacob Frenkel, a close colleague of his, that Johnson had completed parts of the essay—undoubtedly one of his last creative efforts. We regret also to note that Professor Jacob Marschak died about two weeks after sending his essay to us, making this piece one of his last works. Another sad note must be added here: Robert Aaron Gordon died about one month after submitting his essay.

Our thanks are due to colleagues in our department who read some of the essays—Michael Dohan, Hugo Kaufmann, and Michael Edelstein. Michael Intriligator was kind enough to proofread Marschak's paper.

Our acknowledgments would be incomplete if we did not mention the invaluable administrative help of our college assistant, Beatrice Schwartz.

The editors of this volume apologize to Dr. Lerner's many friends who could not be asked, because of space limitations, to contribute to it. We are confident, however, that they join with his colleagues at Queens College and the eminent contributors to this volume in wishing Abba Lerner a happy birthday and in expressing to him our joint thanks, along with that of economists everywhere, for his monumental contributions to the solution of so many of the important problems of our discipline.

The traditional birthday greeting in Hebrew is *Ad Mea Essrim*—"may you live to be one-hundred and twenty"—to which the modern Israelis have added, "plus 8 percent for value added tax." Amen.

The Publications Committee

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Notes

1. Paul A. Samuelson, "A. P. Lerner at Sixty," *Review of Economic Studies* 31, No. 3 (1965): 169.

2. Milton Friedman, *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953), p. 319. The original article appeared in *Journal of Political Economy* 22 (October 1947).
3. Samuelson, "A. P. Lerner," p. 178.

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Chapter 1

Kenneth J. Arrow

The Trade-off Between Growth and Equity

The goals of economic policy are many and varied. Some of them are drawn from outside the economic sphere: national security and power, the achievement of a broad range of social goals (such as the aesthetic improvement of urban life, social communication, health, and internal order and personal security), or the better development of individuals and of the modes of social interaction. Even within what might loosely be regarded as the endogenous goals of economic policy (perhaps defined as those for which the market is or could be used as a detailed allocative instrument), there is a considerable variety. But perhaps all or virtually all can be reduced in one way or another to three: economic stability, allocative efficiency, and distributive equity.

Where does the goal of economic growth appear in this short list? In some ways, economic growth has been a recurrent theme of economic analysis since the days of Adam Smith. But perhaps the period since World War II has seen more emphasis than ever before. This is not surprising since this period has also seen a more rapid rate of economic growth than anything achieved in the past. This period may be drawing to a close. I have no more belief in the existence of the Kondratiev cycle now than I did when my professors ridiculed the idea, but it still may be true that high productivity growth is due to random and unpredictable causes; we may just have had a run of good luck, aided by an arrears of technological development resulting from the Great Depression and World War II. Further the exaggerated views of the limits-of-growth proponents do contain a genuine if tautological truth: there are resources, land and minerals, whose total stock is fixed, and continued use must eventually lead to their exhaustion. If these limited resources are indeed essential, growth must become negative.

But resource scarcities are not, in my judgment, a problem that will restrict growth seriously within the next twenty-five to fifty years; and I

think it by no means unlikely that the rapid growth of scientifically inspired technology will lead to a resumption of growth of factor productivity. So growth, the attitudes toward it, and the policies that can achieve it or at least prevent its cessation are still major issues. But growth is not an elementary goal; it is one derived from the goals of efficiency and equity as applied to choices over time. Specifically just as we are concerned with possible conflicts between efficiency and equity in resource allocation at a moment of time, so we are also concerned with possible conflicts between efficiency and equity in allocating resources among individuals at different points of time.

From the viewpoint of values, this is what the problem of optimal growth policy amounts to. There is also the descriptive problem: identifying both the different policies that can affect the distribution of income or that can affect the future evolution of the economy and the effects of egalitarian policies on growth and of growth-promoting policies on equality of distribution.

Let us start with a review of the problems of reconciling efficiency and equity in a static context. First there is the conceptual question of what is meant by efficiency and what by equity. The answers to both question have been (and doubtless always will be) matters of dispute as long as humanity, with its inevitable tension between the demands of the individual and those of society, exists. I confine myself to a few observations, to set the basis for subsequent discussion.

Efficiency and equity are both judgments, statements of preference. In the context of economics, the judgments or preferences are about allocations of resources. By an allocation in the full sense, I mean a statement of the inputs and outputs of every production process, of the assignments of final goods to individuals or households, and of the productive resources, labor and property, required of each individual or household.

Interest is clearly confined to feasible allocations. An allocation that requires the use of more of a primary resource than is available or that calls for the distribution of final consumers of more of a commodity than is produced cannot be considered. Further, the outputs required of any production process must in fact be obtainable from the inputs; the allocation has to be consistent with the available technological knowledge.

Modern economic analysis has begun to emphasize that there are restrictions on feasibility, in addition to those of resource availability and technology. The very nature of our economic institutions prevents us from achieving any allocation we wish. In an economy based on private property

and free sale of labor services, the initial distribution of skills and ownership of property determines the distribution of income, which in turn determines the allocation of consumers' goods. Thus not all technically feasible allocations can be realized. To be sure, the market allocation can be modified by government actions, either by directly allocating goods or by modifying the distribution of income through taxation, but the possibilities for reallocation in this manner are limited.

A socialist economy might, in theory, achieve a wider set of allocations, but it is also subject to limitations. If it relies heavily on the market and its incentives, then its outcome is similar to that of a capitalist economy. If it tends more toward direct allocation, then it is apt to be mechanically egalitarian and give the same bundle of goods to individuals of varying needs and tastes, not merely for ideological reasons but also for lack of information to make finer differentiations. Thus the concept of feasibility takes account not merely of resource limitations and technology but also of institutional constraints.

Of efficiency and equity, efficiency is the simpler concept. The usual definition in economics was first clearly formulated by Vilfredo Pareto: an allocation of resources is efficient if there is no other feasible allocation that will make everyone better off. The only ambiguity in this definition, is the meaning of "better off." I will confine myself to the individualistic interpretation: each individual is to be the judge of when he or she is better off, so that we respect individual decisions in the market and in voting.¹

Even in a static world, equity is an elusive concept. There is no need to enlarge on the rival concepts that have always held the field. The differences among the utilitarian viewpoint, Rawls's principle of benefiting the worst off, and Nozick's view that any distribution arrived at by free contracting is just, sufficiently illustrate the variety of views. I will assume simply that equity means as much equality of income as is possible, that the only reason that can be raised against policies leading to equalization of income is that they impair efficiency (or other desirable aims not considered in this article). I have stated this in an extreme fashion for simplicity. All that is really needed for my purposes is that the desirable income distribution is more nearly equal than would be yielded by the natural workings of the system.

To some extent, economic theory can be used to argue that the goals of efficiency and equity can be separated, that any distribution deemed equitable can be achieved without loss of efficiency. The argument is based on important properties of the competitive price system. There are two pro-

positions here: any resource allocation achieved by a competitive price system is efficient; and for any efficient resource allocation, there is a redistribution of initial assets such that the competitive system will, after the redistribution, come to rest at the given resource allocation. These conclusions are valid only under some significant conditions, but for the moment let us assume that the conditions are met. Then the policy implication is that equity should be achieved by redistributing initial assets and then letting the market operate freely to determine production and consumption. In the extreme case, an equal division of initial holdings of primary resources would be called for.

It is important that the redistribution of assets not be made dependent on the individual's subsequent actions in the market, for that would amount to a tax on the sales of certain goods, which will impair efficiency. The most important case is that of labor skills, which cannot be redistributed. An alternative would be to redistribute the income arising from their sale, but this amounts to a tax on the sale of skilled labor, as in the case of an ordinary income tax. Since an individual always has the power to reduce his or her offering of labor, the efficiency of allocation is reduced. In short, under a system in which individuals have some control over the total amounts or the particular kinds of labor services they will offer, arbitrary redistributions of income are not feasible. Hence there is a trade-off between equity and efficiency.

One important qualification to this last statement must be registered: the undisturbed market system leads to efficiency only under the assumption of perfect competition, but competition is far from perfect. It is therefore conceivable that steps that interfere with the market might improve both efficiency and equity. Antimonopoly policy is a case in point. To the extent that monopolies increase the inequality of income, breaking them up may be a policy in which the efficiency-equity conflict is absent. But one cannot generalize. If antimonopoly policy includes policy against labor monopolies, the effect may be to decrease equity. It is, however, in the context of time that imperfections of competition are most relevant to the efficiency-equity issue.

In considering the relations between efficiency and equity over time, I will simplify the discussion by ignoring problems of equity within a generation and assume provisionally that all individuals in a given generation are alike.

In the context of allocation over time, there is a new kind of redistribu-

tion of resources as compared with the static case: resources can be distributed from the present to the future. This typically takes the form of investment, a sacrifice of current consumption to increase future products. Refraining from consumption of exhaustible resources can be thought of as a special case of investment.

The condition for efficiency in this context is well known; it is the requirement that all investments yield the same rate of return in any given time period. However, among the efficient allocations, there is a distinction between the concept of growth and the concept of equity. If, for the moment, we assume that growth basically results from capital accumulation, then the greater the capital accumulation, the faster the rate of growth. (It is generally recognized that this process cannot continue indefinitely, eventually the rate of growth is conditioned by labor and other fixed factors. But clearly an increase in capital accumulation can increase growth for a period which may be rather long.) But indefinitely high growth is not necessarily good. Quite apart from problems of exhaustible resources, there is no particular reason why the present generation should sacrifice large amounts of consumption indefinitely to achieve higher rates of growth and higher rates of consumption for its successors. Justice requires a balance between competing values of the current and future generations.

Redistributions in time differ from redistributions at a given moment of time in one important aspect. Usually we think of the latter as reducing total product by reducing incentives. Redistribution from the present to the future, however, is typically productive; we expect such an allocation to yield a return over and above the initial resources invested. In terms of goods, the recipient gains more than the donor loses. Whatever one's exact form of ethics, this clearly is a powerful argument for benefiting the future.

There are, however, two offsetting considerations. One is that present investments tend to make future individuals better off than present ones, so the redistribution is from the present poor to the future rich. To minimize this adverse redistribution, the rate of return required on investments for the future should be higher, the higher is the rate of growth. A second—more disputed—consideration is that there is an intrinsic tendency to discounting the future. No individual living today can really regard individuals living in the future, particularly the far future, as being equivalent to himself. Indeed, if benefits for all future generations were counted equally, the value of the present would dwindle into insignificance. If we consi-

tently refuse to discount the future, then a current generation should reduce itself to subsistence levels if there is any positive return on investment, no matter how small.

Thus a rough consensus is that a future investment ought to be made if and only if the productivity of the investment is at least as great as the sum of two countervailing effects, the pure futurity or discount effect and an allowance for the greater income of future generations. I will call this statement the Investment Criterion.

I have spoken so far, for simplicity, as if growth were entirely due to large capital accumulation. In fact a large fraction of growth in modern society is a result of technological advances that are to a considerable extent at least independent of the usual form of capital accumulation. Hence the future generations may well be richer even if no investment were made today. To that extent the argument for restricting redistribution to the future is strengthened.

Economists typically argue that public investment should be governed by the Investment Criterion. But actual public investments are not necessarily made in accordance with them. The question may also rise whether private investments are made this way. Indeed if concern for the future is considered social rather than individual in nature—that is, an expression of justice or of concern for the perpetuation of humanity—then we would expect individuals to save and invest less than the Investment Criterion requires.

The situation in practice is more complicated than the simple model I have assumed thus far because individuals live over time and because they are concerned about the futures of their families. Hence individuals as well as society have some reason to save or invest for the future. Their behavior in this regard is indeed parallel to that of the social sector, and they may come up with a rather similar criterion.

To the extent that this is true, we may suppose that the market will lead to something like a just and efficient allocation of resources over time. The theoretical argument might suggest some underinvestment in the future; optimal investment might be more than would be sustained by the preferences of individuals for their own future and for that of their children.

But I think a more serious question may be one of imperfections of the capital market. In a world of uncertainty, borrowing cannot necessarily reach the optimal levels. In particular, borrowing for human capital formation, as in education or for development of new technologies, is likely to be restricted, and the government intervention for these purposes has

been well argued; in the case of education, the need is essentially fully accepted by most nations, possibly even overaccepted.

Today there is a widely dispersed distribution of income. Individuals and institutions, through their decisions, allocate their resources between current consumption and investment and saving for the future. Capital markets, to the extent that they operate, direct the desired saving into different forms of specific investment. The economy of the future is generated from all these decisions, together with the outside forces that also influence growth. The result, as experience has shown, is a restructuring of an economy, generally at a higher average income level but again with a widely dispersed distribution of income.

What, then, is the effect of classical redistributive policy through the tax system on efficiency and growth? There are both positive and negative effects. To start with the latter, the first, and perhaps most important, point is the reduced efficiency of the economic system. This has consequences for growth. The loss in income compared with what might have been means both that there is less available for capital accumulation and that the capital accumulated is used less efficiently. Hence the economy is on a permanently lower level, and perhaps the growth rate is lowered.

A second problem arises out of the redistribution itself, apart from the efficiency problems arising from the taxes to pay for the redistribution. It appears that savings by individuals is likely to rise more than proportionately with income. Hence total personal savings will fall as a result of redistribution. Further, to the extent that redistributive taxes fall on the business institutions that form such a large part of the saving mechanism, there may again be a reduction in saving. The income, concentrated in one place and therefore easier to use for saving, is now scattered. In a world of perfect capital markets, this redistribution from firms to individuals would make no difference, but internal financing by firms is to a large extent precisely a compensation for imperfect capital markets.

For these reasons, the aggregate volume of capital formation may fall as a consequence of redistribution. There are compensating factors, however. The recipients of the redistributed income may now have better access to capital markets—for example, through mutual funds or even through savings banks. Their incomes may rise to the point where saving becomes worthwhile.

More important is the increased ability of lower-income individuals to engage in forms of capital formation not handled well through the market.

I am thinking especially of human capital formation. More schooling may become financially possible. The poor may have a greater chance to choose among jobs the ones for which they are best fitted. Improved conditions in the home are an important, though informal, type of capital formation. Because human capital formation among the poor will not be financed through capital markets, there is special reason to believe it will have an unusually high rate of return.

Taking everything together, taxation-financed redistribution will probably lower aggregate saving, though possibly redirecting part of it into higher-return activities. But such a policy will have in general a positive effect in reducing the future inequality of income. On the high-income side, the taxes will have the effect of reducing the concentration of wealth. The rich allocate their resources between current consumption and wealth accumulation for themselves and their heirs. If they are taxed, they will in general reduce both. Hence to the extent that income inequality is perpetuated by inheritance, the same policies that redistribute wealth today will reduce inequality tomorrow. On the low-income side, the subsidies will be used for human capital formation, which is largely devoted to affecting income tomorrow. While inheritance can make no significant contribution to improving the income of the next generation of poor, improvement in the household and more schooling can.

Different types of taxes can be used to finance redistribution. Although the ordinary income tax has many merits, it also has some defects. It distorts the choice between labor and leisure, but this is probably unavoidable in any tax system. It imposes a double taxation on saving by taxing both saved income and the return to that saving. How serious the resulting distortion is not known, but it might be considerable. It can be avoided by shifting to progressive taxes on total consumption. This will have the additional virtue, from the redistributionist point of view, of taxing consumption derived from gifts and inheritances, which are effectively taxed at much lower rates.

It will still be necessary to have annual taxes on wealth, as in Sweden today, to prevent a concentration of wealth by those who consume relatively little out of high incomes. The rate can be low enough to minimize disincentives to save by those who are saving for the purpose of future consumption, while the annual repetition of the tax over a long period of time will fall on those who are accumulating wealth for its own sake or for the sake of the power it conveys.

A policy of income redistribution through taxes and transfers does involve a risk of efficiency losses both at a moment of time and over time. On

the other hand, there are some gains in efficiency if the income of lower groups is raised sufficiently to enable them to engage in some rational planning. On the whole redistribution within a single generation tends to have some positive effect toward equality in the future.

Earlier I singled out the imperfection of the capital markets as the largest element of inefficiency in allocation over time. This raises the question of whether it is possible to counteract these distortions and at the same time decrease inequality. It is clear that the imperfection of the capital market weighs most heavily upon the poor in their human capital formation, and this suggests the proper course of action.

A great part of redistribution should take the form of social capital formation of a kind that will raise the productivity of the poor. The negative income tax will allow the poor the right to choose their own consumption patterns, for example. But I think that it is fairly clear that many kinds of capital formation that will benefit them cannot be carried out at all or at least cannot be carried out efficiently on an individual level.

The most obvious example of social capital formation is education. It may be objected reasonably that this activity is already largely socialized and that there is little possibility of further gains in highly educated countries like the United States and Japan. However this obvious lesson has not been learned by many—perhaps even most—developing countries. They have not realized that education provides a means of achieving both high-productivity investment and income equalization.

Even in advanced countries, there is room for improvement. I would judge that the biggest lack is technical education. This becomes especially important in a technologically advancing world where skills have not only to be acquired but also changed. Mid-career shifts should be facilitated by suitable education, as well as updating in the same line of work. The facilities provided are inadequate in most countries. There is another problem. For an individual capable of earning an income, even an adolescent going to the university, the sacrifice of income is a larger investment than the cost of providing the educational facility. This situation illustrates an imperfection of the capital market; ideally the individual should be able to borrow against future earnings but cannot.

Providing technical education and financing students is both equalizing and socially efficient in producing appropriate growth. It would be desirable, in my view, that the beneficiary ultimately be responsible for the costs incurred. The best way would be a repayment dependent upon future income. In this way the risks and uncertainties of the benefits are borne by the state, which is an ideal insurer, rather than by the individual. If such a