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The General Theory of Second Best and Economic-Efficiency Analysis: The Theory, its Negative Corollaries, the Appropriate Response to it, and a Coda on the Economic Efficiency of Reducing Poverty and Income/Wealth Inequality

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THE GENERAL THEORY OF SECOND BEST AND ECONOMIC-EFFICIENCY ANALYSIS: THE THEORY, ITS NEGATIVE COROLLARIES, THE APPROPRIATE RESPONSE TO IT, AND A CODA ON THE ECONOMIC EFFICIENCY OF REDUCING POVERTY AND INCOME/WEALTH INEQUALITY

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I. INTRODUCTION

A significant percentage of scholarly economics articles, and a far higher percentage of scholarly Law & Economics articles, focus on the economic or allocative efficiency[1] of the non-government or government choices they investigate—i.e., on the difference between the equivalent-dollar gains a relevant choice confers on its beneficiaries and the

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1.   I sometimes substitute the expression "allocative efficiency" for "economic efficiency" to remind readers that the concept is a technical term—in particular, to combat the mistaken tendency of economists and their readers to assume that increases in economic efficiency are morally valuable in themselves and, indeed, that choices that increase economic efficiency are always morally desirable.

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equivalent-dollar losses it imposes on its victims.[2] Economists have never tried to assess any choice's impact on economic efficiency by identifying all or a random sample of the choice's winners and losers and estimating these parties' respective equivalent-dollar gains and losses. In part, this fact reflects the incentives that the beneficiaries/victims of any choice have respectively to exaggerate the magnitude of the equivalent-dollar gains/losses it would confer/impose on them (to the extent that their doing so increases the probability that any government choice in question will be made/rejected or any non-government choice in question will be allowed/prohibited). And in part, it reflects the prohibitive cost and difficulty of estimating the gains and losses that individual winners and losers experience through any method that does not rely on their testimony. The impracticability of this approach to assessing a choice's economic efficiency has led economists to base their economic-efficiency assessments on Welfare Economics propositions that relate the impact of a choice on economic efficiency to its impact on the number and magnitude of the Pareto imperfections in the economy—i.e., of the various types of "imperfections" whose individual exemplars could cause economic inefficiency in an otherwise Pareto-perfect economy (see discussion below). Although this general approach is almost certainly best, the particular Welfare Economics proposition on which economists have relied, and overwhelmingly continue to rely, is wrong.

The vast majority of economists base their approach to economic-efficiency assessment on the assumption that the fact that the economy will contain no economic inefficiency if it contains no Pareto imperfections (no imperfections in seller competition, no imperfections in buyer competition, no externalities, no taxes on the margin of income, no relevant imperfections in the information available to a resource allocator [resource-allocator sovereignty], no failures to maximize by principal resource allocators [given the information that is available to them] and no [critical] buyer surplus) has two critical implications: (1) any choice that reduces the number or magnitude of the Pareto imperfections in an economy will tend to reduce the amount of

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2. The text refers to *equivalent*-dollar gains and losses rather than to dollar gains and losses because many of the relevant effects not only are not direct monetary effects but, in some instances, also cannot be capitalized by the person that experiences them. Take, for example, the equivalent-dollar gain that the owner of swampland who values it positively (for sentimental reasons) despite the fact that its market value is zero obtains from an environmental policy that cleans up the water in the swamp and/or the air over the swamp. If the policy does not improve the property sufficiently for it to have a positive market value post-policy, this winner will not be able to capitalize his equivalent-dollar gain.

economic inefficiency in that economy even if it does not eliminate all Pareto imperfections in the economy and (2) any choice that increases the number or magnitude of the Pareto imperfections in an economy will tend to increase the amount of economic inefficiency in that economy. In making this assumption, these scholars ignore one or both of the following: (1) the related facts that (A) the Pareto imperfection that the policymaker is in a position to reduce or eliminate (that the economic-efficiency analyst is assuming could be reduced or eliminated) is not the only Pareto imperfection in the economy and (B) the economy would be Pareto-imperfect even if the Pareto imperfection in question were eliminated and/or (2) the central lesson of The General Theory of Second Best—*viz.*, since in general any Pareto imperfection one can eliminate will be as likely to counteract as to exacerbate the net joint effect of the Pareto imperfections that remain, there is no general reason to believe that the fact that a choice will reduce the number or magnitude of the Pareto imperfections in an economy will even tend on that account to increase economic efficiency if it will not eliminate all Pareto imperfections in the economy.[3] In Part II, this Article will describe The General Theory of Second Best and its central point. In Part III, I will set forth a twenty-nine step protocol for estimating the economic efficiency of any given choice. In Part IV, I will discuss the economic efficiency of

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3.   For a detailed critique of a wide variety of canonical economics and Law & Economics articles and bodies of literature that execute analyses of the economic efficiency of the policies on which they focus on the assumption that The General Theory of Second Best can be ignored—i.e., on the implicit assumption either that the Pareto imperfection that the policy in question targets is the only (relevant) Pareto imperfection in the economy and/or that the other relevant Pareto imperfections the relevant economy contains perfectly counteract each other's relevant effects—see RICHARD S. MARKOVITS, TRUTH OR ECONOMICS: ON THE DEFINITION, PREDICTION, AND RELEVANCE OF ECONOMIC EFFICIENCY 271-338 (Yale University Press, 2008). For a critique of the various arguments that economists who acknowledge the existence of The General Theory of Second Best allege justify their and the profession's ignoring it, see *id*. at 338-42. I should add that the General Theory of Second Best also applies when the maximand is something other than economic efficiency. For example, if one makes the contestable assumption that the point of a legal trial is to discover the truth of the matter and also makes the contestable assumption that truth would be discovered if the trier-of-fact were ideal and all possibly-relevant evidence were introduced at trial, a second-best argument might lead to the conclusion that, when actual triers-of-fact (say, juries) are imperfect, outcomes would be improved if certain categories of evidence were deemed inadmissible. Or, if the distributive optimum were that all relevant creatures have the same, meaningful opportunity to do X or the same amount of resources (measured by their allocative value in their alternative uses) and one could in each case develop a set of sufficient conditions for the achievement of either of these possible distributive optima, in a world in which one or more members of the (different) sets of optimal conditions for the achievement of either optimum will not be fulfilled, one might be able to make a second-best argument for failing to fulfill one or more of the other members of the different sets of sufficient conditions for achieving one of the optima in question.

egalitarian wealth-redistribution policies in a way that reflects The General Theory of Second Best and conclude that such redistributions would be far more economically efficient than economists tend to assume—indeed, in my judgment, would probably be economically efficient, all things considered. Part V contains a brief conclusion.

II. A NON-ECONOMIC AND ECONOMIC ILLUSTRATION OF THE CENTRAL POINT OF THE GENERAL THEORY OF SECOND BEST

This Part uses a non-economic example and then an economic example to illustrate The General Theory of Second Best's central, negative conclusion that, once one or more members of a set of sufficient conditions for the attainment of an optimum will not be fulfilled, choices that increase the extent to which the other members of that set of sufficient conditions for the attainment of that optimum are fulfilled cannot be assumed to even tend to bring one closer to the optimum. Here is the non-economic example. Assume that there is an ideal way to drive a car around a corner (I will not specify the associated maximand or objective function [whatever it is that would ideally be maximized])—*viz.*, to drive the car 15 miles per hour and turn the steering wheel in the appropriate direction 40 degrees per second. If the car is being driven 15 miles per hour, the optimal rate at which to turn the steering wheel will be 40 degrees per second because, if one turns the steering wheel 40 degrees per second in the appropriate direction, both (all) of the optimal conditions will be fulfilled, and the optimum will be achieved. However, what if the accelerator is jammed, the car is moving 85 miles per hour, and nothing can be done about those facts? Will it be (second-best) optimal to turn the steering wheel 40 degrees per second in the appropriate direction? Almost certainly not. Although it might turn out that fulfilling the second optimal condition (turning the steering wheel 40 degrees per second in the appropriate direction) is second-best optimal, any such reality will be fortuitous in the sense that it will not follow from the fact that turning the steering wheel 40 degrees per second in the appropriate direction is an optimal condition (belongs to a set of sufficient conditions for the achievement of the relevant optimum). To determine the best way to turn the steering wheel when the car is traveling 85 miles per hour, one would have to examine how departures from the two optimal conditions interact to cause suboptimal outcomes both in general and in the particular relevant context. For example, the presence of a steel-reinforced concrete wall 50 yards from the road may play an important role in the relevant analysis even if it

would play no role in determining the optimal way to drive the car around the corner in question.

The pertinent points of this example are: (1) once one of two optimal conditions is not fulfilled, there is no general reason to believe that fulfilling or more closely approximating the second optimal condition will even tend to improve the outcome and (2) in order to determine whether to fulfill or more closely approximate the second of two optimal conditions when the first is not fulfilled (or, more generally, what to do about a second of two outcome-determinants when the magnitude of the first outcome-determinant is not first-best), one must combine an appropriate theoretical analysis with context-specific empirical findings.

Even at this juncture, it may be helpful to be more specific about the negative corollaries of The General Theory of Second Best. The General Theory of Second Best has the following seven economic-efficiency-related negative corollaries:

1. the fact that "no imperfections in seller competition" is one of the set of Pareto-optimal conditions—which constitutes a set of sufficient conditions for the maximization of economic efficiency—does not justify the conclusion that any choice that reduces the number or magnitude of the imperfections in seller competition in an economy that will still be Pareto-imperfect post-choice will tend to increase economic efficiency on that account;

2. the fact that "no imperfections in buyer competition" is one of the set of Pareto-optimal conditions—which constitutes a set of sufficient conditions for the maximization of economic efficiency—does not justify the conclusion that any choice that reduces the number or magnitude of the imperfections in buyer competition in an economy that will still be Pareto-imperfect post-choice will tend to increase economic efficiency on that account;

3. the fact that "no (real) externalities" is one of the set of Pareto-optimal conditions—which constitutes a set of sufficient conditions for the maximization of economic efficiency—does not justify the conclusion that a choice that reduces the number or magnitude of externalities in an economy that will still be Pareto-imperfect post-choice will tend to increase economic efficiency on that account;

4. the fact that "no taxes on the margin of income" (i.e., no taxes that increase [directly or indirectly] with income) is one of a set of Pareto-optimal conditions—which constitutes a set of sufficient conditions for the maximization of economic efficiency—does not justify the conclusion that a choice that reduces the number or magnitude of taxes

on the margin of income in an economy that will still be Pareto-imperfect post-choice will tend to increase economic efficiency on that account;

5. the fact that "all resource allocators are sovereign" (i.e., know everything they need to know to identify the choices that would best satisfy their preferences) is one of the set of Pareto-optimal conditions—which constitutes a set of sufficient conditions for the maximization of economic efficiency—does not justify the conclusion that choices that will improve the relevant information that resource allocators have in an economy that will still be Pareto-imperfect post-choice will tend to increase economic efficiency on that account;

6. the fact that "each resource allocator would always make the resource-allocating choices that would maximize the extent to which his or her preferences are satisfied if each had all relevant information [that each resource allocator always maximizes])" is one of the set of Pareto-optimal conditions—which constitutes a set of sufficient conditions for the maximization of economic efficiency—does not justify the conclusion that choices that reduce the extent to which resource allocators fail to maximize (given the information that is available to them) in an economy that will still be Pareto-imperfect post-choice will tend to increase economic efficiency on that account; and

7. the fact that "no resource-allocating choice yields a critical amount of buyer surplus (an amount that critically affects the choice that is made)" is one of the set of Pareto-optimal conditions—which constitutes a set of sufficient conditions for the maximization of economic inefficiency—does not justify the conclusion that choices that reduce the frequency or the extent to which buyer surplus is critical in an economy that will still be Pareto-imperfect post-choice will tend to increase economic efficiency on that account.

The economic example focuses on the conventional claim (which is alleged to supply an economic-efficiency rationale for pro-competition policies) that any imperfection that decreases the price competition a seller faces will cause the seller to increase economic inefficiency by choosing not to produce one or more units of the relevant product despite the fact that the production of these units would be economically efficient (and, relatedly, that any policy that increases the price competition a seller faces will cause the seller to decrease economic inefficiency by inducing the seller to increase its unit output of the good in question). Although the economists who make this claim do not specify even the category of use from which the resources used by the

seller that faces imperfect price competition withdraws the resources it uses to produce units of its product, I will assume (as I think they are assuming implicitly) that the resources in question were or would be withdrawn from alternative unit-output-increasing uses (from the production of units of other products). Those who claim that any imperfections in price competition an individual seller faces will cause it to produce too few units of its product from the perspective of economic efficiency assume perfectly plausibly that any seller that faces imperfections in price competition (1) will face a downward-sloping demand curve—i.e., will be operating in a situation in which the successive units it could produce of its product will have progressively-lower dollar values to the successive, usually-different buyers who place the highest dollar-value on the successive units in question—and (2) will not find it profitable to engage in price discrimination—indeed, will find that the most-profitable or least-unprofitable way to price any quantity of its product will be to set the single per-unit price for that product that will result in the relevant quantities being purchased and charge that per-unit price for all units of its product. *Ad arguendo*, I will accept both of these assumptions (though each will be inaccurate in some cases).

Proponents of these claims then point out that (on the above two assumptions) the additional (marginal) revenue that a seller that faces imperfections in price competition would obtain by selling the first (say [$n + 1$]th) unit of its product it finds just unprofitable to sell (the first extra-marginal unit of its product) will be lower than the price for which it could sell that unit since in order to sell the ($n + 1$)th unit at the highest price for which it could be sold, the seller would have to take a lower price on the n units of its product it could have sold for a higher price. Proponents of these claims then (1) assert that the highest price for which any unit of any product could be sold equals the allocative value of that unit (the net dollar gain to all affected parties generated by its being consumed by its buyer as opposed to its being destroyed in some allocatively-costless way) and (2) point out that (on the two additional assumptions previously delineated) the preceding assertion implies that the private benefits that any producer that faces an imperfection in price competition would obtain by producing the first unit of its product it finds unprofitable to produce will be lower than the allocative benefits that the consumption of that unit (once it was produced) would generate.

Although the assumption delineated after (1) in the preceding sentence will not always be correct in an otherwise-Pareto-imperfect economy (in which consumption can generate externalities, buyers can misjudge the dollar value of a good to them, buyers can misestimate the

dollar cost to them of buying a good, buyers may be non-discriminating monopsonists, buyers may fail to maximize [given the information they possess], and taxes may be levied on the sale of products), *ad arguendo* I will ignore this Second-Best-Theory-relevant reality in the text that follows. On the plausible assumption that any seller's production of the first extra-marginal unit of its product would cause the seller to incur an infinitesimally-small loss and the dubious[4] (implicit) assumption that the private additional (marginal) cost the seller would have to incur to produce the first unit of its product it would find unprofitable to sell would equal the allocative cost of its production of that unit (the allocative value that the resources that the production of that unit would "use up" would generate in their alternative employments), the proponents of these claims then point out that the preceding conclusion implies that the decision of any seller that faces an imperfection in price competition *not to produce the first unit of its product it finds (just) unprofitable to produce* is economically inefficient. Proponents point out that, if the relevant marginal private cost equals the relevant marginal allocative cost, the fact that any imperfection in price competition would reduce the private benefits to the producer of producing its first extra-marginal unit of output below the allocative benefits that the consumption of that unit of output would generate would imply that the choice to produce that first extra-marginal unit of output would be not only less profitable than economically efficient but also economically inefficient (would sacrifice allocative benefits that would exceed the allocative cost it would save) despite the fact that it would be infinitesimally profitable (would impose private costs on the producer [the marginal revenue it would cause the prospective producer to sacrifice] that are just below the private benefits it would confer on the producer [the marginal costs it would obviate the producer's incurring]). Proponents of these claims then point out that (on its implicit assumptions) the preceding argument establishes not only that producers that face imperfect price competition will generate economic inefficiency by not producing one or more additional units of their respective products but also, and relatedly, that any policies that would eliminate the imperfection in price competition the relevant sellers faced (without generating any allocative transaction costs or preventing any seller from producing its output efficiently—e.g., from taking advantage of economies of scale) would increase economic efficiency by

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4.   For an explanation of why this assumption is dubious, see the text of this section, starting in the next paragraph.

eliminating the divergence between the marginal revenue (private benefits) the seller could obtain by producing the first extra-marginal unit of its product and the price for which it could sell that unit (the unit's allocative value) by putting the seller in a position in which it could sell the additional unit in question without reducing the price it charged for the other units of the product it sold (by confronting the seller with a horizontal rather than a downward-sloping demand curve).

Second-Best Theory implies that, in a world that contains more Pareto imperfections than a single imperfection in price competition that could be eliminated, the preceding argument would no longer justify the conclusions its proponents claim it warrants—the conclusions that any seller that faces imperfect price competition will produce an economically-inefficiently-low output of its product and the related conclusion that any policy that eliminates an imperfection in seller price competition will increase economic efficiency by causing the seller that originally faced the eliminated imperfection to increase its output to the economically-efficient quantity. Second-Best Theory undermines this argument because it makes clear that, in an economy that contains other imperfections than the individual imperfection in seller price competition that can be eliminated, one cannot assume that the marginal private cost a seller has to incur to produce successive units of its product equals the marginal allocative cost of its doing so.

I will investigate two hypotheticals that illustrate this point. The first assumes that the eliminatable imperfection in seller price competition was not the only imperfection in seller price competition in the relevant economy. If the seller that faced the eliminatable imperfection in price competition would withdraw the resources it would use to produce its first extra-marginal unit of output from the production of units of other goods by non-discriminating producers that also face imperfections in price competition that result in their facing downward-sloping demand curves, these other imperfections in price competition would reduce the marginal cost of the first seller's output below its marginal allocative cost (the allocative value that the resources used to produce the relevant unit of output would generate in their alternative uses) by reducing the marginal revenue these latter sellers would obtain by producing and selling the sacrificed units of output below the allocative value of those units of output (the price for which they could have been sold, on otherwise-Pareto-perfect assumptions). This would, in turn, reduce the private value to these latter sellers of the resources they would have used to produce the sacrificed units of output (a function of the marginal revenue the sellers could have obtained by

selling those sacrificed units of output) below the allocative value those resources would have generated in the latter sellers' employ (a function of the higher-than-marginal-revenue price[s] for which the sacrificed unit[s] of output could have been sold), thereby reducing the private cost of those resources to the first seller (infinitesimally higher than their private value to their alternative user) below the allocative cost of the first seller's using those resources (the allocative value the resources would have generated in their alternative user's employ).

But if the marginal cost of the first unit of output that a seller that faces imperfect price competition finds just unprofitable to produce is lower than its allocative cost, the fact that the private benefits that that seller would have obtained by selling that first additional unit once it was produced would be lower than the allocative benefits that would have been generated by that unit's consumption once it was produced will not guarantee—indeed, will not even create a higher-than-50% probability—that the first seller's production of the first extra-marginal unit of its product would have been economically efficient: when marginal cost is lower than marginal allocative cost, the fact that marginal revenue is lower than marginal allocative value does not make it more likely than not that the profits that would have been generated by the production of an extra-marginal unit (marginal revenue *minus* marginal cost) will be lower than the allocative-efficiency gain that would have been generated by the production of that unit (marginal allocative value *minus* marginal allocative cost). If the good produced by the seller that faces an eliminatable imperfection in seller price competition is product X and the goods from whose production resources are withdrawn to produce product X are goods $Y_1 . . . Y_N$, X will be underproduced relative to $Y_1 . . . Y_N$ from the perspective of economic efficiency in an economy in which the only Pareto imperfections are imperfections in seller price competition if and only if P_X/MC_X exceeds the weighted-average P_Y/MC_Y ratio for goods $Y_1 . . . Y_N$ where the weights assigned to products $Y_1 . . . Y_N$ are proportional to the allocative value of the sacrificed units of $Y_1 . . . Y_N$ respectively. Therefore, in an otherwise-Pareto-perfect economy in which two or more producers face imperfect price competition, one cannot justify the related conclusions that (1) sellers that face imperfections in seller price competition will produce economically-inefficiently-low outputs and (2) policies that eliminate the imperfection in price competition a seller faces will increase economic efficiency by citing the fact that no imperfections in seller price competition is a Pareto-optimal condition.

The same conclusions will be justified when the economy contains

any other type of Pareto imperfection. Assume, for example, that the producer of X that faced an imperfection in seller price competition used a production process to produce X that generated external costs. Since the non-internalization of these external costs will cause the marginal private cost of X to its producer to be lower than the marginal allocative cost of X, the same argument I used to justify the conclusion that, in the absence of further information, one cannot assume that the elimination of an imperfection in seller price competition will increase economic efficiency by inducing the seller in question to increase its unit output when the economy in question contains other imperfections in seller price competition also justifies the conclusion that, in the absence of further information, one cannot assume that the elimination of even the only imperfection in seller price competition in an economy will increase economic efficiency in the above way if the economy also contains an external cost of production.

This Part has focused on the negative implications of The General Theory of Second Best. I hasten to point out one should not exaggerate the significance of these negative implications. The General Theory of Second Best does not imply either that it will never be economically efficient to eliminate or reduce a Pareto imperfection or that it will never be possible or economically efficient for an economic-efficiency analyst to predict that a choice that would reduce or eliminate (or, for that matter increase) a Pareto imperfection would increase economic efficiency on that account. However, The General Theory of Second Best does imply that, to justify any such conclusion, an analyst must make a sound argument that is theoretically sophisticated about the different ways in which the various Pareto imperfections in the system (which could individually cause economic inefficiency in an otherwise-Pareto-perfect economy) interact to cause different categories of economic inefficiency and incorporates the results of *ex ante* economically-efficient research into the magnitudes of the parameters whose salience the theory establishes.

III. THE ECONOMICALLY-EFFICIENT PROTOCOL FOR PREDICTING OR POSTDICTING THE ECONOMIC EFFICIENCY OF A CHOICE

Three general categories of approaches to economic-efficiency analysis can be distinguished:

1. first-best-allocative-efficiency analysis—the category of analysis that most economists use—proceeds on the assumption that the Pareto imperfection that the choice under review targets or is assumed to be

affecting is the only (relevant) Pareto imperfection in the economy;

2. second-best-allocative-efficiency analysis executes perfect theoretical analyses of the causes of all the categories of economic inefficiency whose magnitudes the choice under review did or would affect and the diverse ways in which those causes interact to cause each such category of resource misallocation, collects perfectly accurate data on the pre-choice and post-choice magnitudes of the parameters that determine the amount of each category of resource misallocation the economy in question contains or contained pre-choice and contained or would contain post-choice, and analyzes perfectly the implications of the preceding research for the impact that the choice had/would have on each category of economic inefficiency whose magnitudes it did/would affect; and

3. third-best-allocative-efficiency analysis takes account not only of the possible allocative benefits that all relevant theoretical-research and empirical-research projects would generate but also of the allocative cost of each such project (the allocative cost of the resources that relevant research-projects would consume, any allocative cost they would generate by delaying a related government decision, and any allocative cost the project would generate by requiring the government to make intrinsically-economically-inefficient choices to finance its execution) and executes only those projects that are deemed to be *ex ante* allocatively efficient.

I use the acronym FBLE to reference "first-best-allocative-efficiency" or "first-best allocatively efficient" (an acronym whose use is favored by its resemblance to the word "fable" since FBLE analyses are based on the fable that the target Pareto imperfection is the only [relevant] Pareto imperfection in the system)[5]; I use the acronym SBLE to reference "second-best-allocative-efficiency" or "second-best allocatively efficient" (an acronym whose use is favored by its resemblance to the word "sable" since SBLE analyses would be not only beautiful but prohibitively expensive [if they could be executed]); and I use the acronym TBLE to reference "third-best-allocative-efficiency" or "third-best allocatively efficient" (an acronym whose use is favored by its resemblance to the word "table" since TBLE analysis is the type of analysis that should be brought to the policy-evaluation table).

This Part of the Article will briefly, and therefore crudely, outline the protocol for an economic-efficiency analysis that I think is TBLE. I

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5.   My daughter, Stefanie, has suggested that the acronym FBLE is also appropriate because first-best-allocative-efficiency analyses are "feeble."

will start by defining eleven concepts or sets of concepts that this protocol references.

The first relevant concept is the concept of a category of "resource-use." I distinguish the following five basic categories of resource-uses: (1) unit-output-increasing resource-uses, in which resources are used to increase the output of an existing product (the symbol UO is used to refer both to "unit-output-increasing uses" and to "unit output"); (2) quality-or-variety-increasing-investment-creating resource-uses, in which resources are devoted to creating a superior or additional product-variant, a superior or additional distributive outlet, or additional inventory or capacity (which increase the average speed with which the owner of the created inventory or capacity can supply buyers throughout a fluctuating-demand cycle) (the symbol QV will be used to refer both to "quality-or-variety-increasing" and to "QV-investment-creating uses"); (3) production-process-research-executing resource-uses, in which resources are devoted to discovering alternative production processes whose use would reduce the average total private and/or allocative cost of producing a relevant quantity of an existing product (the symbol PPR is used to refer both to "production-process research" and to "PPR-executing uses"); (4) uses of resources that result from the choice among known production processes that could be employed to produce a relevant quantity of an existing product, including non-innovative, cost-reducing, investment-creating resource-uses (using known technology to construct new plants, to modernize old plants, or to select and train a workforce to reduce average costs of production); and (5) consumption resource-uses (in which final goods are consumed by final consumers).

The second relevant concept is the concept of a (somewhat) arbitrarily-defined portion of product-space, which I reference with the acronym ARDEPPS. I substitute this concept for the conventional concept of a "market" because I believe that there is no non-arbitrary way to define either classical economic markets (which are supposed to be defined to maximize the fulfillment of certain ideal-type assumptions about [1] the competitiveness of products placed within a market and [2] the difference between the competitiveness of any pair of products placed in a given market and the competitiveness of any product in that market with any product not in that market) or antitrust markets (which are supposed to be defined to maximize the contribution that data on market-aggregated parameters can make to the legally-correct resolution of antitrust cases).[6]

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6. For a fuller discussion of the inevitable arbitrariness of market definitions, see RICHARD

The third relevant concept is the concept of a category of "actual allocation of resources." In my (standard) terminology, the expression "resource allocation" refers to the withdrawal of resources from one or more categories of use in one or more specified ARDEPPSes and their devotion to a specified use in a specified ARDEPPS. Thus, an actual resource allocation might involve the creation of a new product-variant (in my terminology, the creation of a QV investment) with some resources withdrawn from UO-increasing uses, some resources withdrawn from alternative QV-investment-creating uses, and some resources withdrawn from PPR-executing uses.

The fourth relevant concept is the concept of a resource-allocation component. Although I acknowledge that most actual resource allocations involve the withdrawal of resources from two or more categories of resource-uses and their devotion to one category of resource-use, for expositional and computational reasons, the distortion-analysis protocol distinguishes and focuses on the following 6 categories of one-category-of-resource-use to one-category-of-resource-use actual-resource-allocation components: (1) UO-to-UO allocations, (2) QV-to-QV allocations, (3) PPR-to-PPR allocations, (4) UO-to-QV or QV-to-UO allocations, (5) PPR-to-QV or QV-to-PPR allocations, and (6) UO-to-PPR or PPR-to-UO allocations.

The fifth relevant concept is the concept of a category of resource misallocation. I distinguish 10 basic categories of resource misallocation (economic inefficiency).

> 1. misallocations of resources between or among alternative unit-output-increasing uses between the production of alternative final products or inputs (inter-ARDEPPS UO-to-UO misallocations between the production of final products or inputs [when the products or inputs in question are distant competitors] and intra-ARDEPPS UO-to-UO misallocations between the production of final products or inputs [when the products or inputs in question are close competitors] and [as I have already indicated] the term "ARDEPPS" is an acronym for a [somewhat] arbitrarily-defined portion of product-space);

> 2. misallocations of resources between or among alternative QV-investment-creating uses (inter-ARDEPPS and intra-ARDEPPS QV-to-QV misallocations);

3. misallocations of resources between or among alternative PPR-executing uses (inter-ARDEPPS and intra-ARDEPPS PPR-to-PPR misallocations);

4. misallocations of resources between unit-output-increasing and QV-investment-creating uses (UO-to-QV or QV-to-UO misallocations);

5. misallocations of resources between PPR-executing and QV-investment-creating uses (PPR-to-QV or QV-to-PPR misallocations);

6. misallocations of resources between PPR-executing and UO-increasing uses (PPR-to-UO or UO-to-PPR misallocations);

7. misallocations of resources between known, alternative production processes (non-research-related "production optimum" misallocations);

8. misallocations of resources that result when a buyer purchases an input or final good from a supplier that is not allocatively-best-placed to supply the buyer—i.e., from a supplier that generated higher marginal or incremental allocative costs to supply the buyer than an alternative supplier of the same input or final good would have had to generate to do so;

9. misallocations of final goods among their potential final consumers that do not derive from any associated poverty and income/wealth inequality (conventional "consumption optimum" misallocations); and

10. misallocations of final goods among their potential final consumers that is generated by the poverty and/or income/wealth inequality that results from the actual allocation of final goods among their potential final consumers (non-conventional "consumption optimum" misallocation).

The sixth set of relevant concepts contains three categories of avoidable costs that choices can affect. The impact of a choice on these allocative costs is relevant to its economic efficiency—indeed, affects its allocative efficiency dollar for dollar: (1) the (non-public-finance-related) allocative transaction costs generated in the relevant economy by both its government and its non-government actors, (2) the risk (and uncertainty) costs that relevant actors incur and the allocative costs that actors generate to reduce the risk costs they bear, and (3) the public-finance-related, economic-efficiency losses the government generates when financing its operations.

The seventh relevant concept is the concept of "the economics-marginal resource allocation in a specified category in a specified ARDEPPS"—the least-profitable but not-unprofitable resource

allocation in that category in that ARDEPPS.

The eighth relevant concept is the concept of a "mathematics-marginal resource allocation"—a resource allocation that is infinitesimally small. Economics-marginal resource allocations may or may not be mathematics-marginal.

The ninth relevant concept is the concept of "the distortion in any private-benefit, private-cost, or profit figure"—the difference between the private figure in question and its allocative counterpart (respectively, the allocative benefit, allocative cost, or economic efficiency of a specified resource-allocating choice).

The tenth relevant concept is the concept of the aggregate percentage-distortion in the profits yielded by a specified economics-marginal resource allocation in a specified ARDEPPS—(the profits yielded by that allocation *minus* the impact of that allocation on economic efficiency) *divided* by the allocative cost of that allocation.

The eleventh and final concept I want to explain at this juncture is the resource-allocation marginal-allocative-product curve for a specified resource-allocation component in a specified ARDEPPS. This curve appears in a diagram whose vertical axis measures dollars (in practice, measures in dollars the allocative product and allocative cost of the successive resource allocations in the specified category in the specified ARDEPPS) and whose horizontal axis measures the total allocative cost of resources devoted to the specified resource allocation in the specified ARDEPPS. The curve indicates the allocative value that would be generated by successive uses of resource measured by their allocative cost when devoted to the category of use specified in the ARDEPPS specified after having been withdrawn from the specified categories of use in specified ARDEPPSes.

The protocol that I think will prove to be the third-best-allocatively-efficient approach to predicting or postdicting the impact of any choice on economic efficiency has three distinguishing features. First, it uses different approaches to analyze the impacts of a choice respectively on (1) inter-ARDEPPS UO-to-UO, inter-ARDEPPS QV-to-QV, inter-ARDEPPS PPR-to-PPR, UO-to-QV or QV-to-UO, QV-to-PPR or PPR-to-QV, and UO-to-PPR or PPR-to-UO misallocation; (2) intra-ARDEPPS UO-to-UO, intra-ARDEPPS QV-to-QV, intra-ARDEPPS PPR-to-PPR misallocation, the misallocation that results when homogeneous final goods or inputs are supplied by higher-allocative-cost rather than lower-allocative-cost suppliers, the misallocation that results when for other reasons producers choose to use a known, higher-allocative-cost rather than a known, lower-allocative-cost production

process, consumption-optimum misallocation that is not generated by the income/wealth inequality in the economy in question, and consumption-optimum misallocation that is generated by income/wealth inequality; and (3) the choice's impacts on the allocative transaction costs generated in the economy in question, the risk and uncertainty costs that individual members of the relevant society bear and the allocative costs they generate to reduce the risk and uncertainty costs they bear, and the amount of economic inefficiency the government generates when financing its operations.

Second, the approach that I think will prove to be TBLE to take to predicting or postdicting the impact of a choice on the six categories of economic inefficiency listed after (1) in the preceding sentence focuses on the choice's predicted impacts on the aggregate percentage-distortions in the profits yielded by the economics-marginal exemplars of the categories of resource allocation associated with each of these categories of economic inefficiency in a TBLE-large, random sample of the economy's ARDEPPSes and on the attributes of the studied ARDEPPSes' relevant resource-allocation, marginal-allocative-product curves between the pre-choice and post-choice total-allocative-cost quantities for the categories of resource allocation in question in the studied ARDEPPSes. The protocol I am recommending focuses on the impacts of choices on the distortions in the profit-figures for these economics-marginal resource allocations because, as we saw in the first section of this Article, (1) negative distortions in such profit-figures will usually imply that, from the perspective of economic efficiency, too few resources have been devoted to the relevant category of resource allocation in the ARDEPPSes in question (that one or more resource allocations in the relevant category were not made in the ARDEPPSes in question because they would have been unprofitable despite the fact that they would have been economically efficient) and (2) positive distortions in such profit-figures will usually imply that, from the perspective of economic efficiency, too many resources have been devoted to the relevant category of resource allocation in the ARDEPPSes in question (that some resource allocations in the relevant category were made in the ARDEPPSes in question because they were profitable despite the fact that they were economically inefficient).

Third, the approach that I think will prove to be TBLE to take to analyzing the economic efficiency of a choice takes account of the fact that theoretical work and empirical work are usually non-perfect and always allocatively costly by instructing the economic-efficiency analyst to proceed by (1) generating initial assessments of the economic

efficiency of the choice under review from a less-than-perfect research base, then (2) analyzing the *ex ante* allocative efficiency of doing additional research on specific issues and doing the research deemed to be *ex ante* economically efficient, (3) continuing this process until no additional research is concluded to be *ex ante* economically efficient, and (4) announcing the conclusion that the research done warrants in a paper that describes in detail the protocol that was followed and the intermediate conclusions that were generated. I recognize that this account does not address the infinite-regress problem that attaches to any such maximizing analysis: a problem posed by the question whether an analyst who is trying to maximize the economic efficiency of his or her efforts should make an economically-efficient attempt to consider whether he or she should think about whether to think about whether to think about whether to think about whether to think about . . . the economic efficiency of doing addition research of a specific kind on a specific issue.

The protocol for the economic-efficiency analysis I think would be TBLE contains the following 29 steps (take heart—that is still 30 steps fewer than the movie):

1. define inter-ARDEPPS UO-to-UO, inter-ARDEPPS QV-to-QV, inter-ARDEPPS PPR-to-PPR, UO-to-QV or QV-to-UO, PPR-to-QV or QV-to-PPR, and UO-to-PPR or PPR-to-UO resource misallocation;

2. analyze the way in which a relevant exemplar of each type of Pareto imperfection would tend to cause each of the six categories of economic inefficiency defined in Step (1) in an otherwise-Pareto-perfect economy by distorting the profits generated by the economics-marginal resource allocations with which each of these categories of resource misallocation is associated and/or by causing a relevant resource allocator to make a privately-unprofitable resource-allocating choice of the relevant kind;

3. divide up the economy's product-space into the set of ARDEPPSes that are economically efficient to distinguish and choose a random, third-best-economically-efficiently-large sample of those ARDEPPSes on which to focus the analysis of the impact of the choice on the categories of economic inefficiency defined in Step (1);

4. analyze the different ways in which all exemplars of all types of Pareto imperfections interact to distort the profitability of the economics-marginal resource allocations associated respectively with each of the six Step-(1)-defined categories of economic inefficiency— *inter alia*, create mathematical formulas that indicate the different ways in which the various Pareto imperfections interact to generate

distortions in the profits yielded by the economics-marginal exemplars in any defined ARDEPPS of the various categories of resource allocation with which each of these six categories of resource misallocation is associated;

5. assuming that the relevant resource-allocating decisions maximize the profits of the relevant resource-allocating principals, analyze the relationship between (A) the amount of misallocation in any of the six categories defined in Step (1) that a given ARDEPPS contains and (B)(i) the aggregate distortion in the profits yielded by the economics-marginal exemplars of the associated category of resource allocations and (ii) the attributes of the relevant ARDEPPS' resource-allocation marginal-allocative-product curve (MLP$_{.../...}$) between the quantity of resources measured by their allocative cost that would be allocatively efficient to devote to the relevant category of resource allocation in the relevant ARDEPPS and the quantity of resources actually devoted to that category of resource allocation in the ARDEPPS in question;

6. analyze the relationship between the errors that resource allocators in any ARDEPPS commit by choosing to effectuate unprofitable extra-marginal resource allocations in any Step-(1)-defined category and by choosing not to effectuate profitable economics-marginal and economics-intra-marginal resource allocations in any Step-(1)-defined category and the amount of resource misallocation in the relevant category the ARDEPPS in question contains, given the aggregate distortion in the profits that would have been yielded by its economics-marginal resource allocation in the relevant category and the attributes of its MLP$_{.../...}$ curve over the relevant range of relevant-resource-allocation quantities;

7. combine (A) existing data on and parameter-guesstimates of the number and/or magnitude of the Pareto imperfections in the relevant economy pre-choice that affect the aggregate distortions in the profits yielded by the economics-marginal resource allocations in the Step-(1)-defined categories in the ARDEPPSes to be studied and (B) the mathematical formulas developed in Step (4) to generate estimates/guesstimates of the pre-choice aggregate distortions in the profits yielded by the economics-marginal resource allocations in the six categories defined in Step (1) in the ARDEPPSes studied;

8. estimate or guesstimate (A) the impacts of the choice on the magnitudes of the Pareto imperfections and other factors that determine the aggregate distortion in the profits yielded by the economics-marginal resource allocations in the Step-(1)-defined categories in the ARDEPPSes to be studied and derivatively (B) the impact of the choice on the aggregate distortions in the profits yielded

by (the usually-changing) economics-marginal resource allocations in each Step-(1)-defined category in each ARDEPPS to be studied;

9. estimate or guesstimate the attributes of the pre-choice $MLP_{\perp/\perp}$ curves for each Step-(1)-defined category of resource allocation in each ARDEPPS to be studied over the range of total allocative cost figures associated with the pre-choice and post-choice aggregate-profit-distortion estimates;

10. on the assumption (that will be relaxed below) that the choice under consideration will not alter the attributes of any relevant $MLP_{\perp/\perp}$ curve over any relevant range by increasing the organizational allocative efficiency (proficiency) of the firms that execute the UO-increasing, QV-creating, or PPR-executing resource-uses whose allocative products such curves indicate, derive an estimate or guesstimate of the impact of the choice on the amounts of each Step-(1)-defined category of resource misallocation that the studied ARDEPPSes contain from Step (7)'s estimates or guesstimates of the pre-choice magnitudes of the aggregate distortions in the profits yielded by the economics-marginal resource allocation in each Step-(1)-defined category in each studied ARDEPPS, Step (8)'s estimates or guesstimates of the impact of the choice on those aggregate-profit-distortion figures, and Step (9)'s estimates or guesstimates of the attributes of the pre-choice $MLP_{\perp/\perp}$ curves over the relevant ranges;

11. devote a TBLE amount of resources to considering the possibility that the choice whose economic efficiency is at issue may have altered the attributes of one or more relevant $MLP_{\perp/\perp}$ curves in some way other than by increasing the organizational allocative proficiency of the firms that execute the relevant resource-uses (e.g., by changing the distribution of income/wealth in the relevant society) and, if (contrary to my suspicions) it proves to be TBLE to consider this possibility to any significant extent, estimate or guesstimate the impacts that the choice has on relevant segments of relevant $MLP_{\perp/\perp}$ curves and the impacts the choice has on the amount of Step-(1)-listed categories of resource misallocation the studied ARDEPPSes contain on this account—i.e., generate new estimates of the choice's impact on the amounts of each Step-(1)-defined category of resource misallocation the studied ARDEPPSes contain that take account of the choice's impacts on the studied ARDEPPSes' relevant $MLP_{\perp/\perp}$ curves;

12. estimate or guesstimate the total amount of resources measured by their allocative cost that the economy devoted to each Step-(1)-defined category of resource allocation pre-choice;

13. estimate or guesstimate the total amount of resources measured by their allocative cost the studied ARDEPPSes devoted to each Step-(1)-

defined category of resource allocation pre-choice;

14. on the assumption that the choice would not affect either the organizational allocative proficiency of any relevant resource-user or the totals calculated in Steps (12) and (13), estimate or guesstimate the impact of the choice on the total amount of each Step-(1)-defined category of resource misallocation the relevant economy contains by multiplying the studied-ARDEPPS estimates/guesstimates of Step (11) by the ratio of the relevant economy-wide total-allocative-cost figure estimated in Step (12) to the studied-ARDEPPS total-allocative-cost figure estimated in Step (13);

15. estimate or guesstimate the impact that the choice would have on the total amount of Step-(1)-defined categories of resource misallocation that the economy would contain if the choice would not affect the organizational allocative efficiency of any relevant resource-user or the total allocative cost of the resource allocations associated with any Step-(1)-defined category of resource misallocation either in any studied ARDEPPS or in the economy as a whole by summing the six separate estimates or guesstimates generated in Step (14);

16. devote a TBLE amount of resources to investigating the possible impact of the choice on the total allocative cost of the resources devoted to each category of resource allocation associated with a Step-(1)-defined category of resource misallocation both in the studied ARDEPPSes and in the economy as a whole and, if the conclusion is reached that the choice would or did affect the quantities in question, revise the estimates/guesstimates of Step (14) and (15) to take these impacts into account—i.e., generate new estimates or guesstimates of the choice's impact on the total amount of Step-(1)-defined misallocation the economy contains that take the Step-(16)-referenced possibility into account;

17. define intra-ARDEPPS UO-to-UO misallocation, intra-ARDEPPS QV-to-QV misallocation, intra-ARDEPPS PPR-to-PPR misallocation, the misallocation generated when buyers of homogeneous inputs or final products purchase them from suppliers that are not allocatively-best-placed to supply them with the inputs or final products in question, the misallocation generated when (for other reasons) more-allocatively-costly, known production processes are used rather than less-allocatively-costly, known production processes, and consumption-optimum misallocation that is not generated by any poverty or income/wealth inequality associated with the allocation of final goods among their potential final consumers;

18. analyze the Pareto imperfections or categories of conduct that would cause each of the Step-(17)-listed categories of resource

misallocation in an otherwise-Pareto-perfect economy if no choice could deter a producer from employing or enable a producer to employ a privately-cheaper, known production process that was also allocatively cheaper, could deter a potential QV investor from creating or enable a potential QV investor to create a more-profitable QV investment, or could deter a potential production-process researcher from executing or enable a potential production-process researcher to execute a more-profitable and more-allocatively efficient PPR project;[7]

19. (A) in what I contestably take to be the vast majority of cases— *viz.*, cases in which only one of the potential causes of any of the categories of resource misallocation listed in Step (17) is operative to a significant extent, predict or postdict the impact of the choice under review on the amount of that type of misallocation the relevant economy contains, assuming that it does not have any of the deterring or enabling effects referenced in Steps (17) and (18), by using existing data to estimate or by guesstimating the pre-choice incidence of the operative cause of the category of misallocation in question, devoting an *ex-ante*-allocatively-efficient amount of resources to estimating the impact of the choice under review on the incidence of that cause, and devoting an *ex-ante*-allocatively-efficient amount of resources to estimating the impact that the choice-generated change in the incidence of the relevant cause would have on the amount of the relevant category of resource misallocation the economy in question would contain if it were otherwise-Pareto-perfect; and (B) in those cases in which two or more of the possible causes of one of the Step-(17)-listed categories of resource misallocation are present to a significant degree, predict or postdict the impact of the choice under review on the amount of resource misallocation the relevant economy contains by executing an analysis (that I will not fully outline here) that takes account of the way in which the different types of Pareto imperfections that would cause each of these categories of resource misallocation in an otherwise-Pareto-perfect economy that are present to a significant degree in the relevant economy interact to generate the relevant

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7. For example, (1) explain how even on the above assumptions in an otherwise-Pareto-perfect economy intra-ARDEPPS UO-to-UO misallocation and the misallocation generated by the supply of homogeneous inputs or final products by allocatively-higher-cost suppliers would be generated by predatory pricing, retaliatory pricing, external-cost-of-production differences, or relevant buyer errors, (2) explain why fair-rate-of-return public-utility-pricing regulation will tend to cause the regulated firm to use a known, higher-private-cost and presumptively-higher-allocative-cost production process that is more-capital-intensive rather than a known, less-capital-intensive production process that is less-privately-and-presumptively-less-allocatively expensive, and (3) explain how in an otherwise-Pareto-perfect economy consumption-optimum misallocation that is not generated by poverty or income/wealth inequality would be caused by price discrimination, inter-consumer differences in consumption externalities, and relevant consumer errors.

category of resource misallocation by distorting the profitability of the relevant resource-allocating choices and by leading the relevant resource allocators to make unprofitable resource-allocating choices and estimating or guesstimating both the pre-choice incidence of the causes of each of these categories of resource misallocation and the impacts of the choice under review on the incidence of the causes of each such category of resource misallocation;

20. estimate or guesstimate the impact that a choice (say, a business choice to execute or not to execute a merger, acquisition, or joint venture or to grow internally or a government choice to prohibit/tax or allow/subsidize a class of private-business choices to execute mergers, acquisitions, joint ventures or to grow internally) has on the organizational allocative efficiency (proficiency) of one or more firms by permitting or precluding them from combining assets that are complementary for scale or non-scale reasons and/or by enabling two or more firms to reduce the extent to which their QV investments and/or PPR projects are more duplicative than is jointly profitable and economically efficient: (A) when the choice in question would reduce the private costs that a relevant firm or firms would have to incur to produce its/their pre-choice outputs and/or additional units of a particular good it or they are already producing, estimate or guesstimate (i) the frequency with which the choice would have this effect, (ii) the private-cost savings the choice would enable the firm or firms in question to obtain on its/their pre-choice outputs, (iii) the ratio of the associated allocative-cost savings to the private-cost savings in question,[8] (iv) the quantity of additional output the choice would induce the firm or firms in question to produce and the economic efficiency of its/their producing the extra units in question;[9] (B) when

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8. This ratio will depend on the percentages of the saved resources that would otherwise have been withdrawn from UO-increasing, QV-creating, and PPR-executing uses and the ratio of the allocative value that the saved resources would have generated in those alternative uses to the private benefits they would have generated for their alternative employers.

9. The impact that the production of the extra units in question will have on economic efficiency will depend on its impact on the pre-choice and post-choice difference between the ratios of each relevant product's P^*/MC^* ratio and the weighted-average counterpart ratio(s) for the products $Z_1 . . . Z_N$ whose sales would be reduced by the output-expansion for the product in question where (1) the asterisks attached to the Ps indicate that the P^* figures have been adjusted to make each P^* figure equal the marginal allocative value (MLV) of the good in question (*i.e.*, to take account of the fact that P may not equal MLV in a Pareto-imperfect economy), (2) the asterisks attached to the MCs indicate that each MC figure has been adjusted to produce MC^* figures whose ratio indicates the marginal rate at which the relevant economy can transform the sacrificed bundle of $Z_1 . . . Z_N$ products into the marginal unit of X (an adjustment required by the fact that the associated MC ratio will equal the relevant marginal rate of transformation only fortuitously in a Pareto-imperfect economy), and (3) the weighted –average P^*/MC^* ratio for $Z_1 . . . Z_N$ is created by giving weights to the P^*/MC^* ratios for the individual products in product-set $Z_1 . . . Z_N$ that are proportionate to the allocative values of the sacrificed quantities of the respective products in

the choice in question would increase the allocative efficiency of the QV investments that a relevant firm or firms could create by increasing the intrinsic efficiency of its or their individual QV investments, estimate or guesstimate (i) the frequency with which the choice would induce the firm or firms in question to substitute one or more intrinsically-more-profitable QV investments for the same quantity of intrinsically-less-profitable individual QV investments, (ii) the Pareto-imperfections-generated distortion in the profits yielded by any such QV-investment substitution(s), (iii) the frequency with which the choice would induce the firm(s) whose organizational economic efficiency it increased or one of its/their rivals to make a QV investment when no QV investment would otherwise have been made by increasing the intrinsic profitability of the additional QV investment the figure in question could make and thereby either leading the firm in question to make an additional QV investment or inducing a rival to make a QV investment by creating a situation in which the firm would invest if the rival did not, (iv) the profits yielded by any such induced QV investment and the distortion in those profits (the economic efficiency of any additional QV investments the choice induced to be made),[10] (v) the frequency with which the choice would deter the firm or firms in question or one of its/their rivals from making a QV investment by creating a situation in which the firm or firms and the rival realize that if one of them makes a QV investment the other will find it profitable to respond by making a QV investment as well, and (vi) the amount by which the QV investment that was deterred would have increased or decreased economic efficiency;[11] (C) when the choice in question would enable two or more firms that were separate at least pre-choice to reduce the extent to which their QV investments were jointly-unprofitably-duplicative and (presumptively) economic-inefficiently-duplicative, estimate or guesstimate (i) the profits the choice would enable the firms in question to realize by substituting less-duplicative for more-duplicative QV investments (controlling for the quantity of resources they devote to QV investment), (ii) the Pareto-imperfection-generated distortion in those profits, (iii) whether and the extent to which, by increasing their ability to make less-duplicative QV investments, the choice makes it profitable for the firms in question to make additional QV investments, (iv) the profits

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product-set $Z_1 . . . Z_N$.

10. The sum of the impacts of those investments on inter-ARDEPPS QV-to-QV misallocation, UO-to-QV or QV-to-UO misallocation, and PPR-to-QV or QV-to-PPR misallocation.

11. The sum of the impacts of the elimination of the QV investment in question on inter-ARDEPPS QV-to-QV misallocation, UO-to-QV or QV-to-UO misallocation, and PPR-to-QV or QV-to-PPR misallocation.

the firms in question realize on any additional QV investments the choice induces them to make and the Pareto-imperfection-generated distortion in those profits (the economic efficiency of any induced additional QV investments[12]), (v) whether and the extent to which, by increasing their ability to make less-duplicative QV investments, the choice makes it profitable for the firms in question to reduce the amount of QV investments they make in the relevant area of product-space, and (vi) the profits the firms in question realize by reducing the amount of QV investments they make in the relevant area of product-space and the Pareto-imperfection-generated distortion in those profits (the effect of the QV-investment reduction on economic efficiency);[13] (D) when the choice in question would increase the allocative efficiency of the PPR that a relevant firm or firms could execute by increasing the intrinsic allocative efficiency of the individual PPR projects it/they execute, estimate or guesstimate the parameters, sets of parameters, and economic-efficiency effects that are counterparts to the six listed after "20(B)" for the counterpart QV-investment-related possibility, and (E) when the choice in question would increase the allocative efficiency of the set of PPR projects one or more firms execute with a given amount of resources measured by their allocative cost by reducing the extent to which the PPR projects it or they execute are jointly-unprofitably-duplicative and presumptively economic-inefficiently-duplicative and when the choice in question either induces one or more firms to execute additional PPR projects or deters it or them from allocating as many resources to PPR as it or they would otherwise have done, estimate or guesstimate the parameters, sets of parameters, and economic-efficiency effects that are counterparts to those listed after "20(C)" for the QV-investment-related counterpart analysis;

21. estimate or guesstimate the impact of the choice under review on the amount of consumption-optimum misallocation the relevant economy contains because of the poverty and income/wealth inequality associated with its allocation of final goods among their potential final consumers by estimating or guesstimating (A) the poverty and income/wealth inequality present in the relevant economy pre-choice, (B) the impact of the choice on the extent of poverty and income/wealth inequality on the society in question, and (C) the extent to which the choice-generated changes in poverty and income/wealth

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12. The sum of the impacts of the induced QV investments on inter-ARDEPPS QV-to-QV misallocation, UO-to-QV or QV-to-UO misallocation, and PPR-to-QV or QV-to-PPR misallocation.

13. The sum of the impacts that the eliminated QV investment originally had on inter-ARDEPPS QV-to-QV misallocation, UO-to-QV or QV-to-UO misallocation, and PPR-to-QV or QV-to-PPR misallocation.

inequality will affect the magnitudes of the seven categories of poverty-and/or-income/wealth-inequality-generated misallocation that will be identified in the final paragraph of Part IV of this Article (the paragraph that immediately precedes its Conclusion);

22. estimate or guesstimate the economic-efficiency effect of the impact that the choice under review will have by generating fiscal effects that cause the government to make decisions that alter economic efficiency: (A) estimate or guesstimate the fiscal impact of the choice under review (its impact on the tax revenues the relevant government collects, the profits the relevant government makes by selling goods and services conventionally produced by non-government actors, the fees it collects for providing what are conventionally government-services [e.g., court fees], the private transaction costs it incurs to devise and pass legislative and administrative regulations and to implement such laws and regulations through the Executive Branch [through administrative agencies, police, prosecutorial offices, prison systems, and parole-related institutions], and the private transaction costs the government incurs to operate its courts); and (B) estimate or guesstimate the economic efficiency of the decisions that the choice under review causes the relevant government to make by altering its fiscal position—(i) if the analyst concludes that the choice under review will worsen the government's fiscal position, (a) estimate or guesstimate the extents to which the government will respond to this reality by raising tax-rates or imposing new taxes, by raising the prices it charges for goods and services, by printing money or selling bonds to "finance" the relevant deficit, or by eliminating other expenditures and (b) analyze the economic-efficiency effects of these government responses, and (ii) if the analyst concludes that the choice under review will improve the government's fiscal position, (a) estimate or guesstimate the extents to which the government will respond to this reality by lowering tax-rates or eliminating some taxes, lowering the prices it charges for goods and services, destroying some of the money it possesses or retiring some government debt, or making other expenditures and (b) analyzing the economic efficiency of each of these responses;

23. estimate or guesstimate the impact that the choice will have on the allocative transaction costs generated in the economy that were not counted as an allocative cost in the previously-executed economic-efficiency predictions or postdictions: (A) the additional allocative transaction costs that a government choice to devise and pass a policy caused or would cause the government to generate itself and the additional allocative transaction costs that a government choice to implement a policy (say, enforce a law or process a transfer-claim)

caused or would cause the government to generate, the perpetrators to generate (to defend themselves if they were being prosecuted or subjected to an administrative hearing or to conceal their illegal activity or to pursue a transfer-claim), victims to generate to obtain redress or compensation, and those who think they are or may be eligible for government transfers to generate to apply for those transfers or (B) the allocative-transaction-cost reductions that a government choice to pass or implement a law or regulation would generate by deterring potential violators from engaging in allocative-transaction-costly conduct and by obviating the potential victims of the deterred conduct making allocative-transaction-costly moves to reduce their vulnerability to such conduct.

24. estimate or guesstimate the impact that the choice under review had or would have on the risk and uncertainty costs that relevant individuals bear (which are allocative as well as private costs) and on the allocative cost of the risk-and-uncertainty-cost-reduction moves that individuals and organizations make;

25. add together the estimates and/or guesstimates of the impacts of the choice under review on the amounts of all categories of resource misallocation, on the amount of misallocation the government's related fiscal decisions generate, on those of the allocative transaction costs generated in the economy that were not previously counted, on the risk and uncertainty costs borne by relevant individuals, and on the allocative cost of the risk-and-uncertainty-cost-avoidance moves made by relevant individuals and organizations to generate an initial estimate of the economic efficiency of the choice under review;

26. assess the *ex ante* economic efficiency of doing further theoretical research and additional empirical research into the magnitudes of the parameters whose relevance to the economic efficiency of the choice under review theory has established: estimate (A) the allocative cost of withdrawing from their alternative uses the resources that would be devoted to the additional research projects that could be executed, any allocative cost any additional research would generate by delaying the relevant choice/decision, and any net allocative costs the government would generate to finance the research expenditures in question; (B) the allocative benefits that each possible research-project would generate—(i) the probability that the information that each possible additional research project would provide would critically affect the analyst's assessment of the economic efficiency of the choice under review *times* the allocative-efficiency gain that that information would generate if it would critically affect the analyst's conclusion about whether the choice under review was/would be economically efficient (on the naïve assumption that the decision whether to make any

relevant choice would be completely determined by the choice's predicted economic efficiency, the economic-efficiency gain that would be generated by substituting the choice the additional research would cause to be made for the choice that would otherwise have been made [*minus* the allocative cost of revising the choice that would otherwise have been made]) *plus* (ii) the allocative benefits the relevant research-project would yield by increasing the accuracy of the estimates or guesstimates of the economic efficiency of other choices, and relatedly (C) the difference between the allocative-benefit and allocative-cost estimates in question (i.e., the *ex ante* allocative efficiency of each possible additional research project);

27. execute the additional research projects estimated to be *ex ante* economically efficient;

28. repeat Steps (26) and (27) until no additional research project is found to be *ex ante* economically efficient; and

29. generate a final estimate of the economic efficiency of the choice under review from the results of all the theoretical and empirical research that was available or was executed for the purpose of assessing the economic efficiency of the choice under review and guesstimates of the magnitudes of those parameters that have not been investigated sufficiently to be estimated and publish the relevant economic-efficiency conclusion together with a detailed account of the analyses that generated it.

I anticipate that even those who are willing to admit that (what should I say?) my protocol is thorough (exhaustive and exhausting?) and perhaps even clever will dismiss it as impracticable. I have three responses. First, it is essential to recognize that I am not proposing that economic-efficiency analysts execute all the steps in this protocol perfectly or even as well as they could if one ignored the allocative cost of any such efforts; I am proposing that economic-efficiency analysts execute the protocol to a third-best-allocatively-efficient extent. Indeed, the previous sentence is somewhat miswritten in that my account of the protocol's various relevant steps includes instructions that they be executed to a TBLE extent. Second, a self-serving assertion: I am confident that, in virtually all situations, some more-or-less-refined variant of this protocol will be third-best allocatively efficient—that the use of some variant of the protocol will increase economic efficiency if public choices are based to any insignificant degree on the economic-efficiency conclusions it generates. Third, there is no justifiable alternative to this protocol (or to a version of this protocol that has been improved by further work). No-one has developed an alternative

protocol for predicting or postdicting the economic efficiency of a choice that responds defensibly to The General Theory of Second Best, and, I submit, no defensible alternative can be developed. Only one defensible course of action is available to economists and others who reject this protocol: admit that nothing reliable can be said about the economic efficiency of choices and recommend that choices be evaluated exclusively on such other grounds as their impact or distributive and/or corrective justice and/or the moral defensibility of the decision-procedure through which they were made.

IV. THE ECONOMIC EFFICIENCY OF TAXING THOSE WHO ARE BETTER-OFF THAN THE AVERAGE MEMBER OF THE RELEVANT SOCIETY TO FINANCE REDISTRIBUTIONS THAT REDUCE POVERTY AND/OR INCOME/WEALTH INEQUALITY

Almost regardless of the distributive norm to which they individually subscribe, most economists claim that a trade-off must be made between equality and economic efficiency.[14] I think that this conclusion is certainly contestable and probably wrong. Because I suspect that this issue is of more interest to the probable readers of this Symposium than are the fairly-technical analyses of Second-Best Theory and its implications that the rest of this Article has executed, I have decided to close this Article by analyzing the allegation that a trade-off must be made between equality and economic efficiency despite the fact that Second-Best Theory plays a relatively-small role in the relevant analysis.

The traditional argument for the equality/economic-efficiency trade-off is first-best:

> 1. in an otherwise-Pareto-perfect economy, the taxes on the margin of earned income that would be levied to finance any transfers to the poor would misallocate resources by reducing the private benefit from supplying market labor (the net wage) below the allocative benefits the relevant labor would supply (which, on otherwise-Pareto-perfect assumptions, would equal the gross [before-tax] wage that workers would be paid), thereby causing potential suppliers of market labor to allocate from the perspective of economic efficiency too much time to the supply of do-it-yourself labor and the "production" of leisure and not enough time to the supply of market labor;
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> 2. in an otherwise-Pareto-perfect economy, the taxes on the margin of

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14.   *See, e.g.*, ARTHUR M. OKUN, EQUALITY AND EFFICIENCY: THE BIG TRADEOFF (The Brookings Institution, 1975).

unearned income that would be levied to finance any transfers to the poor would misallocate resources by reducing the private benefits from saving and investing (the net private returns to investment) below the allocative benefits that investment generates (on otherwise-Pareto-perfect assumptions, the gross [before tax] returns to investment), thereby causing potential investors to misallocate resources both by saving and investing less than would be economically efficient and by supplying less market labor than would be economically efficient (to the extent that part of the private benefits from supplying such labor consists of the returns a worker can earn by saving and investing his or her wages); and

3. in an otherwise-Pareto-perfect economy, those transfers to the poor or to individuals with lower-than-societal-weighted-average income and wealth that increase when their income and wealth decrease or that increase with their illnesses and disabilities will tend to cause economic inefficiency by deterring their potential recipients from supplying economically-efficient market labor and from making economically-efficient decisions to save and invest and by inducing their potential recipients to make economically-inefficient general consumption, life-style, labor, and medical-care-consumption choices that increase the extent to which they suffer illnesses and disabilities that result in their receiving government transfers.

All these arguments can be criticized for ignoring the relevance of the other Pareto imperfections that our economy contains. However, with minor exceptions, I think that even in our actual, highly-Pareto-imperfect economy the redistributive policies whose economic efficiency these first-best arguments call into question do cause the categories of economic inefficiency such arguments are incorrectly used to "demonstrate" their cause.

The reason why the standard economic claim that equality must be traded off against economic efficiency is at a minimum contestable and, I believe, wrong is not that the argument for that claim is first-best (ignores The General Theory of Second Best) but that it ignores the fact that poverty and/or income/wealth inequality generates economic inefficiency in at least seven ways. More specifically, the standard claim that equality must be traded off against efficiency is wrong because it ignores the fact that redistributions that reduce poverty and income/wealth inequality will increase economic efficiency by reducing the amount of economic inefficiency generated in the relevant economy because the poverty/wealth-income-inequality it contains (1) increases the amount of misallocation the economy generates because economically-efficient investments in the human capital of children and

adults are not made; (2) increases the amount of misallocation that consumption choices generate because it is advantageous for individuals when they are poor to make external-cost-generating consumption choices (e.g., to buy cheap, external-cost-generating cars and rent cheap, external-cost-generating housing units) whose consumption by them is economically inefficient); (3) increases the amount of misallocation generated because the relevant economy's members make privately-disadvantageous consumption choices that are economically inefficient—i.e., because (A) by damaging them neurologically (by affecting their mothers' nutrition, physical health, and psychological state when they are *in utero*) and by reducing their preparedness for schooling and the quality of the education they receive both inside and outside schools, the poverty of the poor increases both the frequency with which the individuals who are poor fail to understand the attributes of products and their full cost to them and the frequency with which they do their math wrong or make consumption choices unthinkingly and (B) by increasing their frustration and unhappiness, the poverty of individuals who are poor leads them to discount future benefits too highly from the perspective of their own lifetime welfare; (4) increases the amount of misallocation that poverty causes by inducing individuals who are poor to make economically-inefficient decisions to perform dangerous, lawful labor in all the ways that it causes poor individuals to make economically-inefficient consumption-decisions that are not in their interest and, in a society in which poor individuals who have been injured at work or their families receive various types of government transfers for which their non-poor counterparts would not be eligible, by rendering economically-inefficient decisions to perform dangerous lawful labor profitable for those who make them or for their families; (5) increases the amount of misallocation that the people who are poor or have significantly less income and wealth than does the average participant in the relevant economy generate by engaging in economically-inefficient criminal activities, by making them less concerned about the impact of their criminal choices on their victims (by alienating them), by reducing the difference between the attractiveness of life in prison and life without successful crime outside prison, by causing them to use too high a discount rate to calculate the present value of their future welfare, and by causing them to be too optimistic about the profitability of crime for reasons other than the discount rate they apply to their future welfare; (6) reduces the political influence of the individuals who are poor or have lower-than-average income/wealth below the political influence of individuals who are not poor or who

have higher-than-average income/wealth and thereby increases the amount of economic inefficiency the government of the relevant society generates because its choices are based on a calculation that places a lower weight on the average dollar gained or lost by the individuals who are absolutely or relatively poor than on the average dollar gained or lost by the individuals who are not absolutely or relatively poor; and hopefully (7) increases the economic inefficiency the economy generates because its distribution of income and wealth dis-serves (on balance) the "external preferences" of the members of and participants in the society in question (their non-parochial preferences for the resources and opportunities that others have).

V. CONCLUSION

The General Theory of Second Best demonstrates that, in a situation in which one or more members of a set of sufficient conditions for the achievement of an optimum cannot or will not be fulfilled, there is no general reason to believe that choices that increase the extent to which the other members of the relevant set of sufficient conditions are fulfilled will even tend on that account to yield an improvement. In economics and Law & Economics, the optimum that is usually in play is maximizing economic efficiency, the relevant set of sufficient conditions for the maximization of economic efficiency is the set of Pareto-optimal conditions, and the basic negative corollary of The General Theory of Second Best is that the conventional economic-efficiency argument for increasing seller competition, decreasing monopsony, reducing externalities, lowering taxes on the margin of income, improving the product-attribute, product-performance, and full-product-purchasing-cost information available to buyers, and increasing the extent to which resource allocators make the decisions that would best satisfy their preferences if they were perfectly informed cannot bear scrutiny because it assumes incorrectly, in contravention of The General Theory of Second Best, that the fact that no imperfection in seller competition, no monopsony, no externalities, no taxes on the margin of income, resource-allocator sovereignty, and resource-allocator maximization are Pareto-optimal conditions implies that, even in our inevitably-Pareto-imperfect economy, choices that increase the extent to which each or all of these conditions is/are fulfilled will on that account increase economic efficiency.

This Article delineates, explains, and illustrates The General Theory of Second Best, explains and outlines the protocol for economic-

efficiency prediction and postdiction that I think responds economically efficiently to The General Theory of Second Best, and explains why, notwithstanding the consensus among economists to the contrary, tax/redistribution policies that reduce poverty and inequality are likely to increase economic efficiency.