LAW AND ECONOMICS FALLACIES: WHAT MODERN ECONOMICS REALLY SAYS ABOUT THE DEFINITION OF EFFICIENCY AND THE MEASUREMENT OF WELFARE

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Abstract

The fundamental originating principle of law and economics ("L&E") is that legal decisions should be (and are) based on maximizing efficiency. But L&E proponents do not define "efficiency" as Pareto Efficiency—the way agreed to by most economists. A Pareto optimal condition is obtained when no one can be made better off without making someone worse off. Pareto Improvements are win-win changes where no losers exist. In the judicial system, however, there are always winners and losers, because under Article III § 2 of the Constitution a legal case does not exist unless there is a justiciable "case or controversy" in need of resolution. Unable to use Pareto Efficiency, L&E scholars have been forced to adopt alternative definitions of efficiency. Most L&E scholars claim to define "efficiency" based on the work of Kaldor and Hicks, but (perhaps unwittingly) instead use a definition of "efficiency" derived from the 19th century idea of consumer surplus, which encompasses L&E notions such as "wealth maximization," and "consumer welfare" in antitrust. Neither of these alternative definitions is viable, however. Outside of L&E, the Kaldor-Hicks approach has long been recognized to be riddled with logical inconsistencies and ethical failures, and the surplus approach is even more deficient. Remarkably, virtually none of the numerous L&E textbooks even hint at such problems. Critically, all definitions of efficiency improvements in L&E are biased in favor of wealthy individuals or firms, because they are dependent on the status quo ante distribution of assets. Many L&E practitioners treat efficiency improvements instead as being objectively good, an error revealing that L&E is primarily motivated by its neoliberal policy agenda. This article makes three contributions to the L&E literature: (1) it explains that the Kaldor Test is different from the Hicks Test, and explains that this difference generates serious obstacles to using the "Potential Pareto" approach to identify good public policy; (2) it shows that antitrust generally does not actually use the Kaldor-Hicks approaches, but rather the older approach of Alfred Marshall's consumer surplus, and shows what is problematic about that approach; and (3) it shows that most L&E textbooks discuss none of the many problems of making social decisions using "Potential Pareto" or consumer surplus criteria, evasion made possible by teaching the criteria in superficial ways.

I. INTRODUCTION

The mantra of the Law and Economics movement ("L&E") is that economic efficiency is and should be the sole basis of jurisprudence. However, in economics, there are several definitions of efficiency. Pareto Optimality, the most widely accepted definition of efficiency, is inapplicable to legal disputes. So, L&E scholars eschewed that definition of efficiency, and turned to others that would allow L&E scholars to weigh in on economic policy. But these definitions are also unsuited for legal analysis, or any other kind of analysis, in the minds of quite a few economists, including specialists in welfare economics. This paper exposes the foundational fallacies of the L&E project and thereby reveals what it is and, more importantly, what it is not. What it is not is a functional analytical construct for resolving legal disputes. What it is, is an apologist's tool justifying outcomes that enhance the position of the economically powerful—irrespective of any particular practitioner's or scholar's intent.

Part II traces the origins of the L&E project from the "Free Market Study" and the "Antitrust Project" at the University of Chicago, work that was significantly advanced by Chicago law faculty, including Richard Posner. Both the original work in L&E and its rapid spread to law school faculties were funded by conservative organizations whose goal was to lift the constraints on big business imposed by the New Deal consensus. As explained by Posner at that time, the fundamental tenet of L&E is that the common law should be and is guided by the sole objective of economic efficiency, which, as applied by L&E devotees, in turn implies cutting the public sector "down to the modest dimensions of the night watchman state."[1] Thus, the policy prescriptions of L&E were coextensive with the goals of the neoliberal movement and placed L&E squarely within its narrative, and sought to foreclose other theories of law.

Part III begins the critical process of defining "economic efficiency." Many law review articles use that term, but few define it. In most of traditional neoclassical economics, unlike in law review articles, an "efficiency improvement" means a Pareto Improvement, which is a change that leaves no participant worse off. This is the definition of efficiency used by *every* major graduate microeconomic theory textbook. Part III describes several reasons why Pareto Efficiency cannot be used to establish a theory of the common law, which is why it is avoided in law reviews. The principal impediment for L&E to use Pareto Efficiency is that Pareto Efficiency requires unanimous consent for resolution of legal cases. A lawsuit in the United States requires real and non-speculative injury for constitutional standing—a requirement

1. RICHARD POSNER, THE PROBLEMS OF JURISPRUDENCE 307 (Harvard Univ. Press 1990).

that perforce implies a winner and a loser. Pareto Efficiency rejects any resolution that has a loser.

Part IV describes the L&E fallback position. To extend the scope of economics so that it would be able to pass judgment on law, L&E scholars embraced the "Potential Pareto" Criterion as a replacement for the Pareto Criterion. The Potential Pareto Criterion is also known as Cost-Benefit Analysis, as the Kaldor and Hicks efficiency tests or criteria, and as the Kaldor-Hicks Criterion (though we will show that the last term is problematic). The Kaldor Test approves of policy changes for which the proponents could fully compensate the opponents and still be better off themselves, but the Kaldor Test does not ask the proponents to actually compensate the opponents. The Hicks Test disapproves of policy changes for which the opponents could fully compensate the proponents for foregoing the policy change and still be better off themselves, but without actually asking the opponents to compensate the proponents. Part IV explains the connection between these distinct tests and compensating and equivalent variations. It contrasts the logic of the Kaldor and Hicks criteria in several economic settings (in particular, the effect of price changes or of quantity changes), demonstrating that they constitute a theoretical structure riddled with inconsistencies and difficulties. Curiously, while many of these problems have long been understood by specialists in welfare economics, they have simply been ignored by L&E proponents in the legal academy. By contrast, we catalogue the list of problems and show that only by reference to dubious assumptions can even some of these problems be avoided. There is no way to avoid all of them.

Part V addresses consumer surplus, another version of efficiency that has become the prevailing neoliberal goal of antitrust enforcement since it was introduced by Judge Robert Bork in his book *The Antitrust Paradox*. We eliminate consumer surplus as a viable alternative to the Potential Pareto Criterion for L&E by showing that consumer surplus theory only avoids the problems of the Potential Pareto Criterion identified in Part IV by using imprecision, which results in obfuscation, which in turn results in confusion or deception.

Two critiques of the L&E literature form the appendices to the paper. In Appendix 1 we review the leading L&E textbooks on the critical issue of how to define "efficiency." We find these treatments, in general, incomplete at best, with many lacking any account of the many problems with whatever definition is advanced. Appendix 2 reviews the notion of "efficiency" in some of the scholarly work of Richard Posner.

We conclude that while there may be ideological reasons to adopt efficiency, "wealth maximization," or "consumer welfare" as a goal in jurisprudence, there are no *objective* reasons for doing so.

Our critique is not based on rejection of standard economic assumptions—quite the contrary. We adopt all the assumptions

sufficient to prove the First Fundamental Theorem of Welfare Economics, which is the modern statement of Adam Smith's "Invisible Hand" idea that laissez faire is socially optimal. These are sometimes called the Arrow-Debreu assumptions. The assumptions are that agents are fully rational, that there are no transactions costs, no strategic behavior, no asymmetric information, no "uncertainty in the sense of Frank Knight" (that is, no unknowable probability distributions), "complete" markets (markets for every asset in every state of the world), and that there are "convex" preferences and production possibility sets. We do not endorse these assumptions;[2] our goal is to show that the standard L&E approach fails even under such strict assumptions. As a result, defenders of L&E, implicitly or explicitly, must impose even stricter, more unrealistic assumptions. Part II raises at least the suspicion that they (or at least some of them) do so for ideological reasons.

II. NEOLIBERALISM AND THE ORIGINS OF LAW AND ECONOMICS

L&E did not appear out of a theoretical vacuum. It was developed by scholars funded by institutions that were part of the neoliberalism movement of the 1970s, whose objective was to eliminate and replace the New Deal policy consensus that existed at that time.[3] In this Part, we review these ideological origins of L&E.

A. The Great Depression Brings an End to Laissez-Faire Economic Policy

At the turn of the twentieth century in the United States, the dominant economic policy regime could best be described as laissez-faire.[4] The regulation of business was limited, fiscal policy was deemed illegitimate, monetary policy was governed by the gold standard, and banking interests were politically hegemonic. This laissez-faire policy regime lasted until the end of the 1920s. Then it lost all credibility because it was widely believed in the 1930s, and we think rightfully, that unbridled laissez-faire resulted in the great crash of the economy in 1929. Although there is no simple explanation for the Great Depression,[5]

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2. The Arrow-Debreu assumptions are not only unrealistic, they also do not guarantee uniqueness of the competitive equilibrium, as proven by the Sonnenschein–Mantel–Debreu Theorem. *Sonnenschein–Mantel–Debreu theorem*, WIKIPEDIA, https://en.wikipedia.org/wiki/Sonnenschein%E2%80%93Mantel%E2%80%93Debreu_theorem (last visited Oct. 22, 2023). Lack of uniqueness, in turn, imperils stability (*see infra* note 21). In addition, the Arrow-Debreu requirements of complete markets and no Knightian uncertainty mean its treatment of dynamics is largely formal rather than substantive.

3. *See infra* notes 6–44 and accompanying text.

4. Burton W. Folsom Jr., *The Fall and Rise of Laissez-Faire in the United States*, 1789–1900, 23 THE INDEP. REV. 357, 365 (2019).

5. *See* Mark Glick, *Antitrust and Economic History: The Historic Failure of the Chicago School of Antitrust*, 64 ANTITRUST BULL. 295, 309–311 (2019).

the laissez-faire policies of the 1920s unquestionably culminated in an unparalleled economic catastrophe that thoroughly discredited its policy prescriptions.

During the Great Depression, the federal government sought to change perceived deficiencies in the laissez-faire approach. As a first measure, the government regulated banks and financial institutions and limited their power. This combination of restrictions resulted in the virtual absence of financial crisis for about five decades.

However, economic arguments favoring deregulation became prevalent in the 1970s. Savings and Loan institutions were deregulated in the early 1980s and the Savings and Loan Crisis followed a few years later.[6] After that came more deregulation and further financial crises. At the core of the New Deal was the belief that the excessive income and profits of big business compared to the incomes of the other social classes, including small business, farmers, and urban workers, were highly destabilizing. This view was widely held by economists during the Great Depression, even before the rise in popularity of Keynesian macroeconomics. New Deal policies were fashioned to help workers by supporting their ability to unionize, establishing a minimum wage, and limiting the working week to 40 hours. The Social Security Act increased the income of the elderly and established a system of unemployment insurance. The Agricultural Adjustment Act increased the income of farmers, and the Works Progress Administration provided work for the unemployed.[7] As the historian Ellis Hawley wrote, the idea was to use the "government to promote the organization of economically weak groups, thus restoring economic balance…."[8] Such balance was viewed as a key element in achieving economic recovery.

It is often not recognized that the New Deal policies were spectacularly successful. As wages grew, industry responded with increased technological innovation, which led to greater productivity. As just one example, the baseline annual growth of total factor productivity between 1900 and 1920 was 1%.[9] The average for the decade of the 1920s was 2%.[10] It increased to 3% in the 1930s and 2.5% for the 1940s.[11] It continued at 2% after World War II until the crisis of

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6. ANTHONY BADGER, THE NEW DEAL: THE DEPRESSION YEARS *1933–1940* 73 (Noonday Press 1989).

7. *But see* United States v. Butler, 297 U.S. 1, 3 (1936) (holding the Agricultural Adjustment Act to be unconstitutional).

8. ELLIS HAWLEY, THE NEW DEAL AND THE PROBLEM OF MONOPOLY: A STUDY IN ECONOMIC AMBIVALENCE 124 (Fordham Univ. Press 1995) ("The advantages of stronger economic organization had long been stressed by labor, farm, and small business groups. The relatively new element was the attempt of these groups to enlist governmental aid in developing market power.").

9. Robert Shackleton, *Total Factor Productivity Growth in Historical Perspective*, 5 (Cong. Budget Off., Working Paper 2013-01, 2013).

10. *Id.*

11. *Id*

the middle 1970s.[12] There was also an explosion of R&D expenditure during the New Deal and World War II, resulting in major technological advances and new product-related patents.[13] During World War II, the federal government invested heavily in industrial plants and equipment that were sold to private industry at bargain prices after the war. The federal government sponsored basic research that became essential to the post-World War II prosperity. Vernon Ruttan argued that the federal government during this period was responsible for creating all the "general purpose technologies" that undergirded the post-war expansion, including aircraft design, nuclear power, and computers.[14] The New Deal policy consensus continued after the war as the economy expanded with modern technology, high wages, strong unions, low inequality, and government management of the macroeconomy. The U.S. economy grew at an average of 4.4% per year with 2% inflation and consistent growth in productivity until the 1970s, when the crises of that decade allowed neoliberal policies to gain traction.[15] Inflation was a fatal blow.

B. Neoliberalism and its "Freedom" Narrative Emerge as a Response to the New Deal Consensus

The neoliberal movement that spawned L&E arose in the 1930s and 1940s to challenge the New Deal consensus. The neoliberals at this time were composed of a small group of conservative thinkers that held a wide range of views. However, the movement had a unifying theme: the New Deal regulation of big business, its protection of unions, its regulation of trade, and its social programs were misguided. These neoliberal policies were similar to the laissez-faire consensus of the 1920s, but with some differences. For example, neoliberals supported some macroeconomic stabilization policies, and the gold standard of the laissez-faire period was never seriously resurrected. A small minority of the economics profession figured prominently among the neoliberal leaders. For example, frequent participants in the conferences of the important neoliberal Mont Pelerin Society included Friedrich Hayek, Ludwig Von Mises, Milton Friedman, George Stigler, Gary Becker, and James Buchanan.[16] These economists produced important social scientific works, but they also shared a political commitment to undermining the New Deal that was not based on science, but instead

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12. *Id.*

13. Glick, *supra* note 5, at 317.

14. VERNON RUTTAN, IS WAR NECESSARY FOR ECONOMIC GROWTH? 13–14 (Oxford Univ. Press 2006).

15. Glick, *supra* note 5, at 317.

16. PHILIP MIROWSKI & DIETER PLEHWE, THE ROAD FROM MONT PELERIN: THE MAKING OF THE NEOLIBERAL THOUGHT COLLECTIVE 140 (Harvard Univ. Press 2009); *see also* QUINN SLOBODIAN, GLOBALISTS: THE END OF EMPIRE AND THE BIRTH OF NEOLIBERALISM 3–4 (Harvard Univ. Press 2018).

on a common pre-analytic ideological commitment to free markets.[17] Moreover, in political practice, neoliberalism supported policies that gave free reign to big business interests that were being suppressed by New Deal policies.[18] While the consensus among policy makers and social scientists shifted away from laissez-faire in the face of the empirical evidence of the crash and the success of the New Deal, the early neoliberals strongly resisted this shift.

Consider the classic neoliberal work by Friedrich Hayek, *The Road to Serfdom*.[19] The central point of the book is that economic regulation of any kind undermines economic prosperity. Hayek criticized all forms of government regulation by lumping the New Deal with Nazi Germany and Soviet Russia.[20] Hayek believed that in a laissez-faire economy, shortages would lead to higher prices, inducing more production, thus alleviating the shortage, while surpluses would lead to lower prices, depressing production, thus alleviating the surplus. In this way, according to Hayek, laissez-faire economies automatically self-correct any shortages or surpluses of goods that develop over time. According to Hayek, any interference with a laissez-faire economy thwarted the operation of this natural equilibrating mechanism. While this argument provided a veneer of science, a careful reading of the book shows that it contains no theoretical or empirical justification for this argument, only an ideological defense of laissez-faire. Most macroeconomists were convinced by the Great Depression that laissez-faire economies were not self-equilibrating, and modern microeconomists have demonstrated that if the equilibrium in a single market is perturbed, free-market price signals do not guarantee a return to equilibrium, i.e., markets in laissez-faire economies may be unstable.[21]

Milton Friedman's influential book, *Capitalism and Freedom*, dropped the pretense of objectivity employed by Hayek.[22] It described the market as the domain of "freedom" and government as the source of coercion and totalitarianism. For Friedman, the government can only be

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17. JOSEPH SCHUMPETER, HISTORY OF ECONOMIC ANALYSIS 41 (Oxford Univ. Press 1954). Schumpeter wrote that under normal conditions, scientists hold beliefs, called a "pre-analytic vision," about the prevailing core theory that are themselves not the result of the scientific process, and make scientific advance difficult absent a "crisis." When we refer to "ideology," we mean a set of beliefs that support the interests of a particular class or group, but are presented as being in the general interests of all.

18. David Bromley, *The Ideology of Efficiency: Searching for a Theory of Policy Analysis*, 19 J. OF ENV'T ECON. & MGMT. 86, 87 (1990).

19. FRIEDRICH A. HAYEK, THE ROAD TO SERFDOM (Rutledge Classics 2001).

20. *See id.* at 4, 234.

21. Samuel Bowles et al., *Friedrich Hayek and the Market Algorithm,* 31 J. ECON. PERSP. 215, 221 (2017) (showing that there is no general proof of the "stability" of a competitive equilibrium). See WIKIPEDIA, *supra* note (showing lack of uniqueness imperils stability); *see also* Michael Mandler, *Sraffian Indeterminacy in General Equilibrium*, 66 REV. ECON. STUD. 693, 693–711 (1999).

22. MILTON FRIEDMAN, CAPITALISM AND FREEDOM 14 (Univ. of Chi. Press 1962).

legitimately employed in a situation of market failure.[23] The market is described as natural and existing prior to and independent of government because markets arise solely by individuals following self-interest. This is obviously untrue both logically and historically: markets cannot exist without secure property rights, control of theft and fraud, and contract rules adequate to facilitate trade. Such rules are determined collectively, through government, not by the market itself.[24] It is not only these basic legal rules that are required for modern markets, however. Modern markets cannot operate without additional regulation[25] and background rules.[26]

Friedman refers to the marketplace as "free" because transactions are "voluntary." But in a modern free-market economy, most labor occurs within firms, within which decisions are made not on the basis of freedom but rather on the basis of command and control within a hierarchical governance structure. (This is the point of Ronald Coase's famous article *The Nature of the Firm.*[27]) Ignoring the coercive nature of the organization of work within firms, Hayek and Friedman

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23. Since Friedman's classic work, other neoliberal economists have gone even further and questioned the role of government even in the face of market failure. James Buchanan and other public choice theorists have argued that government failure is more serious than market failure, so government should not be employed in any economic situation. *See* EAMONN BUTLER, PUBLIC CHOICE—A PRIMER 11 (Inst. of Econ. Affairs 2012) ("This self-interest operating in the political system will lead to 'government failure' because of the coercive power that government exercises and because government is not subject to a direct competitive process."). The public choice approach completely obscures the role of ideology and persuasion and the ability of groups to exercise and retain political power. *See* NANCY MACLEAN, DEMOCRACY IN CHAINS: THE DEEP HISTORY OF THE RADICAL RIGHT'S STEALTH PLAN FOR AMERICA (Penguin 2017).

24. JULES COLEMAN, RISKS AND WRONGS 61 (Cambridge Univ. Press 1992) ("Competition presupposes a stable, enforceable scheme of property rights. Any such scheme is a collective or public good."). Duncan Kennedy, *The Structure of Blackstone's Commentaries*, 28 BUFF. L. REV. 205, 211 (1981) ("Here is an initial statement of the fundamental contradiction: most participants in American legal culture believe that the goal of individual freedom is at the same time dependent on and incompatible with the communal coercive action that is necessary to achieve it.")

25. Every market transaction requires contract enforcement, which must be coercive, to protect expectational interests. Voluntary exchange presupposes a world of collective external contract rules and enforcement. *See* Betty Mensch, *Freedom of Contract as Ideology,* 33 STAN. L. REV. 753, 753–772 (1981).

26. As Bernard Harcourt describes:

> The fundamental problem is that foundational categories of, on the one hand, "market efficiency" or "free markets" and on the other hand "excessive regulation," "governmental inefficiency," or "discipline," are illusory and misleading categories that fail to capture the irreducible individual phenomena of different forms of market organization. In all markets, the state is present. Naturally, it is present when it fixes the price of a commodity such as wheat or bread. But it is also present when it subsidizes the cultivation or production of wheat, when it grants a charter to the Chicago Board of Trade, when it permits trading of an instrument like a futures contract, when it protects the property interests of wheat wholesalers, when it facilitates the river transport of wheat, when it criminalizes the coordination of prices, when it allows the merger of grain companies, when it polices the timing of trades, and so on. . . . All markets are highly regulated.

BERNARD HARCOURT, THE ILLUSION OF FREE MARKETS 47 (Harvard Univ. Press 2011).

27. Ronald Coase, *The Nature of the Firm*, 4 ECONOMICA 386, 387 (1937) ("If a workman moves from department Y to department X, he does not go because of a change in relative prices, but because he is ordered to do so.")

disingenuously treat firms as single private actors, as if the firm was a contracting individual with no more power than its employees:[28] "Enterprises are private so that the ultimate contracting parties are individuals. . . ."[29]

Nor is the decision to accept employment necessarily "voluntary" or an agreement among equals. The voluntary theory of the nature of employment was the basis for the Supreme Court's decision in *Lochner v. New York*, in which the Supreme Court overturned a New York statute limiting the working hours of bakers because it violated the workers' right to freedom of contract under the 14th Amendment.[30] The decision led to an avalanche of criticism by the Legal Realist School. As Robert Hale wrote in 1923, "[u]nless, then, the non-owner can produce his own food, the law compels him to starve if he has no wages, and compels him to go without wages unless he obeys the behests of some employer."[31]

Much of the legal realist discourse did not effectively address the assumptions behind laissez-faire ideology. Robert Hale's work was an exception. For Hale, choices in the market are not voluntary because alternatives are limited by legal entitlements. Instead, Hale labeled market choices as "volitional." Volitional choices are those choices circumscribed by each market participant's opportunity set. Property rights determine the degree to which each participant's opportunities are expansive or limited.[32]

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28. However, while firms exercise "individual" power, Friedman and Hayek treat unions as illegitimate collective actors. *See* FRIEDMAN, *supra* note 22; s*ee also* HAYEK, *supra* note 19.

29. FRIEDMAN, *supra* note 22.

30. Lochner v. New York, 198 U.S. 45 (1905).

31. Robert Hale, *Coercion and Distribution in a Supposedly Non-Coercive State*, 38 POL. SCI. Q. 470, 473 (1923). Indeed, long before the Legal Realists, Marx sarcastically summarized the laissez-faire vision of the free labor market:

> The sphere that we are deserting, within whose boundaries the sale and purchase of labour-power goes on, is in fact a very Eden of the innate rights of man. There alone rule Freedom, Equality, Property and Bentham. Freedom, because both buyer and seller of a commodity, say of labour-power, are constrained only by their own free will. They contract as free agents, and the agreement they come to, is but the form in which they give legal expression to their common will. Equality, because each enters into relation with the other, as with a simple owner of commodities, and they exchange equivalent for equivalent. Property, because each disposes only of what is his own. And Bentham, because each looks only to himself. The only force that brings them together and puts them in relation with each other, is the selfishness, the gain and the private interests of each. Each looks to himself only, and no one troubles himself about the rest, and just because they do so, do they all, in accordance with the pre-established harmony of things, or under the auspices of an all-shrewd providence, work together to their mutual advantage, for the common weal and in the interest of all.

1 KARL MARX, CAPITAL: A CRITIQUE OF POLITICAL ECONOMY 123 (Progress Press 1887).

32. The institutional economist Warren Samuels probably best depicted Hale's distinction in the following passage:

> If we define as volitional freedom the opportunity or capacity to choose between alternatives, and if we define as voluntary freedom the opportunity or capacity to determine the alternatives themselves between which one may choose, then it appears that the difference between voluntary and volitional freedom is very largely for present purposes the impact of the operation of choice by others, as manifest and embodied in, for example, particular legal arrangements, which is simply another way of saying that

Using Hale's methodology, the neoliberal "free market" based on voluntary transactions is merely a volitional freedom. One's income and property rights determine the actual choices that are available. Choosing between starvation or farm labor is not the same human experience as choosing between fine restaurants to frequent, even though legally, no one is prevented from fine dining or starvation. The upshot is that the economy is a domain of coercion just as the government is, and property rights create the ability to exercise economic coercion against others. For example, for Hale, the price of any commodity, such as food, is the amount that must be paid to overcome the owner's legal right to withhold the commodity.[33] As Hale stated regarding a starving person: "While there is no law against eating in the abstract, there is a law which forbids him to eat any of the food which actually exists in the community—and that law is the law of property."[34] The function of anyone's income is to give the person the ability to pay the owner of a commodity enough to induce that owner to forego his/her ability to exercise economic coercion.[35] Smaller income reduces volitional freedom.

Thus, the neoliberals are incorrect in maintaining that freedom is maximized in an economic market when it is unregulated by any government action. In reality, government regulation does not increase coercion at all, it only shifts who is benefitted by the totality of economic and government coercion.[36]

Another implication of the fact that a legal structure must pre-exist for a market to operate is that the outcomes of voluntary trade are partially determined outside the market. Because property rights and other legal rights determine economic agents' opportunity sets, they also determine, along with preferences, the outcomes of "voluntary"

> one economic actor is limited or constrained to bear the costs in various forms imposed by other economic actors jointly and severally either through market forces or the legal process. The impact of others' decisions and choices is transmitted to the one actor whose range of alternatives is thus circumscribed so that freedom is volitional and not voluntary.

Warren Samuels, *Interrelations between Legal and Economic Processes*, 14 J. L. AND ECON. 435, 440–441 (1971).

33. *Id.* at 440 ("Private rights, for example, property rights, are in effect capacities to participate in the economic decision-making process as a coercive force; they define and delineate loci and conditions of power, or participation. This means … that the distribution of relative risk, business costs, and resource allocation, income distribution and general level of income are a partial function of law.").

34. Hale, *supra* note 31, at 472.

35. While Hale focused on property rights, contract rights and other legal entitlements also impact income. For example, contract defenses such as "duress," "necessity," or "unconscionability" are distributional, as are inheritance laws and tort laws such as the duty to give aid.

36. Barbara Fried, in her book on Robert Hale, explains this point succinctly:

> That situation meant that when the government intervened in private market relations to curb the use of certain bargaining power, it did not inject coercion for the first time into those relations; it merely changed the relative distribution of coercive power.

BARBARA FRIED, THE PROGRESSIVE ASSAULT ON LAISSEZ-FAIRE: ROBERT HALE AND THE FIRST LAW AND ECONOMICS MOVEMENT 18 (Harvard Univ. Press 1998).

trade. Each agent's substitute opportunities to any transaction—their "opportunity cost" or "threat values" of abstaining from trade—in part determine the equilibrium outcome of such trade. For example, if workers are given a right to a safe workplace, this alters the outcome of voluntary trade in the labor market compared to the situation where they have no such right.

Robert Hale's views were antithetical to laissez-faire ideology, but not to the views of the economics profession. Economists have always recognized that power and coercion were exercised in the economy. For example, Adam Smith, David Ricardo, and Thomas Malthus explained that subsistence wages are the result of the lack of power by workers because of their chronic oversupply and lack of alternatives. Karl Marx emphasized that the workers had little economic power because they did not own the "means of production," meaning that their alternative opportunities for a livelihood were limited.

The American Institutionalist economists also analyzed economic power relations. Richard Ely, for example, was critical of laissez-faire judges who viewed all economic transactions as free and voluntary. He wrote, "It must be observed here in criticism that in other contracts, especially labor contracts, the coercion of economic forces has not received that which must be demanded by a realistic jurisprudence based on the actual economic life of the twentieth century."[37]

The neoclassical economic theory that arose in the 1870s similarly did not posit the economy as a domain of freedom devoid of differences in economic power. Neoclassical theory merely took existing income distribution as an input and proceeded from there. It stopped short of the neoliberals by simply leaving the origin of existing economic power unanalyzed, choosing instead to focus on the properties of a model with a given distribution of commodities and property rights (given "endowments," to use the economists' term). As described in the next section, the neoclassical concept of Pareto Efficiency does not divorce distribution from efficiency, and the initial property rights that set the endowments (along with preferences) determine the specific efficient market outcome.[38]

C. Law and Economics Finds a Home and Funding

Until the 1970s, L&E was represented in only a small minority of law schools and represented a fringe view of jurisprudence. It had

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37. 3 RICHARD ELY, PROPERTY AND CONTRACT IN THEIR RELATIONS TO THE DISTRIBUTION OF WEALTH 608 (Macmillan and Co., Ltd. 1914). John Commons also stressed that property rights distribute economic power. "The economists, however, took property rights as self-evident and not needing justification or investigation; and founded their theories on a contradictory definition of wealth as materials and the ownership of materials." JOHN COMMONS, INSTITUTIONAL ECONOMICS: ITS PLACE IN POLITICAL ECONOMY 114 (Macmillan and Co., Ltd. 1934).

38. Given the standard Arrow-Debreu assumptions, as described *infra* Section I, page 5.

gained an important foothold at the University of Chicago after Hayek helped bring Aaron Director to the University of Chicago Law School and secured funding from the Volker Fund for the "Free Market Study" that ran from 1953 to 1957. The Volker Fund also helped bring Ronald Coase to the Chicago Law School. The Free Market Study was followed by the "Antitrust Project." L&E then grew out of the Chicago School's critique of antitrust law. In 1958, the Journal of Law and Economics was formed with Director, and later Coase, as its editor. The University of Chicago further sponsored law and economics fellowships that included Richard Posner as a recipient, and Posner was brought from Stanford to the Chicago Law School in 1969.

The economic crisis of the late 1960s and 1970s ushered in the main conservative political counterattack on New Deal policies. During the 1970s, unemployment grew to 6.22%, inflation raged at an average of 7.09%, and corporate profits and productivity declined precipitously.[39] Low profits and high inflation eroded high incomes. The income share of the top 1% of earners reached a post-World War II low in the 1970s.[40] This induced a well-funded conservative backlash: the Business Roundtable was founded in 1974,[41] the Heritage Foundation in 1973, [42] and the Cato Institute in 1977 (by Charles Koch).[43] In the early 1970s, Richard Posner wrote the first edition of his landmark work *The Economic Analysis of Law*,[44] in which he proposed the goal of economic efficiency, defined as "willingness to pay" or "wealth maximization," as the foundation stone of L&E. He further purported to show how this basis could be employed to analyze virtually every area of legal analysis. Posner's book spawned an enormous literature on L&E, which accepted his originating premise that "efficiency" should be, and in fact is, the basis of the common law.

During the rise of neoliberalism in the 1970s, conservative funding organizations funded L&E scholarship at law schools and L&E made tremendous strides among law faculties.[45] Of particular importance in promoting L&E was the work of the John M. Olin Foundation, which supported Henry Manne's Economic Institute for Federal Judges. By 1990, Manne's institute hosted 40% of the federal judiciary.[46] Olin supported L&E programs at many major law schools including Chicago, Yale, Columbia, Harvard, Penn, Stanford, Berkeley, Virginia,

39. Glick, *supra* note 5, at 323–324.

40. TIMOTHY NOAH, THE GREAT DIVERGENCE 23–25 (Bloomsbury 2012).

41. JOHN SALOMA III, OMINOUS POLITICS 66–67 (Hill and Wang 1984).

42. KURT ANDERSEN, EVIL GENIUSES: THE UNMAKING OF AMERICA A RECENT HISTORY, *PART II* (Ebury Press 2020).

43. SALOMA III, *supra* note 41, at 128.

44. RICHARD A. POSNER, THE ECONOMIC ANALYSIS OF LAW (Little, Brown 1972).

45. Glick, *supra* note 5 at 324–325.

46. STEVEN TELES, THE RISE OF THE CONSERVATIVE LEGAL MOVEMENT: THE BATTLE FOR CONTROL OF THE LAW, 112–13 (Princeton Univ. Press 2008).

Georgetown, Cornell, Michigan, and George Mason.[47] These schools further turned out students trained in L&E who populated the faculties of other law schools across the nation. As Steven Teles concludes, "simply measured in terms of the penetration of its adherents in the legal academy, law and economics is the most successful intellectual movement in the law of the past thirty years."[48]

D. Law & Economics Advances the Modern Neoliberal Agenda

We discuss at length in this paper how inconsistent and flawed L&E's notion of efficiency is. Suffice it to say for the moment that Posner's claim that legal decisions should be based on "wealth maximization"/"willingness to pay" is congruent with the neoliberal enterprise. Allocating resources based on "willingness to pay"—"willingness *and ability* to pay," more accurately—simply asks judges to reproduce the prevailing economic power relationships in the market, since it is big business and wealthy individuals who have a greater ability to pay.[49] In addition, since Posner claims that efficiency is separate from distribution (which is false[50]), adopting his approach counsels judges to ignore the wealth distributional impacts of their decisions. Moreover, by endorsing efficiency as the only goal, L&E scholars advocate that the goal of antitrust law should be limited to increases in consumer welfare, not to curb the business strategies of large firms that harm smaller firms and other groups, or consumers on a basis other than higher prices. Using its own definition of efficiency, L&E views property law as channeling transactions into the existing market without altering the opportunity sets of market participants, and views contract law as only facilitating these market transactions, not influencing their outcomes. Moreover, under this construct, tort law is understood as finding the lowest-cost method of controlling externalities, but it measures such costs at existing market prices (which depend on distribution), and criminal law takes the existing criminal statutes as a given and examines how incentives can best be fashioned to conform to those laws and only those laws. Thus, the use of a flawed concept of efficiency provided a veneer of science for neoliberal ideology.

Posner himself candidly conceded that "wealth maximization" supported the interests of "dominant groups" in the economy.[51] Posner

47. *Id.* at 200, 207.
48. *Id.* at 216.
49. *See infra* Sections IV.A.3, IV.F.2, and IV.F.3.
50. *See infra* Section III.G.1(c).
51. Posner wrote:

> Wealth maximization is an ethic of productivity and social cooperation—to have a claim on society's goods and services you must be able to offer something that other people value … And an ethic of productivity and cooperation is more congruent with the values of the dominant groups in our society than the pure utilitarian ethic would be.

also openly committed to the Neoliberal agenda[52] of reducing the scope of government.[53]

Posner's position attracted sustained criticism for its normative implications—which we expand on—but not for his positive economics.[54] In the face of these normative critiques, Posner retreated. By 1990, Posner, reflecting on his 1979 book *The Problems of Jurisprudence,* wrote that "The strongest argument for wealth maximization is not moral, but pragmatic."[55] By 2011, the ethical case supporting "wealth maximization" and "willingness and ability to pay" had all but collapsed, so that Scott Hershovitz could write,[56] ". . .nowadays nearly no one thinks wealth maximization is an attractive ethical principle, except perhaps as a proxy."

Although Posner agreed he could not defend the "wealth maximization" or "willingness and ability to pay" version of economic efficiency on normative grounds, that version of efficiency has remained the foundation of L&E. But its defects are not only normative. Later in this article we show that L&E is also seriously defective on positive grounds, even accepting all the neoclassical assumptions of the Arrow-Debreu model.[57] Because of those both positive and normative problems, the other notion of efficiency in economics, Pareto Efficiency, is much more widely accepted by economists.[58] While subject to considerably fewer problems than "willingness and ability to pay," Pareto Efficiency is not problem-free. Indeed, as we show in the next Part, even those less significant problems render Pareto Efficiency incapable of constituting a theory of the common law.

POSNER, *supra* note 1, at 391. We discuss wealth maximization and its fundamental flaws in detail below.

52. He believed that capitalism was more successful than socialism and that the wealth maximization goal supported free markets. POSNER, *supra* note 1, at 384 ("We have reason to believe that markets work—that capitalism delivers the goods . . . .").

53. Posner wrote:

> All modern societies depart from the precepts of wealth maximization. The unanswered question is how the conditions in these societies would change if the public sector would be somehow cut all the way down to the modest dimensions of the night watchman state *that precepts of wealth maximization seem to imply*.

POSNER, *supra* note 1, at 387 (emphasis added).

54. *See infra* Section IV.F. "Normative" refers to subjective matters involving value judgments, while "positive" refers to objective matters which can be proven to be either true or false. *See* Amy Fontinelle, *Positive vs. Normative Economics: What's the Difference*, INVESTOPEDIA (Mar. 19, 2023), https://www.investopedia.com/ask/answers/12/difference-between-positive-normative-economics.asp.

55. POSNER, *supra* note 1, at 382.

56. Scott Hershovitz, *Harry Potter and the Trouble with Tort Theory*, 63 STAN. L. REV. 67, 75 n.16 (2011).

57. *See infra* Sections IV.E and V.B–V.E.

58. *See infra* Section III.C.

III. PARETO EFFICIENCY: THE REALM OF CONSENSUS

In this Part we sketch the historical development of the notion of economic efficiency. Economists have a particular understanding of that word, Pareto Efficiency (also known as Pareto Optimality), which we will describe in detail. We then show that this definition of efficiency cannot be completely separated from distribution, and describe why economic efficiency cannot serve as a foundation for L&E.

To lay the foundation for discussing efficiency, we begin by discussing the history of utility theory and by showing why many economists think that there cannot be valid interpersonal comparisons of utility.

A. The Beginnings of Utility Theory

Prior to the development of neoclassical economics in the 1870s, the classical economists such as Adam Smith, David Ricardo, Karl Marx, and John Stuart Mill believed that prices were determined by a commodity's cost of production.[59] The "value" of a good or service was the average direct and indirect labor time necessary for its production. For the classical economists, value was an objective measure and there was no concept that could be used as a basis for measuring human well-being, either at the level of an individual or at the aggregate level of an entire society.

Early neoclassical economists William Jevons, Leon Walras, and Carl Menger replaced the classical emphasis on the cost of production with a consumer-demand-based theory of short-term prices.[60] They introduced the concept of "utility," a measurement of happiness, to understand demand by consumers for goods and services. The consumer's demand for a product or service was based on the additional, or "marginal," utility the consumer received from consuming that last unit of the good or service, constrained by the consumer's income. It was not until Alfred Marshall published his *Principles of Economics* in 1890 that supply considerations were addressed and the cost of production was reintroduced into the analysis.

By placing the subjective concept of happiness at the heart of the theory of price formation, the neoclassicals were advancing a hedonic concept of an individual's utility—that is, utility was simply a number that represented a measure of human happiness.

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59. *classical economics*, ENCYCLOPAEDIA BRITANNICA (Oct. 1, 2023), https://www.britannica.com/money/topic/classical-economics; DENIS PATRICK O'BRIEN, THE CLASSICAL ECONOMISTS REVISITED 2–4 (Princeton Univ. Press 2018).

60. WILLIAM JEVONS, THE THEORY OF POLITICAL ECONOMY 47, 49–51(Macmillan and Co., Ltd. 1871); CARL MENGER, PRINCIPLES OF PURE ECONOMICS 7–8, 173, 192 (James Dingwall & Bert F. Hoselitz trans., Ludwig von Mises Inst. 2007) (1871); LÉON WALRAS, ELEMENTS OF THEORETICAL ECONOMICS OR THE THEORY OF SOCIAL WEALTH 52 (Donald A. Walker & Jan van Daal eds. & trans., Cambridge Univ. Press 4th ed. 1900) (1874).

In tandem with developing utility as a positive description of what motivates individuals' behavior, economists also developed a normative movement called Utilitarianism that drew implications from utility theory for public policy. Having developed a numerical measure of individual utility, it was a simple step for early neoclassical economists to further assert that there was a numerical measure of aggregate, social utility, or total welfare, which was simply the sum of the utility of all the individual consumers. (Producers were not ignored, but simply recognized in their role as consumers, the idea being that the term "consumers" encompasses all economic agents who are natural persons.) Maximizing this single number then became the proper purpose of all economic policy. This is Bentham's fundamental axiom of "the greatest happiness principle" or "the principle of utility." [61] Many Utilitarians, including Alfred Marshall, posited diminishing returns in utility when a person consumes more and more of a particular product or service. For example, the tenth scoop of ice cream is less satisfying than the first. Marshall thought that diminishing returns also applied to money: the more total wealth an individual has, the less additional utility is obtained from another dollar. This property, referred to as the declining marginal utility of money, implies that total social utility can be increased by equalizing wealth, and equalizing wealth therefore became a common policy prescription among the later Utilitarians.[62]

B. Utility: Cardinal and Ordinal

In the early twentieth century the notion of measuring "happiness" came to be recognized as unacceptably vague: there is simply no method for objectively identifying and measuring happiness. Moreover, a single number cannot capture the multidimensional nature of happiness. Happiness could include feelings of dignity, relief, pride, contentment, respect, and numerous other distinct thoughts and emotions.[63] Alfred Marshall was one of the first to reframe utility as a measure of satisfaction of a desire or want, rather than happiness *per se*.[64] By the

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61. ALESSSANDRO RONCAGLIA, THE WEALTH OF IDEAS: A HISTORY OF ECONOMIC THOUGHT 175 (Cambridge Univ. Press 2005).

62. ARTHUR CECIL PIGOU, THE ECONOMICS OF WELFARE 89 (Macmillan and Co., Ltd. 4th ed. 1932):

> Nevertheless, it is evident that any transference of income from a relatively rich man to a relatively poor man of similar temperament, since it enables more intense wants to be satisfied at the expense of less intense wants, must increase the aggregate sum of satisfaction. The old 'law of diminishing utility' thus leads securely to the proposition: Any cause which increases the absolute share of real income in the hands of the poor, provided that it does not lead to a contraction in the size of the national dividend from any point of view, will, in general, increase economic welfare.

63. Indeed, the list of positive experiences is very long. Modern neuroscience has found several hormones that produce pleasurable feelings from different types of activities including dopamine, serotonin, oxytocin, and endorphins. One must suspend one's intuition about living life as a human being to accept a single number for happiness.

64. ALFRED MARSHALL, PRINCIPLES OF ECONOMICS 92 (Macmillan and Co., Ltd. 8th ed. 1920).

time of Jacob Viner's classic 1925 article on this topic, virtually all economists had adopted the "satisfaction of desire" view of utility.[65] Today, utility refers to a number that represents a measure of satisfaction of a want or desire.

This reinterpretation addressed the unacceptable vagueness of the prior interpretation, but did not address the growing concern that Marshall's utility numbers were simultaneously, albeit in a different way, unacceptably precise. That is, these numbers were "cardinal" in nature. When a quantity is cardinally measurable, the notion of twice an initial quantity is meaningful. For example, weight is cardinally measurable, and the notion that one object weighs twice as much as another is meaningful; whereas temperature or calendar date are not cardinally measurable because the notion that one temperature or calendar date is twice as large as another is not meaningful.[66]

Quantities that can only be ordered (ranked), but not otherwise measured, are called "ordinal." An example is the letters in the English alphabet: they have a traditional order, "a" first and "z" last, but this order has no cardinal meaning (there is no sense in which "b" is twice as large as "a" or is one larger than "a"). Similarly, economists came to recognize that it is impossible to assign a meaning to "twice as much satisfaction." [67] When a consumer's utility from consuming one bundle of goods is assigned the number 4, and the utility from consuming a different bundle of goods is assigned the number 2, we cannot conclude that the first bundle gives that consumer "twice as much satisfaction." There is simply no basis to understand consumer satisfaction in this way. Marshall's utility numbers were cardinal numbers and therefore conveyed information about both order and intensity of satisfaction, but most economists today agree that we cannot infer intensity of satisfaction from observation of actual consumer choices. From those choices we can only infer whether a consumer prefers one good or bundle of goods over another. That is an ordinal ranking, not a cardinal measurement. Since ordinal numbers represent order but not intensity, economists now understand utility to be only ordinally measurable.[68]

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65. Jacob Viner, *The Utility Concept in Value Theory and its Critics*, 33 J. POL. ECON. 369, 372, 375–76 (1925).

66. Saying January 1, 2000 was twice as large as January 1, 1000 has no meaning because it is false if one switches to any other equally valid calendar. Saying that a temperature of 200 degrees Fahrenheit is "twice as large" as a temperature of 100 degrees Fahrenheit has no meaning because those temperatures are the same as 93.3 and 37.8 degrees Celsius, the former of which is not twice the latter.

67. W. STANLEY JEVONS, THE THEORY OF POLITICAL ECONOMY 14 (Macmillan and Co., Ltd. 3d ed. 1888) ("The reader will find, again, that there is never, in any single instance, an attempt made to compare the amount of feeling in one mind with that in another. I see no means by which such comparison can be accomplished."); Lionel Robbins, *Interpersonal Comparisons of Utility: A Comment*, 48 ECON. J. 635, 640 (1938) ("I still cannot believe that it is helpful to speak as if interpersonal comparisons of utility rest upon scientific foundations . . . .").

68. When studying decision-making under uncertainty, economists often use cardinal utility. They do so whenever using the "Expected Utility Hypothesis." Perhaps not coincidentally,

An implication of this is that when a consumer's utility from consuming one bundle of goods is assigned the number 4, and the utility from consuming a different bundle of goods is assigned the number 2, each of the numbers "4" and "2" can be replaced by any other number as long as the first number is larger than the second number.[69]

Once economists began to abandon cardinal utility in favor of ordinal utility, Utilitarian ideas lost favor with them. The shift to ordinal utility at the level of individual consumers makes Utilitarianism at the level of society even more untenable because it makes no sense to add numbers that only represent order. In other words, since adding together or comparing different people's utilities is meaningless, no interpersonal comparisons of utility are possible.[70] This destroyed "the sum of utilities" as the lodestar of economic policy.

One reaction to this loss was to adopt something called "the sum of social surplus" as the new lodestar for economic policy, which is the topic of Part V below. Briefly, this approach strongly resembles the "sum of utilities" approach in that even though it fortunately no longer adds up cardinal utility of different people to come up with a grand total of utility for all of society, it does use cardinal "surplus," and it adds up the cardinal "surpluses" of different people to come up with a grand total of "surplus" for all of society. The "surplus" approach predates ordinal utility theory, and Alfred Marshall advocated it more or less in tandem with his advocacy of Utilitarianism. However, Marshall realized that the surplus approach failed to correctly describe how consumers react to income changes. Kaldor and Hicks later modified the surplus approach by fixing that aspect of it, giving rise to the "Potential Pareto" approach which is the topic of Part IV below.

The other reaction to the loss of the "sum of utilities" as the lodestar of economic policy was to throw out any cardinal measurement of either individual or social welfare, and therefore to reject using a sum to consolidate the experiences of all of society's different people into a single number. This more modern approach was begun by Vilfredo Pareto and is the topic of the rest of this Part III.

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this is one of the least successful parts of microeconomic theory, and part of another field, behavioral economics, has arisen in opposition to it. See, for example, Lecture Notes for ECO 317 Economics of Uncertainty from Avinash Dixit, Professor at Princeton University, *Critiques of Expected Utility Theory*, https://www.princeton.edu/~dixitak/Teaching/EconomicsOfUncertainty/Slides&Notes/Notes10.pdf.

69. For example, we could choose to assign the first bundle of goods the utility value "one million" and the second bundle of goods the utility value "negative 17"; or we could assign the first bundle a utility of "negative 0.0003" and the second bundle a utility of "negative 1000."

70. Peter Hammond, *Interpersonal Comparisons of Utility: Why and How They Should be Made*, DEPT. OF ECON., EUR. U. INST. (1989) ("This paper discusses reasons why interpersonal comparisons of utility (ICU's) have been eschewed in the past and argues that most existing approaches, both empirical and ethical, to ICU's are flawed.").

C. Economic Efficiency is Pareto Efficiency

Vilfredo Pareto, in his *Manual of Political Economy* first published in 1906, was one of the first economists to reject cardinal utility and the interpersonal comparability of utility.[71] His replacement for "the sum of utilities" as the basis of economic policy today bears his name: "Pareto Improvements" are defined as changes in which at least one agent is benefitted while none are harmed. (The amount of benefit, which would be cardinal, is irrelevant: only direction matters.) Pareto defined, for the first time, the word "efficiency" in the context of economic policy: he defined a situation to be "efficient" if no Pareto Improvements from it are possible—i.e., there is no possible change that would benefit one agent without making another worse off. Then, Pareto asserted that the purpose of economic policy should be to eliminate any situation that is not Pareto Optimal. This "Pareto Principle" uses only ordinal utility and no interpersonal utility comparisons.

Every major first-year Ph.D.-level microeconomics textbook today adopts Pareto's definition of efficiency, although they sometimes redundantly introduce the terms "Pareto Efficiency" and "Pareto Optimality" as synonyms for "efficiency." (Even more confusing is economists' penchant to use "Optimality" as a synonym for "Pareto Optimality" even though this clashes with economists' use of the word "optimal" in many other contexts.) In the well-known texts of Varian[72] and of Jehle and Reny,[73] the word "efficiency" is exclusively used as a synonym for Pareto Efficiency. In the well-known text of Mas-Colell, Whinston, and Green, "efficient *production*" means "it is impossible to produce more of one output and no less than any output while simultaneously using no more of any input" (p. 150); but every other use of the word "efficiency" in that book means Pareto Efficiency.[74]

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71. VILFREDO PARETO, MANUAL OF POLITICAL ECONOMY, 482, 532, 535, 566, 567, 610 (Aldo Montesano et al. eds., Oxford Univ. Press 2014).

72. Varian neither defines nor uses the single word "efficiency" in the text of his book. It appears in some of his headings, such as "13.10 Efficiency and Welfare," but the accompanying text always puts the word "Pareto" before "efficiency." *See* HAL R. VARIAN, MICROECONOMIC ANALYSIS 226, 227 (W.W. Norton 3d ed. 1992).

73. *See* GEOFFREY A. JEHLE & PHILIP J. RENY, ADVANCED MICROECONOMIC THEORY 186 (Pearson Education Ltd. 3d ed. 2011) ("Now it would seem that to obtain an *efficient* outcome, the total surplus – the sum of consumer and producer surplus – must be maximised. Otherwise, *both* the producer and the consumer *could be made better off* by redistributing resources to increase the total surplus, and then dividing the larger surplus among them so that each obtains strictly more surplus than before. But we must take care . . . .") (emphasis added).

74. *See* ANDREU MAS-COLELL, MICHAEL D. WHINSTON & JERRY R. GREEN, MICROECONOMIC THEORY 307, 308 (Oxford Univ. Press 1995) ("An economic outcome is said to be Pareto optimal if it is impossible to make some individuals better off without making some other individuals worse off. This concept is a formalization of the idea that there is no waste in society, and it conveniently separates the issue of economic efficiency from more controversial (and political) questions regarding the ideal *distribution* of well-being across individuals.")

We examine, in turn, three concepts of efficiency that are part of Pareto Efficiency: distributive efficiency, productive efficiency, and allocation efficiency.

D. Pareto Efficiency Requires Distributive Efficiency

The simplest model of an economy considered by economists has no production of new commodities. The economy is limited only to exchange of previously existing goods. Such an economy is called a "pure exchange" economy. In a pure exchange economy, provided certain simplifying assumptions are made, a Pareto Efficient allocation has the following property. Suppose that, upon taking one unit of a commodity—say, apples—from one person—say, Jones—it is the case that Jones would accept "*x*" units of another commodity—say, bananas—as full compensation for his loss of the apple. The number *x* is called Jones's marginal rate of substitution ("MRS) of bananas for apples. At a Pareto Efficient allocation, i.e., where no more Pareto improvements are possible, all persons in the economy must have equal MRS of bananas for apples.[75] In this situation, where the economy is limited to exchange, we say that we have achieved "distributive efficiency."

Figure 1 is an Edgeworth Box and is used to illustrate distributive efficiency.[76] The width of this Box represents the number of apples in the economy and the height of the box represents the number of bananas in the economy. The "apple" (horizontal) and "banana" (vertical) coordinates of a point such as F represent the number of apples and bananas consumed by Smith. Simultaneously, the banana consumption of the other person (Jones) in the economy is measured *down* along the right-hand axis, and Jones's apple consumption is measured to the *left* along the upper axis. The upper right-hand corner of the Box represents Jones consuming no commodities and all the economy's commodities being consumed by Smith.

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75. The proof of this result is by contradiction. Begin by supposing that the situation is Pareto Efficient but that there are the two consumers, Jones and Smith, whose MRSes of apples for bananas are different. Suppose Jones's MRS is 3 and Smith's MRS is 2. Now take an apple away from Smith. Give Smith two bananas taken from Jones, thus leaving Smith as well off as she was initially; and give Jones the apple taken from Smith. Had Jones been left with one more apple and three fewer bananas, Jones would have been as well off as he was originally, but he is actually left with one more apple and two fewer bananas, so he is better off than he was originally. With Smith equally well off as she was originally and Jones better off than he was originally, the original situation cannot have been Pareto Efficient because additional improvement was possible. This contradiction establishes the proof. The case in which Jones's MRS was less than Smith's is proven similarly.

76. The Edgeworth Box was introduced by Francis Ysidro Edgeworth in 1881, further developed by Pareto in 1906, and popularized by Bowley in 1924. Michael McLure & Aldo Montesano, *Thinking Outside the Box: Edgeworth, Pareto and the Early History of the Box Diagram*, U. W. AUSTRALIA RESEARCH REPOSITORY (2019), available at https://research-repository.uwa.edu.au/en/publications/thinking-outside-the-box-edgeworth-pareto-and-the-early-history-o-2.

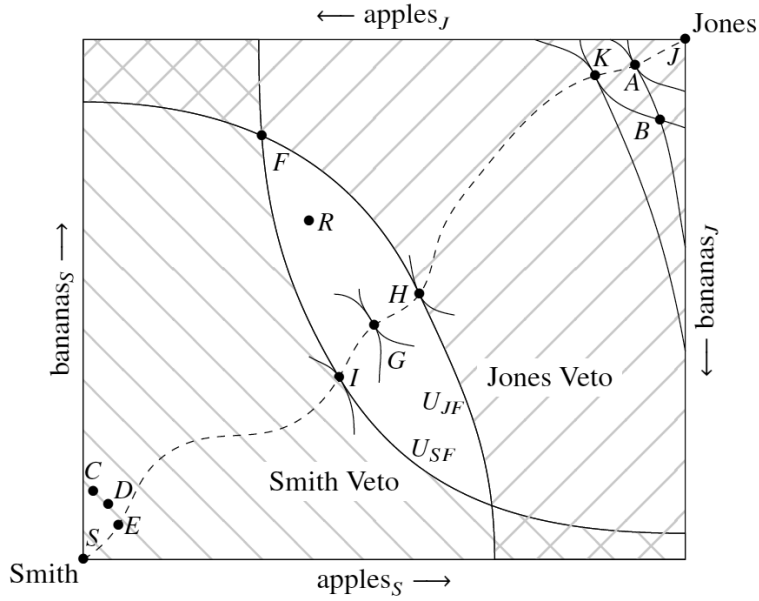

Figure 1. An Edgeworth Box and its contract curve.

All the combinations of apples and bananas belonging to the curve going through points F and I represent points giving Smith the same utility as point F and point I; that curve is therefore called an "indifference curve," "U_{SF}." All the combinations of apples and bananas belonging to the curve going through points F and H give Jones the same utility as point F and point H, so that is one of Jones's indifference curves, "U_{JF}." Each consumer has an infinite number of indifference curves. Smith's indifference curves represent higher utility for Smith the more right and higher the curve is, while Jones's indifference curves represent higher utility for Jones the more left and lower the curve is. Indifference curves have ordinal, not cardinal values: if one has a higher value than another, it means that the consumer has higher utility along the first than along the second, but "how much more utility" is not a meaningful question.

If the economy begins at point F, then Smith would veto any redistributive policy that moved into the "Smith Veto" region of the graph because such policies would result in less than the level of utility U_{SF} to Smith. Jones would similarly veto any redistributive policy that moved into the "Jones Veto" region of the graph because such policies would result in less than the level of utility U_{JF} to Jones. However, there is an unshaded region of the graph that neither party would veto. A policy suggesting a move into this region or onto its edge, such as to Points G or H or I, would be vetoed by no one. (Remember our assumption that Smith and Jones only care about the number of apples and bananas they consume, and not about the fairness of an allocation,

which involves the number of apples and bananas the other person consumes.) A move to Point G would improve Smith's utility compared to Point F, since Point G represents more apples (a rightward movement) and more bananas (an upward movement) for Smith compared to Point I, and Point I gives Smith the same utility as Point F did, namely U_{SF}. A move to Point G would also improve Jones's utility compared to Point F, since Point G represents more apples (a leftward movement) and more bananas (a downward movement) for Jones compared to Point H, and Point H gives Smith the same utility as Point F did, namely U_{JF}. Moving from F to G is therefore a Pareto Improvement, proving that point F is not a Pareto Optimal point.

Points G, H, and I are, however, Pareto Optimal points. For example, if one were to sketch the "Jones Veto" and "Smith Veto" areas for Point G, the union of those areas would include every point in the Box. In general, at inefficient points like F, the indifference curves of the agents will not be tangent, whereas at efficient points like G, H, and I, the indifference curves of the agents will be tangent. This turns out to be identical to the observation made above that at efficient points the agents' MRSes are equal.[77]

There are an infinite number of points of tangency like G, H, and I, stretching from the lower left of the box (Point S) to the upper right (Point J). This set of efficient points is called the "contract curve" because (from the rather naïve viewpoint of pre-1970's microeconomics) there is no reason for the parties to sign a final contract that is not located on that curve. It is indicated by the dashed line in Figure 1.

Each point on the contract curve generates a certain utility for Smith and for Jones. Hence each point on the contract curve generates a point on a new graph, Figure 2, depicting Smith's utility on one axis and Jones's utility on its other axis. In the Edgeworth Box, Smith's utility will be least for points on the contract curve near the lower left and most for points on the contract curve near the upper right; Jones's utility will be least for points on the contract curve near the upper right and most for points on the contract curve near the lower left. Hence along the contract curve, as one agent's utility goes up, the other agent's utility goes down. Therefore in Figure 2, depicting Smith's utility on one axis and Jones's utility on the other axis, the graph depicted will be downward sloping, showing an inverse relationship between the utility of the two agents once attention is confined to efficient points. This is expected: were the utility of the agents not related inversely, or "antagonistically," to each other, the utility of both agents could rise together, hence the original situation could not have been an efficient

77. Along the edges of Edgeworth Boxes, it can happen that efficient points occur when indifference curves are not tangent to each other, because then the alternative contemplated in the proof in *supra* note 75 may be infeasible.

one. The relationship in Figure 2 is called the "utility possibility frontier."[78] Since utility is measured ordinally, there are utility possibility frontiers representing the same preferences as Figure 2 but having somewhat different shapes (where "somewhat different" means that the consumption bundle generating point T in Figure 2 would still have to generate a point on any such alternative utility possibility frontier that would lie above and to the left of the point generated by the consumption bundle that in Figure 2 gives rise to point W, even though how much the first point would lie above and to the left of the second could be different than in Figure 2).

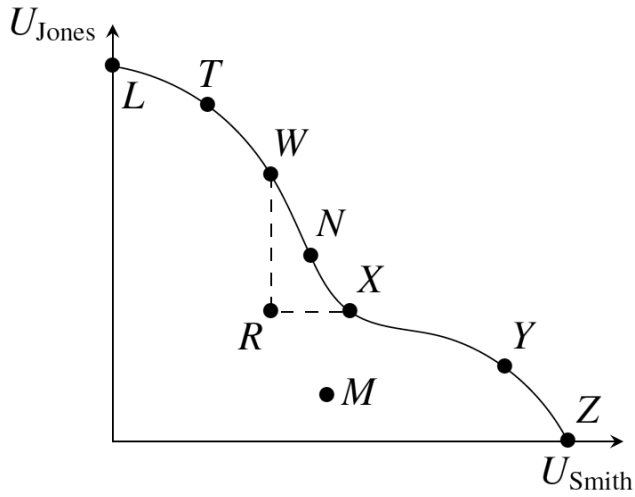

Figure 2. A utility possibility frontier.

Point L on the utility possibility frontier corresponds to the lower left-hand corner of the Edgeworth Box (its Point S), where Jones's utility is at a maximum and Smith's utility is at a minimum. Point Z on the utility possibility frontier corresponds to the upper right-hand corner of the Edgeworth Box (its Point J), where Smith's utility is at a maximum and Jones's utility is at a minimum. As one moves from the lower left to the upper right in the Edgeworth Box along the contract curve, one moves from L to T then W then N then X then Y then Z along the utility possibility curve.

An inefficient point, such as F in Figure 1, corresponds to a point such as R inside the utility possibility frontier. Moving in Figure 1 from F to I, along an indifference curve of Smith, corresponds to moving from R to W in Figure 2, keeping Smith's utility constant. Moving in Figure 1

78. Since utility numbers are ordinal, the utility possibility frontier could be in any quadrant or quadrants. It need not be in the first quadrant, although that is how we have drawn it. For the same reason, the utility possibility frontier need not be concave: see Figure 10.B.1 of MAS-COLELL, WHINSTON, & GREEN, *supra* note 74.

from F to H corresponds to moving from R to X in Figure 2. Moving in Figure 1 from F to G corresponds to moving in Figure 2 from R to N or a point nearby it.

E. Pareto Efficiency Requires Productive Efficiency

In an economy with production, an important concept is the "marginal rate of technical substitution" (MRTS) of different "factors of production" (for example, land and irrigation water) into output (for example, apples or bananas). The "MRTS of land for water in the production of apples" is the extra amount of land needed to keep the number of apples produced constant if one reduced the amount of water used by one unit. In an economy with more than one output, Pareto Efficiency requires "efficient production," which in turn requires equality of the MRTSs in each industry; otherwise, a rearrangement

of the utilization of the factors of production could result in greater output of one commodity and no smaller output of any other commodity. Thus, for example, "efficient production" would require equality of "the MRTS of land for water in the production of apples" and "the MRTS of land for water in the production of bananas." We omit the proof, which is essentially identical, *mutatis mutandis,* to that described for distributive efficiency above, in the interest of space.

F. Pareto Efficiency Requires Allocative Efficiency

Allocative efficiency means that neither an economy's utilization of its factors of production nor its distribution of produced goods can be altered to make some people better off without making some others worse off. An economy has allocative efficiency if it has both distributive efficiency and productive efficiency. When economists refer to "efficiency" (modified by no adjective) in an economy with production, they mean "allocative efficiency." An economy with production is Pareto Efficient if and only if it has allocative efficiency.[79]

79. The proof of this result is too lengthy to present here, but we can show the proof of a closely related result in a model with a simpler description of production. To this end, abstract away from factors of production (land and irrigation water, in our discussion above), and define the "marginal rate of transformation" to refer to the ultimate tradeoff at the margin between apple output and banana output. In particular, assume that, adjusting land and irrigation water appropriately, reducing output by one apple would result in the ability to produce four more bananas, and vice versa, so that the MRT of bananas for apples is four. Under such circumstances, any situation in which the common MRS of bananas for apples of Jones and of Smith was not equal to four would not be Pareto Optimal. To prove this, assume by way of contradiction that the situation is Pareto Optimal but that the MRT is not equal to the MRS: suppose that although the MRT of bananas for apples is 4, the MRS of bananas for apples of Jones and Smith is 5. Create two more apples, one each for Jones and Smith, by using as inputs 8 bananas, 4 each from Jones and Smith. Each person now has one more apple and four fewer bananas. Had each person been left with one more apple and five fewer bananas, they would be equally as well off as before, but actually they are left with one more apple and four fewer bananas, so they are better off than they were before; hence, the original situation was not Pareto Optimal. This contradicts our premise that

To illustrate allocative efficiency, put the Edgeworth Box used to illustrate exchange into a larger production possibility frontier, which is the relationship between the economy's potential outputs of apples and bananas, and is illustrated by the curve p_1p_2 in Figure 3. (The curve from the lower left to the upper right of the Edgeworth Box is the contract curve.) The slope of the dashed tangent line at *J* is the tradeoff at the margin between apple output and banana output (*supra* note 79's "marginal rate of transformation"). By assumption, at point *m*, the indifference curves U_{Sm} and $U_{Jm}$are tangent to each other, and the slope of the dashed common tangent line at *m* is the MRS for both Jones and for Smith. The allocation *m* is Pareto Efficient if and only if the dashed tangent lines at points *J* and *m* are parallel. At this point no Pareto Improvement is possible, and the economy is allocatively efficient.

Allocative efficiency, as illustrated in Figure 3, is a much more complicated idea than distributive efficiency illustrated in Figure 1; it is not even clear that positions like *J* and *m*, which have tangents parallel to each other, will exist in general, and if they do exist, proving their existence is typically only possible using advanced mathematics.[80]

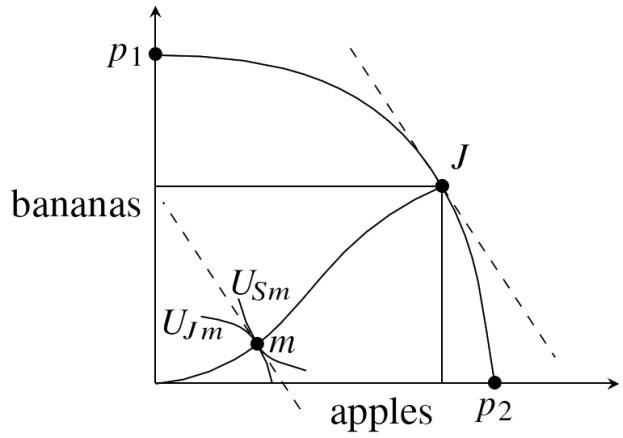

Figure 3: Allocative efficiency

the original situation was Pareto Optimal and establishes the proof. The case in which the MRT is greater than the joint MRS is proven similarly.

80. In particular, by using an Arrow-Debreu general equilibrium setup. In such a setup, exactly as in an Edgeworth Box, the initial endowment of commodities to each consumer is a given. *See* HAL R. VARIAN *supra* note 72 at 344. *See* GÉRARD DEBREU, THEORY OF VALUE (Wiley 1959) ("Each consumer holds an initial endowment vector in the interior of his consumption set"). Also, as in an Edgeworth Box, the initial distribution of endowments will determine the set of Pareto Efficient points, and they, in turn, will generate a utility possibility frontier of the same general shape as Figure 2 but more complicated to calculate.

G. Pareto Efficiency Cannot be Used to Establish a Theory of the Common Law

Having established that for an economy with production to be Pareto Efficient the economy must have allocative efficiency, and that that in turn requires productive efficiency and distributive efficiency, this section explains why Pareto Efficiency cannot form the basis for a theory of the common law, i.e., what judges do or should do. We separate our claims into "positive economic limitations" and "normative problems."

1. Positive Economic Limitations of Pareto Efficiency

a. Pareto Optimality Cannot be Used to Resolve Legal Controversies

The first problem with Pareto Efficiency for use in the courtroom is that it will never or almost never be applicable to a real-world legal dispute. A legal controversy only comes to court when a dispute has a potential winner and a potential loser. Under Article III § 2 of the Constitution, standing (the ability to bring suit) in federal court is limited to "cases" and "controversies." Most state constitutions follow this same limitation. Courts do not offer "advisory opinions" and a plaintiff bringing a case must show that there is a real and concrete dispute to be resolved. For cases seeking damages, most causes of action such as tort and contract cases also require "injury" as an essential element of the claim itself, which must be pled in the operative complaint. If damages are awarded, they are paid by the defendant to the plaintiff. Accordingly, both a plaintiff and a defendant will experience harm from an adverse judgment or "loss" of a lawsuit. But Pareto efficiency requires that there be no "loser." Thus, Pareto-efficient outcomes are inconsistent with court processes and, if they are ever attained, they would probably be uncovered by the parties themselves or in mediation. Accordingly, it is highly unlikely that judicial decisions would be based on the Pareto principle.

b. Pareto Optimality is an Incomplete Ordering

In addition, even if a judicial decision could result in no "loser," the Pareto criteria may still be inapplicable because the Pareto Principle results in an incomplete ordering: that is, although the Pareto Principle can rank some situations as 'better' or 'worse' than some other situations, it cannot supply a complete ordinal ranking of all social states. For example, in Figure 2 above, the Pareto Principle can rank points W, N, and X as "better than" point R. However, the Pareto Principle cannot rank points on the utility possibility frontier, such as L, T, W, N, X, Y, or Z, vis-à-vis each other, because movements from one of these to another are not Pareto Improvements. To illustrate, the

situation in which Smith is a slave and Jones owns Smith might be point L (very low utility for Smith, very high utility for Jones), and the situation in which neither is a slave might be point W (compared to L, Smith's utility has increased and Jones's utility has decreased); the Pareto Principle cannot rank-order points L and W. (This could also raise normative concerns—see Section III.G.2.)

The Pareto Principle also cannot rank R vis-à-vis another point like M, which is also inside the utility possibility frontier, but which has a greater utility for one person and a smaller utility for the other person. The Pareto Principle would rank point R worse than a point between R and W; it would rank point R worse than a point between R and N; and it would rank point R worse than a point between R and X.[81] In general, the only points that the Pareto Principle can rank higher than R are points lying above and to the right of R; that is, points between the dashed lines in Figure 2. Similarly, the only points which the Pareto Principle can rank lower than R are points lying below and to the left of R. The Pareto Principle cannot rank vis-à-vis R points like M, in the area below and to the right of R, or points in the area above and to the left of R. Thus, many situations that may arise in court cases are simply not subject to comparison using Pareto efficiency and application thereof cannot aid in resolution of such cases.

c. Pareto Efficiency Depends on Distribution: The Separation Hypothesis, Pie Analogies, and the "Efficient Allocation of Property Rights"

L&E's free market ideology counsels that judges should ignore distributive justice and instead use efficiency as their sole criterion for adjudication. This requires belief that efficiency improvements can be identified independent of distribution. We call this idea that efficiency improvements and distribution are completely separate from each other "the Separation Hypothesis."[82] L&E often explains the Separation Hypothesis by using the analogy of a pie: increasing the size of the pie corresponds to efficiency improvements, while the way the pie is sliced and handed out corresponds to distribution.

To show that this analogy is not apt and that the Separation Hypothesis is false, consider an Edgeworth Box such as the one in Figure 1 above. If the "pie" analogy were correct, then in such an Edgeworth Box of a pure exchange economy, wherein the size of the box (i.e., the amount of each commodity) is fixed, efficiency (the size of the pie) would be fixed and unchangeable. Moves within the Box would only

81. Jules L. Coleman, *Efficiency, Utility, and Wealth Maximization*, 8 HOFSTRA L. REV. 509 n.12 (1980) (making similar points).

82. An early statement of the Separation Hypothesis is in Nicholas Kaldor, *Welfare Propositions of Economics and Interpersonal Comparisons of Utility*, 49 THE ECON. J. 549, 551 (1939). Kaldor says the idea is originally due to Pigou.

reflect changes in distribution, not efficiency. Clearly, this is not the case: changes in distribution like that from F to G, or even from F to a point halfway between F and G, generate efficiency improvements. It is as if changes in the way a pie is sliced affect the size of the pie. Since actual pies do not behave in this way, the pie analogy in economics is misleading and should be dropped.

Figure 1 can be used to show more precisely how distribution affects efficiency improvements. If the initial distribution of commodities is at Point F, the only points that are Pareto *improvements* are the points that lie neither in the "Smith Veto" hatched area nor in the "Jones Veto" hatched area. However, if the initial distribution of commodities is at Point B, the set of Pareto-improving points would shift to the lens-shaped area that includes points K and A. Finally, if the initial distribution were at S or J, the set of Pareto-improving points would be empty. The Separation Hypothesis says that efficiency improvements can be identified separately from distribution, but this example shows that distribution determines what points are and are not Pareto improvements. If we define the new term "efficiency improvements" to be a synonym for "Pareto improvements," then we can say that distribution determines efficiency improvements. (Note that distribution does not determine the set of efficient points, which is the entire contract curve and is independent of distribution: thus, distribution determines efficiency *improvements*, not efficiency.)

In an economy with prices, there is yet another way to see that distribution affects efficiency. Suppose a society is composed of two factions, one that is quite fond of banana cream pies and the other that despises banana cream pies. In such a society, the value/"size" of a banana cream pie will be much higher if the first faction of people is rich and the second faction is poor than if the reverse holds.

To extend this argument to an economy with production, suppose the only input to production is human-capital-adjusted labor. Suppose it is the only commodity in anyone's endowment. There are two types of people, Type A and Type B. Type A people like apples but do not like bananas. Type B people like bananas but do not like apples. Further, suppose that Type A has a large amount of human-capital-adjusted labor, and Type B has very little. Under such conditions, the "optimal" allocation of labor is to put labor into the production of apples; producing bananas is not "productive." But if Type A has very little human-capital-adjusted labor and Type B has a great deal, then the "optimal" allocation of labor is to put labor into the production of bananas and producing apples is not "productive." So "100 apples and 0 bananas" is "a big pie" in one situation and "no pie at all" in the other situation. The distribution of endowments determines pie size, thus disproving the Separation Hypothesis. This also means, in turn, that if one measures "output" using market prices, as, for example, is done in

calculating GNP, then one's measure of "output" depends on the distribution of wealth. The concept of economic "output" is distribution dependent. [83] Hence increasing "output" is not necessarily a good thing.[84]

The goal of proponents of the Separation Hypothesis was to separate economic policy questions into two aspects, "efficiency improvements," which economists and judges could "objectively" identify, and "distribution improvements," which they could not. However, the set of points which are Pareto Improvements completely depends on what the original distribution was, and distribution affects prices, which in turn affects the valuation of any commodity bundle. Therefore, the notion that efficiency improvements can be determined independently of distribution is false.

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83. Hausman and McPherson similarly note: "There are many problems with this argument, and many of these problems are inherited by the practical implementation of this line of thought in contemporary cost-benefit analysis. The central problem is that the separation that Kaldor and Hicks envisioned between questions concerning efficiency and distribution, between the size of the pie and the way it is sliced is not in general to be had." Daniel M. Hausman & Michael S. McPherson, *The Philosophical Foundations of Mainstream Normative Economics* 244, *in* THE PHILOSOPHY OF ECONOMICS: AN ANTHOLOGY (Daniel M. Hausman ed., Cambridge Univ. Press 3d ed. 2007). For a similar sentiment, see MARK BLAUG, ECONOMIC THEORY IN RETROSPECT 575 (Cambridge Univ. Press 5th ed. 1997) ("Thus, the long discussion on welfare criteria—from Pareto through Barone to Hicks, Kaldor and Scitovsky—has brought us no further in evaluating policy changes which benefit some people but harm others on purely 'positive' grounds. Efficiency questions appear to be inseparable from equity questions.").

84. The famous economic historian Richard Henry Tawney wrote:

> Thus privilege, which was to have been exorcised by the gospel of 1789 [the start of the French Revolution], returns in a new guise, the creature, no longer of unequal legal rights thwarting the natural exercise of equal powers of hand and brain, but of unequal powers springing from the exercise of equal rights in a world where property and inherited wealth and the apparatus of class institutions have made opportunities unequal. Inequality, again, leads to the mis-direction of production. For, since the demand of one income of £50,000 is as powerful a magnet as the demand of 500 incomes of £100, it diverts energy from the creation of wealth to the multiplication of luxuries, so that, for example, while one-tenth of the people of England are overcrowded, a considerable part of them are engaged, not in supplying that deficiency, but in making rich men's hotels, luxurious yachts, and motorcars like that used by the Secretary of State for War, "with an interior inlaid with silver in quartered mahogany, and upholstered in fawn suede and morocco [leather]". . . .
>
> Thus part of the goods which are annually produced, and which are called wealth, is, strictly speaking, waste, because it consists of articles which, though reckoned as part of the income of the nation, either should not have been produced until other articles had already been produced in sufficient abundance, or should not have been produced at all. And some part of the population is employed in making goods which no man can make with happiness, or indeed without loss of self-respect, because he knows that they had much better not be made, and that his life is wasted in making them.

RICHARD HENRY TAWNEY, THE ACQUISITIVE SOCIETY 37–38 (Harcourt, Brace & Co. 1920), https://www.gutenberg.org/files/33741/33741-h/33741-h.htm. *See also id.* at 29–36, 102. *See also* Pope Pius XI, *Quadragesimo Anno* (1931), https://www.vatican.va/content/pius-xi/en/encyclicals/documents/hf_p-xi_enc_19310515_quadragesimo-anno.html ("And thus bodily labor, which Divine Providence decreed to be performed, even after original sin, for the good at once of man's body and soul, is being everywhere changed into an instrument of perversion; for dead matter comes forth from the factory ennobled, while men there are corrupted and degraded."). *See also* E. F. Schumacher, *The Age of Plenty: A Christian View*, *in* HERMAN E. DALY & KENNETH N. TOWNSEND, VALUING THE EARTH: ECONOMICS, ECOLOGY, ETHICS 165 (MIT Press 2d ed. 1993) (citing Pope Pius XI, *Quadragesimo Anno*).

d. The Coase Theorem Does Not Support the Separation Hypothesis

The "Separation Hypothesis" entered economics in the first part of the twentieth century via Kaldor and Pigou,[85] but it entered the L&E tradition in 1960 via the famous Coase Theorem,[86] which states that one may obtain "the" efficient outcome regardless of how property rights are distributed. This conclusion flatly contradicts the argument against the Separation Hypothesis we just made in Section III.G.1(c), so it is impossible for the Coase Theorem and our earlier argument to both be true *under an identical set of assumptions*. Recall, we make all the Arrow-Debreu assumptions of market perfection, and therefore our task in this subsection is to show that under those Arrow-Debreu assumptions, the Coase Theorem is false. Note that the Arrow-Debreu assumptions rule out strategic behavior and transactions costs. Therefore, our discussion will be quite different from the discussion of many other Coase Theorem critics, who show that the Coase Theorem fails upon the introduction of strategic Coasian Bargaining considerations[87] or who show that it fails upon the introduction of transactions costs.[88] In contrast, we demonstrate that it fails even in the absence of strategic behavior and even in the absence of transactions costs.

85. *See Kaldor, supra* note 82.

86. *See* Ronald H. Coase, *The Problem of Social Cost*, 3 J. L.& ECON 1, 1–44 (1960).

87. *See* William Samuelson, *A Comment on the Coase Theorem*, *in* GAME-THEORETIC MODELS OF BARGAINING 321–339 (Alvin E. Roth ed., Cambridge Univ. Press 1985).

88. Ronald Coase himself was a critic of the "Coase Theorem" because of its assumptions of no transactions costs. Glenn Fox makes a convincing case that the main thrust of Ronald Coase's entire career was that "no transactions costs" assumptions were completely irrelevant to the real world. The theorem really ought to be called "Stigler's Coase Theorem" and readers should be reminded that in Coase's Nobel lecture he called it "infamous"—and he meant "infamous" in the traditional, pejorative sense of that word. *See* Glenn Fox, *The Real Coase Theorems*, 27 CATO J. 373, 378, 381–82 (2007); Ronald H. Coase, *Prize Lecture, The Institutional Structure of Production*, THE NOBEL PRIZE (Dec. 9, 1991), https://www.nobelprize.org/prizes/economic-sciences/1991/coase/lecture.

Figure 4 illustrates the Coase Theorem.

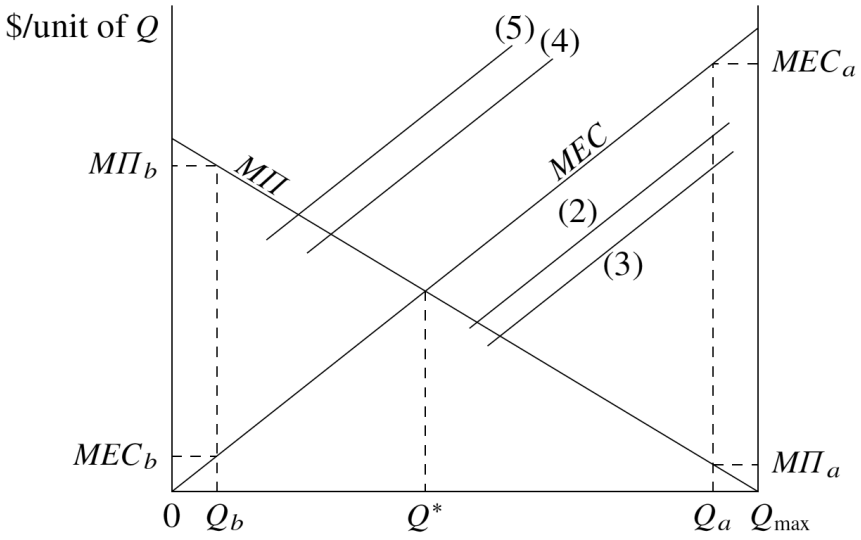

Figure 4. The Coase Theorem

In the figure, $M\Pi$ denotes the marginal profit that a firm earns if it produces one more unit of an output called Q. Left unregulated, the firm will produce Q until further units of Q are worthless to it; that is, it will produce until marginal profit is zero, which is at output level $Q_{\max}$. (Total profit will be at its maximum where marginal profit is zero.) Next, suppose production of this output generates air pollution, and assume that pollution victims are willing and able to pay for some pollution reductions. Calling their willingness and ability to pay to reduce pollution "external cost" because that is the way pollution's cost is measured in neoclassical economics, Figure 4's *MEC* curve illustrates the marginal external cost, that is, the external cost of the Qth unit of production. If producers have the property right to pollute as much as they wish, they will plan to produce at $Q_{\max}$. However, pollution victims would be willing and able to pay the firm MEC_a (or less) in return for a reduction in planned output to Q_a. Firms would only require a payment of $M\Pi_a$ (or more) in return for reducing output to Q_a. Since $MEC_a > M\Pi_a$, for any payment amount between those two values, both parties would gain by the pollution victims paying that amount to the firm in return for a reduction in output to Q_a. Similar further rounds of bargaining would result in output falling until it finally gets to Q^*, beyond which $MEC > M\Pi$ is not true anymore and bargaining stops.[89]

89. This assumes that if a trade which is mutually beneficial in the short run exists, then that trade will actually take place. This assumption is, from the point of view of the modern theory of repeated games, naïve. Samuelson, *supra* note 87.

On the other hand, if pollution victims have a property right to clean air, they would enforce that right and plan to compel the firm to produce zero output. However, the firm would be willing and able to pay the victims $M\Pi_b$ (or less) in return for an increase in planned output to Q_b. Pollution victims would only require a payment of MEC_b (or more) in return for allowing output to increase to Q_b. Since $M\Pi_b > MEC_b$, for any payment amount between those two values, both parties would gain by the firm paying that amount to the pollution victims in return for an increase in output to Q_b. Further rounds of bargaining would result in output rising until it finally gets to Q^*, beyond which $M\Pi > MEC$ is not true anymore and bargaining stops. The Coase Theorem thus concludes that, regardless of the initial assignment of property rights, the amount of output produced will be Q^*, which is the (unique) socially-optimal level of output because it is Pareto Efficient.

The flaw in this argument is that once pollution victims have paid money to the firm in return for a reduction in output from $Q_{\max}$ to Q_a, the pollution victims do not have as much money as they had before, and (if clean air is a normal good) their demand for clean air will fall—an "income effect" or a "wealth effect"—so *MEC* is not going to remain fixed, it is going to fall to a position such as (2) in the graph. Additional payments by consumers in exchange for further reductions in Q beyond Q_a will shift the *MEC* curve further, for example to position (3). (If clean air were an inferior good, the *MEC* curve would shift upwards to positions such as (4) and (5).) Thus, the bargaining process will never get to Q^*. Similarly, if the pollution victims have the property right, then once the firm pays the pollution victims money in exchange for an increase in Q from zero to Q_b, the pollution victims will have more money than they did before, and hence their demand curve for clean air, *MEC*, will shift up (say to position (4)) if clean air is a normal good, and shift down (say to position (2)) if clean air is an inferior good. Additional payments by firms in exchange for further increases in Q beyond Q_b will shift the *MEC* curve even further, for example to position (5) or, respectively, to position (3). Again, the bargaining process will never get to Q^*. Only in the theoretically uninteresting and empirically irrelevant case in which the good is exactly on the borderline between being normal and being inferior will the *MEC* curve not shift and will the bargaining, under all the other (unrealistic) assumptions required for the Coase Theorem to work such as no transactions costs, end up at Q^*.

The upshot is that the Coase Theorem's interpretation of Q^* as an economically efficient or optimal point irrespective of the distribution of income or rights is misguided. The economically "efficient" amount of clean air a society will produce, just like the amount of bread it produces, is a direct consequence of the prior distribution of income, wealth, and property rights. The assignment of property rights determines the position of *MEC*, and each change in property rights as the steps of

bargaining occur changes the position of *MEC*. Thus, the notion that the position of Q^* is independent of all property rights is as unlikely as the idea that demand curves do not depend upon income.[90]

We have not yet argued that the $M\Pi$ curve will also shift, but we need to, because otherwise the Coase Theorem would hold if both sides of the problem were firms, such as a rancher and a farmer, rather than a firm and an individual. If the polluter has the property right to pollute, receipts of payments from pollution victims can be thought of as decreases in the fixed cost of production (as well as prohibitively large increases in the marginal opportunity costs of production for levels of Q past wherever the final bargaining point ends up). The resulting increase in profit will have to be competed away in long-run equilibrium, or else continual entry of firms would occur. The only mechanism for that is a decrease in product price (due to a shift outward in the product's supply curve), which would shift the $M\Pi$ curve down,[91] or an increase in marginal production costs (due to increased demand from this industry shifting the demand curve for inputs out), which would also shift the $M\Pi$ curve down.

Thus, we have proven that the Coase Theorem fails under the Arrow-Debreu assumptions.

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90. The discussion in the text is a minor variation on that given in Ezra J. Mishan's essay. Ezra J. Mishan, *The Postwar Literature on Externalities: An Interpretative Essay*, 9 J. ECON. LITERATURE 1, 18–21 (1971). It is also an extension of C. Edwin Baker's *The Ideology of the Economic Analysis of Law.* Baker realized that the initial position of a curve like the *MEC* curve depends on income, although he did not analyze how things changed as Coasian bargaining progressed. Baker wrote:

> But Coase's analysis is subject to an important qualification, a qualification which is vital for understanding the biases implicit in Posner's, and much legal-economic, analysis. The initial assignment of a right can affect the wealth of the parties which in turn can affect the parties' "valuation" of the right, and thus affects the ultimate use of the resource. An extreme example, given by Posner, of the initial assignment determining the use which ultimately prevails is the case of a "right to a barrel of water as between two dying men in a desert" [. . ..] If the barrel of water is assigned to the one for whom it is most valuable, the one willing and able to pay the most for it, the water would be assigned to the richer of the two men. But the analysis is moving too fast. Why would the initial assignment—contrary to the standard reading of Coase—make a difference? [. . .] An assignment of the right to the barrel of water (or a right to be free from pollution or a right of property owners not to have their property damaged by sparks from trains) increases the wealth of the party assigned the right. [. . .] a person's wealth affects how much that person is willing and able to pay for a specific desired right [. . .] the initial assignment may determine who "values" the right the most. [. . .] No neutral efficiency analysis exists which can avoid or segregate the distributive question; in the legal dispute the value maximizing award depends on what initial distribution is assumed while the content of the initial distribution is the precise issue in dispute.

C. Edwin Baker, *The Ideology of the Economic Analysis of Law*, 5 PHIL. & PUB. AFFS. 3, 12–13, 16 (Wiley 1975).

91. Explicitly detailing the mechanism would be nontrivial because the fixed costs constitute a nonconvexity. There is a countervailing tendency: the payments from the pollution victims have essentially been transmitted onward to the consumers of the product through the fall in price, and if the product is a normal good, the income effect will cause demand for it to rise, shifting the $M\Pi$ curve up—but the net result must still be for the $M\Pi$ curve to shift down to be consistent with the fall in the product price.

e. The Equity-Efficiency Tradeoff Fallacy

As ubiquitous as the "pie" analogy (the Separation Hypothesis) is in L&E, just as common in L&E is another position that contradicts it—not in the correct way described by Section III.G.1(c) but in an incorrect way. This other position holds that the more evenly one cuts pieces of the pie, the smaller the pie becomes. In other words, it holds that policies promoting equity damage efficiency. In this subsection we prove this position similarly fallacious.

In an Edgeworth Box of a pure exchange economy, it is easy to disprove the contention that increasing equity impairs efficiency. In Figure 1 above, moving from an inequitable position such as S or J to a more equitable position such as I, G, or H does not change the size of the box at all. Therefore, as a theoretical microeconomics proposition, there is no necessary tradeoff between equity and efficiency, and the "Equity-Efficiency Tradeoff" is a fallacy. (Whether it is a fallacy as a historical proposition is addressed in the paragraph after next.)

The Second Fundamental Theorem of Welfare Economics extends this argument. It says that "we can achieve any desired Pareto Optimal allocation as a market-based equilibrium using an appropriate lump-sum wealth distribution scheme."[92] For example, starting from an unequal point such as S, J, C, D, or E in Figure 1, one could achieve the more equitable position G in the following way: impose (against one party's wishes) a lump-sum redistribution moving the economy to a point somewhere near F, then begin protecting property rights and establish perfect competition; the free market transactions that follow will on their own move the economy to G (which is not only more equitable than S/J/C/D/E, it is also Pareto Optimal, unlike C and D). In other words, starting from point S or C, then expropriating much of Jones's endowment and giving it to Smith, does not hamper the ability of the economy to then achieve, through competitive trading, an efficient point. Obviously, there is no Equity-Efficiency Tradeoff here, in this Arrow-Debreu world of the Second Fundamental Theorem of Welfare Economics. No one would be interested in the Second Theorem if lump-sum redistributions in favor of the poor caused Edgeworth Boxes to shrink, because the Second Theorem assumes the Edgeworth Box stays the same size when the redistributions occur. Yet not only are economists "interested" in the Second Theorem, they also often call it a "Fundamental Theorem," one of only two theorems in all of economics to be called that. Economic theorists thus are clearly not taking the Equity-Efficiency Tradeoff seriously.

We concede that models (like an Edgeworth Box of unchanging size) are only models, not the real world, and results that are extremely important in economic theory (like the Second Fundamental Theorem

92. MAS-COLELL, WHINSTON & GREEN, *supra* note 74, at 551.

of Welfare Economics) may be much less important in the real world. While the Equity-Efficiency Tradeoff is a fallacy insofar as it is a theoretical statement (a statement of general applicability), we would require historical evidence to argue that it is fallacious as an empirical regularity of the real world. Fortunately for us we have such evidence as already presented in Part II: the more equitable distribution of the New Deal Consensus resulted in higher growth, higher productivity increases, and more investment than the period of more unequal distribution after 1980.[93] Therefore, we conclude that the Equity-Efficiency Tradeoff is a fallacy both as a matter of economic theory and as a matter of the U.S. historical experience.[94]

2. Normative Problems

In this section we consider some observers' normative objections to using Pareto Efficiency as a foundation of jurisprudence.

a. Perverse Preferences and the Monotonicity Assumption

Pareto Optimality requires that no one be made worse off: it only allows for decisions based on unanimous consent. For example, the Pareto Principle would require us to refrain from punishing criminals

93. From the perspective of elementary economics this seems to pose a theoretical enigma: shouldn't high income taxes generate disincentives to work, depressing economic activity and diminishing national wealth? Once one abandons the simplistic "work yields disutility/leisure yields utility" framework and considers the many ways that work can bring nonpecuniary benefits (for example the feeling of not being a parasite on society, or the pride in creating things valued by others, or the enjoyment from exercising control over other people in the workplace), the picture becomes considerably more complex. The Queen of England did not work because of the paycheck (which she would probably get anyway), and Bill Gates now works at giving his money *away*. Such motivations are described as "internal incentives" in GREG DAVIDSON & PAUL DAVIDSON, ECONOMICS FOR A CIVILIZED SOCIETY 32 (W.W. Norton 1988); they should not be ignored. At the level of elementary macroeconomic theory, an Equity-Efficiency Tradeoff is dubious because redistribution from rich to poor increases the economy-wide average marginal propensity to consume and thus shifts the aggregate demand curve out. Finally, even if high income taxes on highly-paid people did constitute a disincentive for those people to work, that might be a *good* thing. In an economy like the US with very advanced division of labor, many highly-paid people are highly-paid because they have specialized knowledge, which is to say, they have large informational advantages over the principals who hire them as agents. Giving them incentives to work harder could result in greater principal-agent inefficiencies and lower national income. Would the 2008 financial crisis have happened if bond traders were compensated like schoolteachers instead of being eligible for bonuses in the seven figures? Would the opioid crisis be happening if the family that owns Perdue Pharma (maker of OxyContin) had faced a 100% marginal income tax rate on income above a few million dollars? Therefore, high income taxes might increase the size of the economy by decreasing the amount of socially-destructive work more than high income taxes decrease (if they even do) the amount of socially-useful work. For more on this see Neal Gabler, *Disincentivizing Greed*, L.A. TIMES (August 22, 2010), https://www.latimes.com/archives/la-xpm-2010-aug-22-la-oe-gabler-greed-20100822-story.html.

94. There is also international evidence to support our position, such as the post-World War II German "Wirtschaftswunder" period. *See, e.g.*, *Wirtschaftswunder*, WIKIPEDIA, https://en.wikipedia.org/wiki/Wirtschaftswunder (last visited Oct. 23, 2023). The post-World War II land reform in Taiwan also supports our position. *See* Anthony Y.C. Koo, *Economic Consequences of Land Reform in Taiwan*, 6 ASIAN SURVEY 150, 150–57 (1966).

because no criminal would consent to punishment that harms him. Thus, the Pareto Principle is unattractive in a world with criminals or, more broadly, in a world with people whose preferences are perverse. Most economists deal with the problem of perverse preferences by simply assuming that perverse preferences do not exist—an assumption called the "monotonicity" assumption of welfare economics (or of the "social choice function"). Evidently, the Pareto Principle is attractive only in a world in which the monotonicity assumption holds. This has not bothered economists much because they have shown great enthusiasm for the monotonicity assumption.

However, if perverse preferences exist, judges, unlike theoretical economists, cannot simply assume them away. In a world where monotonicity fails and there are perverse preferences, moral philosophers convincingly object to the notion, endorsed by the Pareto Principle, that there is no reason not to "increase the utility of an undeserving person, or someone satisfying morally objectionable preferences, so long as no one else is harmed." Jules Coleman writes:

> Generally, a policy that makes A better off and no one worse off would be Pareto superior, even if A had no right to be made better off, or if he deserved to be made worse off, or even if B not A should have been better off. Until we know something about the rights and deserts of individuals affected by alternative courses of conduct, we should remain agnostic about the moral value of those policies that would otherwise be recommended to us as Pareto superior. In the absence of a prior nonefficiency-based theory of rights and moral deserts, it would be irrational to consent to Pareto superiority as a moral maxim.[95]

The zeal with which economists embrace the monotonicity assumption in order to be able to ignore such considerations is difficult to overstate. In none of the texts of Varian, Jehle and Reny, or Mas-Colell, Whinston, and Greene is there any suggestion that this assumption be abandoned.

Pareto Optimality makes no sense without the monotonicity assumption. Economists embrace the monotonicity assumption, eliminating this objection to Pareto Optimality. The real world of legal decisions in the courtroom cannot.

b. Is Pareto Optimality Sufficient or Necessary for Social Optimality?

In Figure 1 above, point S is Pareto Optimal. Surely, however, that would not be *sufficient* for most people to describe S as a socially optimal

95. Coleman, *supra* note 81, at 547.

point, or to define a society at S as a just society. Dasgupta and Heal write,

> The fact that a vector of acts is Pareto efficient does not offer sufficient ground for it to be regarded as optimal—or even desirable. Typically, one would be concerned with the distribution of utilities, and it is possible that a vector of acts sustains an equilibrium [and is efficient]…and at the same time yields a distribution of utilities that one may deplore.[96]

The Second Fundamental Theorem of Welfare Economics can help in understanding how social well-being could be enhanced by abandoning a Pareto Optimal point such as S or E in Figure 1. If one started with an endowment point like S or E but then confiscated enough apples and bananas from Jones and gave them to Smith so that the endowment point was changed to F, then under the Arrow-Debreu assumptions, competitive trading from F will achieve an efficient point somewhere on the contract curve between I and H. In other words, if society has a sufficiently great aversion to inequality, a one-time wholesale, even revolutionary, reassignment of property rights would—so long as afterwards property rights are respected and voluntary trades are allowed—enhance social well-being by moving society's fate away from Pareto Optimal points S or E to I or G or H. In such societies, Pareto Optimality is clearly not sufficient for social optimality.

In an Arrow-Debreu world, most observers would agree that Pareto Optimality is a *necessary* condition for social optimality (in other words, no point which is not Pareto Optimal can be socially optimal). Given the monotonicity assumption of Section III.G.2(a), it cannot be socially optimal to refrain from engaging in a Pareto Improving move. However, in a non-Arrow-Debreu world, suppose in Figure 1 that for some reason the points in the lens-shaped area generated by F—in other words, the points that belong to neither the "Smith Veto" region nor the "Jones Veto" region—are not feasible. A reasonable person might then prefer a non-Pareto-Optimal point like F to a Pareto Optimal point like E, meaning that Pareto Optimality would not be a necessary condition for social optimality. Paul Samuelson, a Nobel laureate and one of the greatest economists of the twentieth century, held such a view.[97]

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96. P.S. DASGUPTA & G.M. HEAL, ECONOMIC THEORY AND EXHAUSTIBLE RESOURCES 17 (Cambridge Univ. Press 1979).

97. Kotaro Suzumura, *An interview with Paul Samuelson: welfare economics, "old" and "new", and social choice theory*, 25 SOC. CHOICE AND WELFARE 327, 336 (2005) (describing "the following common *error*: if a situation α is Pareto optimal and β is not, then always society should prefer α to β") (emphasis added).

We conclude Part III having established that in economic theory "efficiency" means Pareto Efficiency. But this has fatal positive and normative deficiencies that render it incapable of being the foundation for a theory of the common law. Its most glaring deficiency is that it is inapplicable to what judges do. As a result, L&E has adopted alternative definitions of efficiency, referred to as "Kaldor-Hicks." What exactly L&E textbooks mean by "Kaldor-Hicks" we will take up in Appendix 1; what we do immediately next is discuss what economists mean by the approaches of Kaldor and Hicks. As we detail, however, the Kaldor and Hicks definitions of "efficiency" have deficiencies, both positive and normative, that make Pareto Efficiency's deficiencies look miniscule by comparison.

IV. THE CRITERIA OF KALDOR AND HICKS: THE REALM OF COERCION

The hallmark of Pareto Efficiency, which as we have seen is not a viable theoretical underpinning for L&E, is that no one is hurt by Pareto improving moves. The alternative "efficiency" criteria L&E advocates have retreated to are alternatives that not only tolerate, but affirmatively result in hurting people. Writings of L&E advocates may praise "freedom" and denounce "government coercion" but it must be made completely clear at the outset that making social decisions according to the criteria that L&E advocates recommend means, in every instance, using State power to coercively reallocate resources and property rights to the detriment of some people in the society.

For idiosyncratic historical reasons, this alternative approach to economic efficiency goes by three names which mean the same thing: the "Potential Pareto" Approach; Cost-Benefit Analysis (or Benefit-Cost Analysis); and the "Kaldor-Hicks" Approach or Criterion. Usually we will describe this approach using only one of these three terms (often chosen randomly), but sometimes we will use two or even all three of the names to remind readers that they all mean the same thing.[98] The first two names are straightforward, but the last is a misleading name because the Kaldor Test (or Kaldor Criterion) and the Hicks Test (or Hicks Criterion) are different from each other. Believing that Kaldor and Hicks had the same approach is not only historically incorrect, it also, much more importantly, obscures many flaws of the "Potential Pareto" approach because those flaws arise from differences between the Kaldor Test and the Hicks Test.

98. We acknowledge that, since the three names are used by different subdisciplines of economics (welfare economics, industrial organization, L&E, environmental economics), each name is now connected to a tradition which has evolved in ways that the other subdisciplines could have evolved, and still could evolve, but have not evolved. For example, practitioners of "Cost-Benefit Analysis" may sometimes deviate from strict adherence to the approach in order to ameliorate unfavorable outcomes to the poor, while practitioners of "the Kaldor-Hicks approach" may not—but either group could adopt the practice of the other.

In this Part, we carefully examine separately the Kaldor test and the Hicks test in several alternative settings and show that these tests can be inconsistent with each other and express normative values that are incompatible with most ethical theories. First, though, we will explain why the fundamental nature of "economic value" is binary, which gives rise to the positive problems which plague the Potential Pareto approach.

The presence of these positive problems should not come as a surprise. The great strength of the Pareto Efficiency approach is that it keeps very far away from any attempt to measure utility change in a cardinal way. The Potential Pareto approach, as well as its inferior cousin the Surplus approach of Part V, on the other hand *are* attempts to measure utility changes using a cardinal measurement, called "value." These attempts are doomed to fail because utility changes simply are not cardinal. We understand the motivation to wish that utility changes were cardinal. It would be wonderful if economists were able to say that "John Doe values one apple at two bananas" or "John Doe values one apple at $1.23." But economists cannot say such things.[99] Our next Section, IV.A, describes how close they can come: economists are able to supply *two* answers to the question "what value does John Doe put on one apple?" This is considerably worse than being able to supply one answer to that question, and generates many difficulties, but it does provide some useful information. Part V's Surplus approach, on the other hand, is an attempt to totally evade the problem by pretending that economists *can* provide *one* answer to the question "what value does John Doe put on one apple?" That approach is worse than useless because it fools some people into thinking that it is possible to measure value in a non-binary way.

A. Value's Binary Nature: Willingness to Pay/Accept; Compensating/Equivalent Variation

One of the most fundamental questions in all of economics is "what is the value of a commodity?" In the same way there is no single number that is the right measure of human blood pressure—there are two numbers (the systolic and diastolic pressures), equally valid and important though different—there is also no single number that is the right measure of the economic value of a commodity to a person—there are two numbers, equally valid and important though different. One is the value a person puts on a commodity he or she has been given (for free); the other is the value a person puts on that same commodity if he or she will not be given it. These numbers are different because in the first situation the person is richer than he or she is in the second

99. We are discussing non-marginal changes so the "marginal rate of substitution" is irrelevant.

situation, and a person generally behaves differently when he or she is richer than poorer.

One way economists approach understanding economic value is by imagining a consumer, say Ms. Smith, who possesses no apples and five bananas, and asking how many bananas Ms. Smith would be willing and able to pay ("WATP," traditionally shortened to "willing to pay," "WTP") for an apple. A second approach is to determine how many bananas Ms. Smith would be willing to accept ("WTA") as compensation for not receiving that apple. We will see that in general, WATP, which is measured assuming Ms. Smith has become better off by receiving the apple, is not equal to WTA, which is measured assuming Ms. Smith will never receive the apple.

1. Settings: Describing Various Policy Changes and the Units in Which They Are Valued

In the example just discussed, the contemplated change (perhaps arising from a proposed government policy) was a change in the *quantity* of one commodity (apples), and it was valued using WATP and WTA measured in terms of the *quantity* of another commodity (bananas). We will call this setting "*Setting Qq*" because two *quantities* are involved: the first one, denoted by the capital letter, is the initial change, and it is measured ("valued") in terms of the second one, denoted by the lower-case letter. Setting Qq was introduced into economics by Shogren et al. in 1994.[100] Setting Qq applies to the study of shifting property rights because property rights are generally rights to a certain *quantity* of property. Setting Qq will be our most commonly used setting.

In the study of antitrust, however, the initial policy change is often a change in a *price*, and economists often would prefer the corresponding WATP and WTA to be valued in units of money *income*. For example, "how much money (how much of her *income* or wealth) would Ms. Smith be WATP for a decrease in the *price* of apples," or "how much of an increase in *income* would Ms. Smith be WTA to compensate her for a refusal to decrease the *price* of apples?" We call that situation "*Setting Pi,*" where, again, the capital letter represents the initial change, which is in a price, and the lower-case letter represents how that change is valued, which is in income. Setting Pi was first studied around 1940 by John R. Hicks (winner of the 1972 Nobel Prize in Economics) and Nicholas Kaldor, although the "WATP" and "WTA" terminology came much later. There is a generalization of Setting Pi called "*Setting *i*", in

100. Jason F. Shogren et al., *Resolving Differences in Willingness to Pay and Willingness to Accept*, 84 THE AM. ECON. REV. 255, 255–70 (1994). This paper does not mention that the very first author to use Setting Qq was actually legal scholar Jules Coleman. *See* Coleman *supra* note 81, at 514–15 n.8.

which the initial policy change can be any number of different things, but each of them is valued in terms of income.

In 1943 Hicks also developed "*Setting Qi*"[101], in which the proposed policy is a *quantity* change and the corresponding WATP and WTA are measured in units of *income*. Setting Qi was little studied or used until the 1991 work of Hanemann[102] demonstrated its relevance to rationing programs, and to public goods and to environmental economics more broadly. This work gave rise to Setting Qq three years later, but for our purposes Setting Qi has little importance otherwise.

"*Setting QQqq*", in which the proposed policy change is a change in the *quantity* of (say) apples *and also* the *quantity* of (say) bananas, and the corresponding WATP and WTA is expressed by a *quantity* of apples *and also* a *quantity* of bananas, is employed by Hayashi[103] and by us in a few discussions.

We next describe in more detail the settings we use most frequently, Settings Qq and Pi.

101. J. R. Hicks, *The Four Consumer's Surpluses*, 11 REV. ECON. STUD. 31, 35–36 (1943).

102. W. Michael Hanemann, *Willingness to Pay and Willingness to Accept: How Much Can They Differ?*, 81 THE AM. ECON. REV. 635, 635–47 (1991). Hanemann's framework has one unpriced good and all its other goods have prices.

103. TAKASHI HAYASHI, GENERAL EQUILIBRIUM FOUNDATION OF PARTIAL EQUILIBRIUM ANALYSIS 18, 18–19 (Palgrave Macmillan UK 2017).

2. Setting Qq Explained

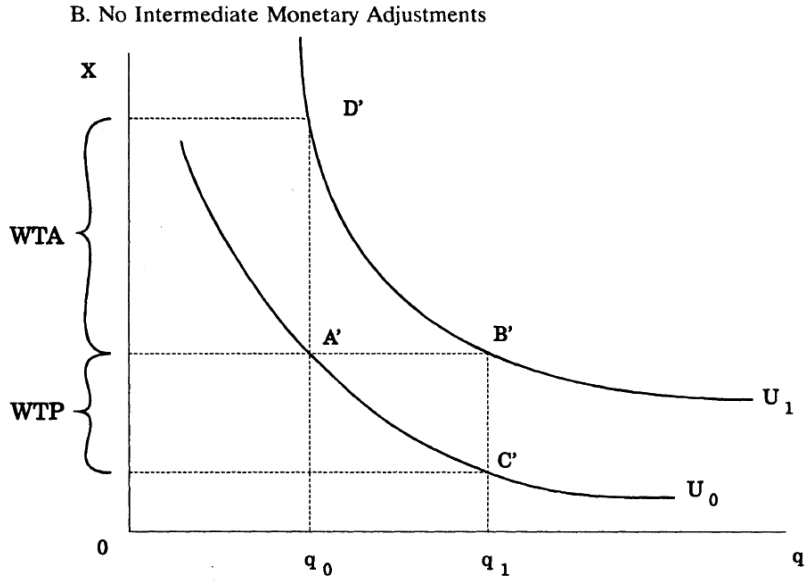

FIGURE 1. THE SIMPLE ANALYTICS OF THE WTA–WTP DIVERGENCE

Figure 5. An indifference curve graph showing Setting Qq's WATP and WTA (from Shogren et al.).

In Setting Qq, consider Figure 5, taken from the paper by Shogren et al.[104] In it, commodity q is graphed on the horizontal axis, commodity x is graphed on the vertical axis, and the indifference curves U_0 and U_1 of one person are shown. The initial point is assumed to be A' and the prospective policy is a move from q_0 to q_1. As reflected in the figure, if that move is done, the consumer would be willing and able to pay "WTP" of Good x in exchange, going from B' to C'; paying any more than WTP would reduce utility below its initial U_0 level, while paying any less would leave the consumer better off than at U_0. If that move—which would increase utility to U_1—were not done, the consumer would accept in compensation "WTA" amount of Good x, going from A' to D', because that would also increase utility to U_1. The upshot is that the question "what is the value of $q_1 - q_0$ units of good q?" has two valid but different answers: its value is $B'C'$ units of Good x if the consumer *is* given the $q_1 - q_0$ units of good q, but its value is $A'D'$ units of Good x if the consumer *is not* given the $q_1 - q_0$ units of good q. Both answers for "the value of $q_1 - q_0$ units of good q" are cardinal, so they are much more useful than "U_1 minus U_0," since we could have assigned literally *any*

104. Shogren et al., *supra* note 100.

numbers to U_0 and U_1 as long as the one we assigned to U_0 was less than the one we assigned to U_1. (See also Section III.B.) The success in moving from the merely ordinal U_0 and U_1 to the cardinal "$B'C'$ and $A'D'$ amounts of Good x" is welcome. However, the fact that $B'C'$ is not equal to $A'D'$ means value has a binary nature, so our attempt to "cardinalize" utility is only a partial success—and the more we study this binary-natured value, the more we will be vexed by paradoxes and enigmas generated by its binary nature.

In order to be able to address L&E's advocacy of "wealth maximization" later in this paper, we need explain that what the last paragraph showed is that *value is not a function*. To start, let us explain why utility *is* a function. In Figure 5, we could choose to represent this person's preferences by choosing as their utility function one which assigns the value "negative 17" to U_0 and "positive 3" to U_1. But since utility is ordinal, we could make an infinite number of other choices for this person's utility function, as long as it set the utility U_0 less than the utility of U_1. Once one has chosen a utility function, however, the utility at a particular point, such as A', is a single number. Value, though, is different. A mathematical economist would call value a "correspondence" not a function, because value assigns not one but two numbers to "the value of $q_1 - q_0$ units of good q." In short, one can study how a consumer is affected by economic policy or by a legal judgment either by working with an *ordinal function* (namely utility)[105] or with a *cardinal correspondence* (namely value). "Ordinal" is more troublesome to work with than "cardinal" because only the sign, not the magnitude, of a difference such as $U_1 - U_0$ has any meaning. Correspondences are more troublesome to work with than functions because correspondences cannot be maximized or minimized, and because they can generate ambiguous rankings, as is easily imagined if one were asked to "rank patients by their blood pressure"—systolic? diastolic? some mixture of both? Part III's Pareto approach took the "ordinal function" route; Part IV's approach takes the "cardinal correspondence" route. (Part V's approach tries to have the best of both worlds by taking a "cardinal function" route, but consumer preferences cannot be correctly represented that way.[106])

In Figure 5, WTP/WATP is less than WTA. In fact, if one moved the U_1 indifference curve a bit more to the right, WTA would be infinite. As in Figure 5, so also in surveys of consumers taken to estimate WATP and WTA for specific (often environmental) issues, WTP/WATP is typically less than WTA.[107]

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105. Actually, working with one of a class of utility functions, all representing the same preferences.

106. *But see supra* note 68.

107. Raphaël Giraud, *Money Matters: An Axiomatic Theory of the Endowment Effect,* 50/2 ECONOMIC THEORY 303, 304 (2012).

Only in unusual, "knife-edge" cases could WATP be equal to WTA. Shogren et al. illustrate such a case:

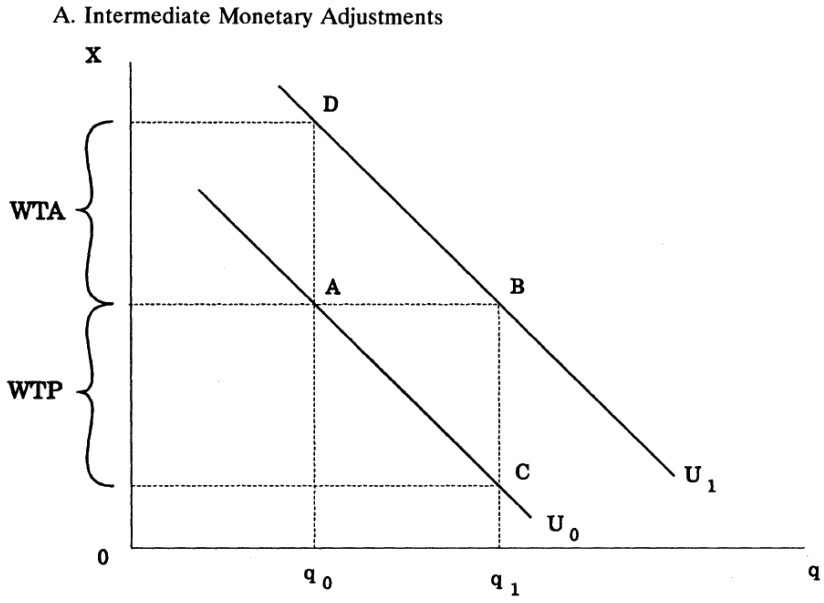

Figure 6. An example in which WTA = WATP in Setting Qq (from Shogren et al.).

This is the case in which q and X are perfect substitutes and the indifference curves are parallel to each other. This is certainly not a case of general interest. It is true that, in Figure 5, it would be possible, if U_1 had been different in a way that lowered D' just the right amount, to make WTP equal to WTA, but that would also be a "knife-edge" situation of little interest.

Another implication of the fact that "in Figure 5, if one moved the U_1 indifference curve a bit more to the right, WTA would be infinite" is that WTA is not always well-defined. WATP is not always well-defined, either: for example, it would not be well-defined if, in Figure 5, the indifference curve U_0 intersected the q axis between q_0 and q_1, eliminating point C' from the graph.

3. Setting Pi Explained

In Setting Pi, consider a prospective policy of decreasing the price of apples. A consumer's WATP for this is illustrated in Figure 7. There, BC_0 is the original budget constraint, BC' is the new budget constraint, U_0 is the original maximized utility, which is obtained at point A, and U' is the new maximized utility, which is obtained at point C. In exchange for the new, lower price of apples, this consumer would be willing for his income to be reduced until his budget constraint was the dashed line,

so the gap between BC' and the dashed line is related to WATP; this gap is known as "the income effect of a fall in the price of apples." WATP itself, in dollars, is most easily obtained from "Δb_p times the price of bananas (p_b)," but it can equivalently be obtained from "Δa_p times the new price of apples (p'_a)." Since Δb_p has to be smaller than *ef*, and since *ef* is the maximum number of bananas the consumer could buy if the consumer bought no apples, namely income I divided by p_b, we have $\Delta b_p < ef = I/p_b$, so $WATP = \Delta b_p * p_b < I$, that is, WATP has to be less than income. Most economists call WATP "willingness to pay," "WTP," but since it is limited by income, "willingness and ability to pay" is a more accurate name for it. After all, your WATP to reduce air pollution near where you live is almost certainly much less than Bill Gates's WATP to reduce air pollution near where he lives,[108] but this difference in WATP stems overwhelmingly from the "ability" part, not the "willingness" part (the part reflecting pure preferences).

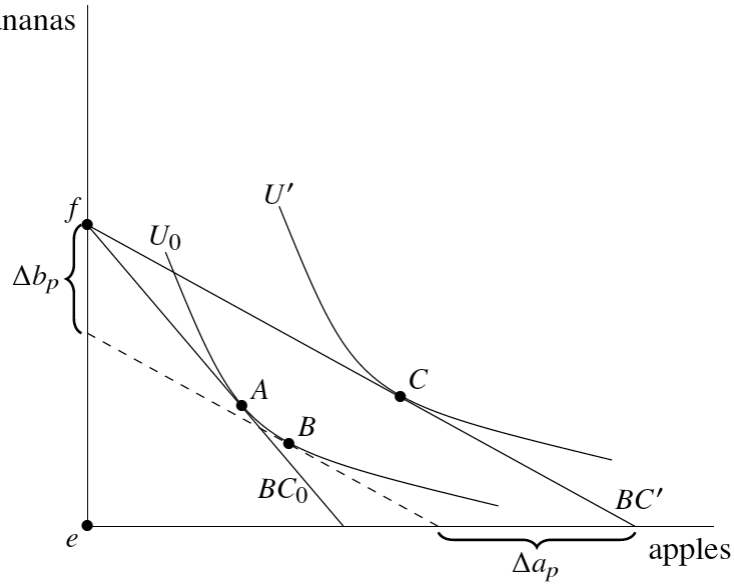

Figure 7. WATP illustrated (the "p" subscript refers to "pay"). The motion from B to C is the income effect of a fall in the price of apples.

By contrast, this consumer's WTA for this policy is illustrated using Figure 8. In return for foregoing the new, lower price of apples (which would increase utility to U'), this consumer would be willing to remain at the old prices and accept the dashed line as his budget constraint,

108. Zachary Liscow, *Is Efficiency Biased?*, 85 U. CHI. L. REV. 1649, 1672 (2018) ("Rich people tend to be willing to pay a relatively large amount for amenities like clean air that produce good health.") (citing Bengt Kristrom & Pere Riera, *Is the Income Elasticity of Environmental Improvements Less Than One?*, 7 ENV'T & RES. ECON. 45, 47-48 (1996) (offering collaborating empirical evidence)).

consuming at point D. The gap between BC_0 and the dashed line is related to WTA; this gap is known as "the income effect of a rise in the price of apples" even though what we are considering is a fall in the price of apples. WTA itself, in dollars, is most easily obtained from "Δb_a times the price of bananas (p_b)," but it can equivalently be obtained from "Δa_a times the old price of apples (p_{a0})." Since Δb_a does not have to be smaller than *ef*, WTA does not have to be less than income. However, WTA will usually be affected by income, and in particular, a person who is poorer will have a BC_0 that is shifted towards point e (the origin), which would make Δb_a, and hence WTA, smaller, all else equal.[109] Because it is difficult to express the dependence of "willingness to accept" on income in just a few extra words, we accept its "WTA" conventional abbreviation.

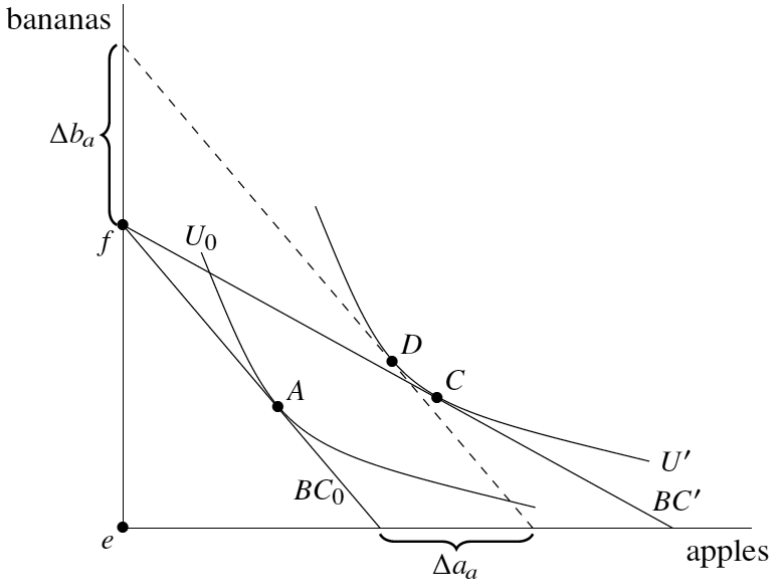

Figure 8. WTA illustrated (the "a" subscript refers to "accept"). The motion from A to D is the income effect of a rise in the price of apples.

To compare WATP and WTA, it is easiest to compare them expressed in terms of bananas since the price of bananas does not change: $WATP = \Delta b_p * p_b$ and $WTA = \Delta b_a * p_b$, meaning that WATP equals WTA if and only if $\Delta b_p = \Delta b_a$. That would be a most unusual situation. As illustrated by Figure 9 (for a different consumer than considered above), it can occur. To construct Figure 9, U' had to be drawn as a vertical translation of U_0, that is, AD and BC must have the same length. This implies that the income effect of the fall in the price of

109. To simulate a smaller income while keeping all else equal, change the scale of the graph's axes.

apples on the demand for apples, which is the motion from B to C, is exactly zero (C lies exactly vertically above B).[110] Utility functions of this special type are called "quasilinear." In this graph, Δb_p is equal to BC, and Δb_a is equal to AD; accordingly, since AD and BC have the same length, $\Delta b_p = \Delta b_a$, which, as we saw above, implies that WATP is equal to WTA.

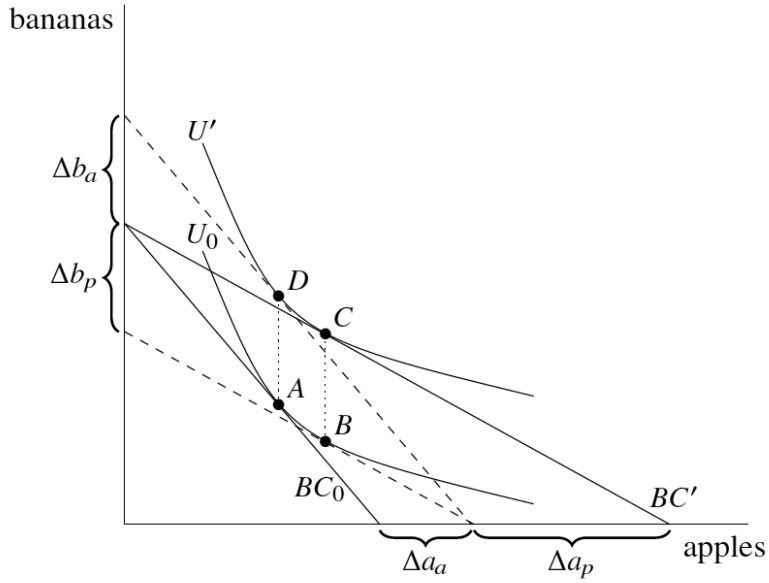

Figure 9. An example in which WTA = WATP in Setting Pi.

We saw that WATP and WTA could be undefined in Setting Qq; this can also occur in Setting Pi. In Figure 10 it is not possible to define WATP because U_0 is steeper everywhere than BC'; one can see this by comparing U_0 to the dashed line, which is parallel to BC'. (In this case, it is also impossible to divide the motion from A to C into an income effect and a substitution effect.)

110. In a model with more than two goods, demands for all the goods except for one would have zero income effects.

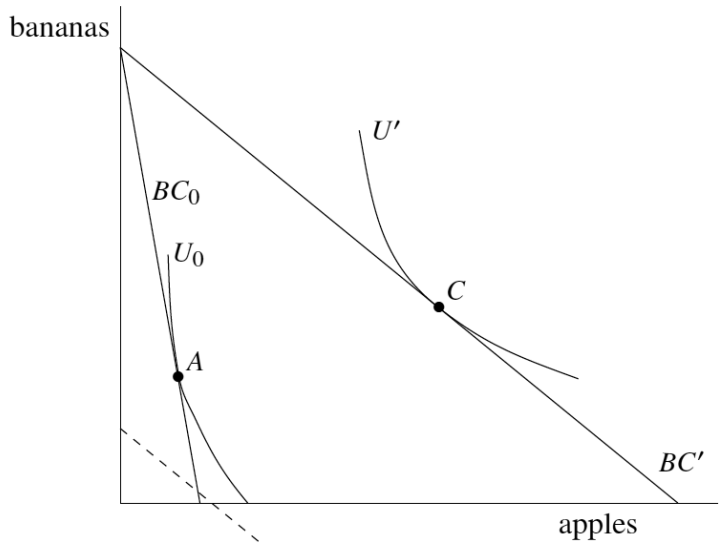

Figure 10. An example with no WATP in Setting Pi.

Similarly, in Setting Pi's Figure 11, it is not possible to define WTA (or the income and substitution effects) because U' is flatter everywhere than BC_0, as can be seen by comparing U' to the dashed line, which is parallel to BC_0.

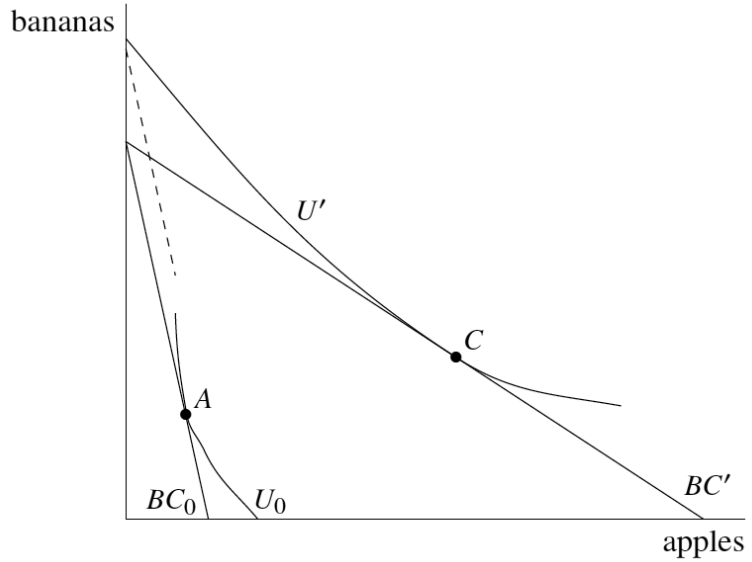

Figure 11. An example with no WTA in Setting Pi.

4. The General Inequality of WATP and WTA

In both Settings Qq and Pi, then, neoclassical economic theory predicts—under its usual assumptions of a "rational" consumer maximizing a utility function subject to a budget constraint—that WATP will not be equal to WTA except under a highly restrictive further assumption.[111] The "highly restrictive further assumption," quasi-linearity of the utility function, is, in Setting Pi, exactly the same as the one we have encountered before: Part III.G.1(d)'s assumption that "demand curves do not depend upon income" (there used in discussing the Coase Theorem).[112] In Setting Qq, the "highly restrictive further assumption" is that indifference curves are linear and parallel.

Before undertaking the next steps in the analysis, we need to define more terminology and introduce additional techniques.

5. Compensating and Equivalent Variation

Consider a pure exchange economy (that is, an economy with no production, only exchange) with Ms. Smith and Mr. Jones as the only two people, and apples and bananas as the only two goods, and no prices. Consider the following original position and a policy that proposes moving from that position:

> Original position: Smith has 6 apples and 5 bananas. Jones has 4 apples and 1 banana.
>
> Policy: Give 4 of Smith's bananas to Jones, leaving Smith with 1 banana.

The Policy would help Jones and hurt Smith. It would transfer bananas. There are two versions of "Willingness and Ability to Pay" and "Willingness to Accept." The first version is defined by the answers to the following two questions:

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111. W. Michael Hanemann, *The Economic Theory of WTP and WTA*, *in* VALUING ENVIRONMENTAL PREFERENCES: THEORY AND PRACTICE OF THE CONTINGENT VALUATION METHOD IN THE US, EU, AND DEVELOPING COUNTRIES 66 (Ian J. Bateman & Kenneth G. Willis eds., Oxford Univ. Press 1999). The inequality of WATP and WTA is not quite the same as the "phenomena known variously as *loss aversion*, the *endowment effect*, or *status quo bias*. [...] The essence of these phenomena is that individuals weigh losses more heavily than comparable gains. The evidence comes from experiments in which researchers have elicited values for changes in an item like *q*. However, the changes are different from those considered so far. Up to now, I have compared the WTP for some particular change in *q* to the WTA for the same change in *q*. By contrast, many of the empirical experiments compare the WTP for an increase in *q* with the WTA for a comparable decrease in *q*. As I now show, this is a somewhat different matter.").

112. For the corresponding preferences, see Gabriel A. Lozada, Consumer Surplus, the Coase Theorem, and the Fraught Search for a Unique Objectively Efficient Allocation: An Elementary View (Feb. 24, 2020) (unpublished manuscript) (on file with Univ. of Utah Depart. of Econ.) https://content.csbs.utah.edu/~lozada/Research/CompEquivW.pdf.

> If we *adopt* the policy, how many apples would Jones be *willing and able to pay* ("WATP") to make him as well off as if we had not adopted the policy?
>
> If we *adopt* the policy, how many apples would Smith be *willing to accept* ("WTA") to make her as well off as if we had not adopted the policy?

This "if we adopt" version is due to Kaldor. The second version of "Willingness and Ability to Pay" and "Willingness to Accept" is defined by the answers to the following two questions:

> If we *do not adopt* the policy, how much would Jones be *willing to accept* ("WTA") to make him as well off as if we had adopted the policy?
>
> If we *do not adopt* the policy, how much would Smith be *willing and able to pay* ("WATP") to make her as well off as if we had adopted the policy?

This "if we do not adopt" version is due to Hicks.

Kaldor did not use WATP and WTA but used the related concept of "compensating variation" ("CV"). Denote the winner of a policy by "W" and the loser of a policy by "L." When faced with Kaldor's "if we adopt" scenario, W would be willing to pay for the policy to be adopted and L would require compensation in order to accept the policy. Hence in Kaldor's scenario, W has a WATP and L has a WTA. It can be shown that W's WATP is equal to W's CV and L's WTA is equal to negative one times L's CV.[113]

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113. To explain the relationships between Kaldor's CV, on the one hand, and WATP and WTA, on the other hand, consider the Policy at the beginning of this Section IV.A.5. If Jones's utility function is $u_J(apples, bananas)$ then Jones's WATP for the Policy obeys the relationship $u_J(4,1) = u_J(4 - WATP, 5)$ because the left-hand side is how well off Jones is if we do not adopt the Policy and the right-hand side is how well off Jones is if we adopt the Policy, giving Jones four more bananas, if Jones were to give up WATP apples in return. Utility here is understood in its ordinal sense because if we instead measured Jones's utility using a transformation $f(u_J)$ instead of using u_J, the same WATP would satisfy relationship $f(u_J(4,1)) = f(u_J(4 - WATP, 5))$. Since Jones cannot be said to possess a negative number of apples, $4 - WATP$ needs to be greater than or equal to zero, so WATP needs to be less than or equal to 4, illustrating the point we made above that "WATP" indeed is limited by a person's *ability* to pay. If Smith's utility function is $u_S(apples, bananas)$ then Smith's WTA for the Policy obeys the relationship $u_S(6,5) = u_S(6 + WTA, 1)$ because the left-hand side is how well off Smith is if we do not adopt the Policy and the right-hand side is how well off Smith is if we adopt the Policy, taking away from Smith four bananas, if Smith were to be given WTA apples in return. For either person, "compensating variation" ("CV") is defined to obey the relationship $u(original\ apples, original\ bananas) = u(original\ apples - CV, new\ bananas)$. This makes Jones's WATP equal to Jones's CV and makes Smith's WTA equal to negative one times Smith's CV.

Hicks did not use WATP and WTA but the related concept of "equivalent variation" ("EV"). Again, denoting the winner of a policy by "W" and the loser of a policy by "L," when faced with Hicks's "if we do not adopt" scenario, L would be "willing to pay" for the policy *not* to be adopted and W would require compensation in order to accept *non*-adoption of the policy. Hence weighing the policy using Hicks's question, L has a WATP and W has a WTA, whereas weighing the same policy using Kaldor's question, it was W who had a WATP and L who had a WTA. (To repeat, since this is a point completely missing from any of the numerous L&E textbooks surveyed in Appendix 1: *one* policy; two *different* evaluations of it by W (one a WATP and one a WTA); and two *different* evaluations of it by L (one a WATP and one a WTA).) It can be shown that W's WTA is equal to W's EV and L's WATP is equal to negative one times L's EV.[114,115,116]

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114. To explain the relationships between Hicks's EV, on the one hand, and WATP and WTA, on the other hand, consider the Policy at the beginning of Section IV.A.5. If, as before, we represent Jones's utility function as $u_J(apples, bananas)$ then the EV version of Jones's WTA for the Policy obeys the relationship $u_J(4,5) = u_J(4 + WTA, 1)$ because the left-hand side is how well off Jones is if we adopt the Policy and the right-hand side is how well off Jones is if we do not adopt the Policy, which would have given Jones four more bananas, and gave Jones "WTA" apples instead. Similarly, the EV version of Smith's WATP for the Policy obeys the relationship $u_S(6,1) = u_S(6 - WATP, 5)$ because the left-hand side is how well off Smith is if we adopt the Policy and the right-hand side is how well off Smith is if we do not adopt the Policy, which would have taken four bananas away from Smith, if Smith were willing to give up "WATP" apples instead. For either person, "equivalent variation" ("EV") is defined to obey the relationship $u(original\ apples, new\ bananas) = u(original\ apples + EV, original\ bananas)$. This makes Jones's WTA equal to Jones's EV and it makes Smith's WATP equal to negative one times Smith's EV.

115. CV and EV are much older terms than WATP and WTA (perhaps three decades older) and are the terms Kaldor and Hicks used. Hicks used the terms "quantity-equivalent variation" and "quantity-compensating variation" for EV and CV in Setting Qi, and the terms "price-equivalent variation" and "price-compensating variation" for EV and CV in Setting Pi. Since "quantity-equivalent variation" and "quantity-compensating variation" are from Setting Qi, they are not identical to the EV and CV in our Setting Qq, but they resemble the EV and CV of Setting Qq more than "price-equivalent variation" and "price-compensating variation" resemble EV and CV in Setting Qq. "Price-equivalent variation" and "price-compensating variation" are by far the most commonly used EV and CV in economics because Setting Pi is used much more than Frames Qi and Qq. Hicks, *supra* note 101, at 35–36.

"Quantity-equivalent variation" is sometimes called "equivalent surplus" ("ES") and "quantity-compensating variation" is sometimes called "compensating surplus" ("CS") but we will not use those terms in this paper. *See* A. MYRICK FREEMAN III ET AL., THE MEASUREMENT OF ENVIRONMENTAL AND RESOURCE VALUES: THEORY AND METHODS 66 (3d ed., Oxford Univ. Press 2014). Also, in Environmental Economics the acronym "CV" is often used to denote not compensating variation but Contingent Valuation, a survey method that can be used to measure either equivalent variation or compensating variation.

116. This inequality of one agent's EV and CV was known by the inventors of the terms EV and CV, but the equivalent inequality of one agent's WATP and WTA was not known by all of the early users of the terms WTP (our WATP) and WTA, who thought WATP and WTA would be equal for rational agents. Even modern texts sometimes ascribe some of the difference between WATP and WTA to consumers' irrationality, which while it might be true is superfluous, since as we have shown, rational agents' WATP and WTA can differ greatly. For an example of such a modern text see THOMAS H. TIETENBERG & LYNNE LEWIS, ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS 81 (Routledge 11th ed. 2018) ("Economic theory suggests that differences between WTP and WTA should be small, but experimental findings both in environmental economics and in other microeconomic studies have found large differences. Why? Some economists have attributed the discrepancy to a psychological endowment effect . . . .") Occam's Razor simply ascribes the

In Figure 7, the policy is a fall in the price of apples, A is the initial point, C is the final point, and the consumer's WATP and CV is Δb_p. Now suppose one were to begin at C and contemplate a policy of reversing the fall in the price of apples, making the consumer worse off. The EV of that policy would be $-\Delta b_p$, which is negative one times the WATP and CV of the original policy. The general point is that "the CV of a policy is equal to negative one times the EV of the reverse of that policy." That was in Setting Pi, but the same is true in Setting Qq, as illustrated in Figure 5, where the policy was an increase in q. There, A' is the initial point, B' is the final point, and the consumer's WATP and CV is $B'C'$. If one were to begin at B' and contemplate a policy of reversing the increase in q, the EV is $-B'C'$, which is negative one times the WATP and CV of the original policy.

In Figure 8, the policy is a fall in the price of apples, A is the initial point, C is the final point, and the consumer's WTA and EV is Δb_a. Now suppose one were to begin at C and contemplate a policy of reversing the fall in the price of apples, making the consumer worse off. The CV of that policy would be $-\Delta b_a$, which is negative one times the WTA of the original policy. The general point is that "the EV of a policy is equal to negative one times the CV of the reverse of that policy." That was in Setting Pi, but the same is true in Setting Qq, as illustrated in Figure 5, where the policy was an increase in q. There, suppose A' is the initial point, B' is the final point, and the consumer's WTA and EV is $A'D'$. If one were to begin at B' and contemplate a policy of reversing the increase in q, the CV is $-A'D'$, which is negative one times the WTA of the original policy.

B. The Potential-Pareto/Kaldor-Hicks/Cost-Benefit-Analysis Criterion for Making Coercive Social Decisions

Obviously, not all societal or government decisions have been designed to result in no one being made worse off. Indeed, as noted above, nearly all judicial determinations result in winners and losers. So, how do these alternative "efficiency" measures fare in such circumstances?

Consider a "social" or "governmental" policy having two parts:

- take an action that makes Person L worse off and Person W better off ("L" for "loser" and "W" for "winner"); together with

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difference between WATP and WTA to income effects, to which Tietenberg & Lewis devote a mere one sentence. *Id*. Giraud divides the difference between WATP and WTA into two parts, one due to the income effect and the other due to the endowment effect. Giraud, *supra* note 107. *See also* Ulrich Schmidt & Stefan Traub, *An Experimental Investigation of the Disparity between WTA and WTP for Lotteries*, 66 THEORY AND DECISION 229 (2009).

- require Person W to give to Person L some amount of money or some amount of some commodity that was not involved in the first part's action to compensate for the loss suffered by L.

Suppose that this joint policy is a Pareto Improvement (i.e., no one is left worse off). Clearly, having the State use its coercive powers to enact the first part of the policy without the second would not be a Pareto Improvement because Person L would not be compensated for his loss. For example, if one strikes a two-part deal with an automobile seller that you will get his automobile (the first part) and you will give him a certain amount of money (the second part), that is a Pareto Improvement; but if the State allows you to perform only the first part (taking the car) but not perform the second part (the money transfer), the result is not a Pareto Improvement, or anything like a Pareto Improvement; the result would be a clear property-right violation. Yet, Kaldor astonishingly would endorse the State seizing the car from the dealer without compensation and giving it to you (ignoring any perversion of future incentives), and David D. Friedman's Law and Economics textbook confirms that in an analogous situation, "it would still be an improvement, and by the same amount, if John stole the apple."[117] Kaldor wrote:

> …since in all such cases it is *possible* to make everybody better off than before, or at any rate to make some people better off without making anybody worse off. There is no need for the economist to prove—as indeed he never could prove—that as a result of the adoption of a certain measure nobody in the community is going to suffer. In order to establish his case, it is quite sufficient for him to show that even if all those who suffer as a result are fully compensated for their loss, the rest of the community will still be better off than before. Whether the landlords, in the free-trade case, should in fact be given compensation or not, is a political question on which the economist, *qua* economist, could hardly pronounce an opinion.[118]

In other words, Kaldor claims that if a two-part policy is a Pareto Improvement, the first part of the policy should be adopted even if the second part is not adopted, because the second part *could have been*

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117. DAVID D. FRIEDMAN, LAW'S ORDER: WHAT ECONOMICS HAS TO DO WITH LAW AND WHY IT MATTERS 20 (Princeton Univ. Press 2000); *see* DAVID ELLERMAN, PUTTING JURISPRUDENCE BACK INTO ECONOMICS: WHAT IS REALLY WRONG WITH TODAY'S NEOCLASSICAL THEORY 135 (Springer International 2021).

118. Kaldor, *supra* note 82, at 550.

adopted. This is known as the "Potential Pareto" criterion: the first part of a policy should be adopted even if the second part is not, if adopting the second part would (together with the first part) have resulted in a Pareto Improvement.

It is difficult to see why anyone should take the Potential Pareto criterion seriously. Varian says that "An allocation that is potentially Pareto preferred to the current allocation has *potentially* higher welfare. But one might well argue that *actual* welfare is what is relevant."[119] (Emphasis added.) Coleman trenchantly points out that there is absolutely no reason to think that people would consent to a policy that harms them "in virtue of its potential to be something other than it is."[120] We agree with Chipman and Moore that an economist taking Kaldor's advice wants "to wash one's hands of the responsibility for one's own actions."[121]

A possible reason for the criterion's popularity among some economists is that it was couched, not in terms of a pure-exchange economy, but in terms of an economy with production. The first part of the policy, in making Person L worse off and Person W better off, was also assumed to increase the amount of goods produced. However, that is no comfort to Person L. Moreover, a policy that increases the amount of goods produced is *not* any more virtuous than a policy like the two-part automobile trade, which increases the utility of both parties. Increasing utility is the goal of economic policy; increasing the amount of goods produced, *per se*, is not. Privileging "productive" activities over those that only increase joint utility via exchange (without new production) fetishizes commodities, which is an old mistake in economics.

We conclude this portion of our argument with one more example. The canonical neoclassical argument in favor of free trade is that the following two-part policy is Pareto Improving: (a) remove barriers to trade; (b) compensate people who lose because the trade barriers were removed, by taxing the people who win. (Proof that in an elementary model (a) combined with (b) is a Pareto Improvement can be found in any textbook on international trade theory.) The Kaldor "Potential Pareto" criterion then says that "(a) without (b)" is also an improvement. The alleged reason for this is the Separation Hypothesis (debunked in Section III.G.1(c) above), that "(b) is about distribution, not efficiency, and is outside the scope of economics; besides, distribution can be taken care of with lump-sum income transfers." However, (b) is not "just" about distribution—(b)'s redistribution is fully half of what makes the *joint* policy of "(a) and (b)" an efficiency

119. VARIAN, *supra* note 72, at 409.

120. Coleman, *supra* note 81, at 546–47 n.62.

121. John S. Chipman & James C. Moore, *The New Welfare Economics 1939–1974*, 19 INT'L ECON. REV. 547, 580 (1978).

improvement. Accordingly, this "Potential Pareto" criterion makes no sense. However, it is presumably the reason why U.S. presidents of both political parties from the 1980's to 2016 pursued (a) without (b), leading to deindustrialization and an epidemic of "deaths of despair"[122] among the policy's losers. Clearly, then, the "Potential Pareto" criterion has none of the moral appeal of the Pareto Criterion.

On the very next page after Kaldor drafted the passage quoted above, he wrote the first argument in favor of the Separation Hypothesis cited in *supra* note 82. The "Potential Pareto" criterion is closely related to the Separation Hypothesis because Kaldor sees the first part of the policy, making W better off and L worse off, as an "efficiency improving" question, while the second part, compensating L for the loss, he views a "political question" of "distribution." Sections III.G.1(c) and III.G.1(d) have shown that the Separation Hypothesis is unsound. "Value," "willingness and ability to pay," and concepts like "efficiency improvements" that follow from value and WATP, all depend on distribution. Posner[123] acknowledged this:

> Willingness to pay is in turn a function of the existing distribution of income and wealth in the society. Were income and wealth distributed in a different pattern, the pattern of demands might also be different and efficiency would require a different deployment of our economic resources.

To see an example of how this plays out, suppose it is impractical for wealthy automobile drivers to engage in Coasian bargaining with impoverished pedestrians over which group should have the "property rights" (the right-of-way) over a roadway crosswalk. If bargaining were possible, suppose (as is likely) the result would be automobile drivers having the right-of-way, either buying it from the pedestrians, if pedestrians had the original property right, or simply exercising it, if the drivers had the original property right. Applying the Potential Pareto criterion (Kaldor-Hicks efficiency) directs judges to give those property rights to the motorists without compensation to the pedestrians because the motorists *could have* paid the pedestrians for the right and made both parties better off. But such a judgment leaves the pedestrians worse off than if they had gotten the right-of-way, and leaves advocates of the Potential Pareto judgment on extremely weak footing, defending *this* judgment by arguing that 'there exists *a different* judgment (the first part of which gives the motorists the right-of-way and the second part of which requires the motorists handing over money to the pedestrians) that *would* have made both parties better off.' Yet, it is obvious why the

122. ANNE CASE & ANGUS DEATON, DEATHS OF DESPAIR AND THE FUTURE OF CAPITALISM 146 (Princeton Univ. Press 2020). Deaton is a Nobel Laureate in Economics.

123. POSNER, *supra* note 44, at 4.

wealthy motorists would want to make this argument, weak though it is. They benefit from judicial adherence to Kaldor-Hicks efficiency in a way they would not if the criterion were Pareto efficiency and the pedestrians initially had the right-of-way. Section III.G.1(c) showed that original distributions ("endowments") determine what moves are Pareto efficiency improvements. In turn, what determines the endowments are property rights, contract rights, and other legal rules and entitlements. The Potential-Pareto/Kaldor-Hicks/Cost-Benefit-Analysis argument that wealthy drivers rather than impoverished pedestrians should be given the "property rights" over a roadway crosswalk is completely driven (no pun intended) by the *ex ante* large property rights of the drivers and small property rights of the pedestrians, not by a "distribution-free, objective notion of Pareto efficiency"—there being no such thing. Property rights determine Pareto-efficiency improvements, not vice versa. Accordingly, it is impossible to have a "Pareto-efficient allocation of property rights," [124] but (as the wealthy motorists in our example know) it is possible to have "a *Potential*-Pareto-efficient allocation of property rights."[125]

The above shows the flawed nature of the "Potential Pareto" criterion. There are further flaws in the "Potential Pareto" approach, but they can only be revealed by investigating the approach in more technical detail and discussing the Kaldor Test separately from the Hicks Test. After the technical discussions of Sections IV.C and IV.D, Section IV.E will discuss further positive problems with "Potential Pareto." It will show, for example, that the "Potential Pareto" criterion does not even completely solve the problem it was supposed to solve—overcoming the Pareto Principle's inability to rank all social states—because it turns out that the Potential Pareto Principle likewise cannot rank all social states. Moreover, the Potential Pareto Principle sometimes ranks State A strictly above State B *and* ranks State B strictly above State A, an inconsistency not present with the Pareto Principle. In addition to these further positive problems, the Potential Pareto

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124. Warren J. Samuels, *The Coase Theorem and the Study of Law and Economics,* 14 NAT. RES. J. 1, 24 (1974) ("[T]here is no unique Pareto optimal result, only results specific to the power structure; and when the very act of legislating (through statute or court decision) liability rules (through the joint rights determination process discussed above) will also govern the rights and power structure and thereby the Pareto optimal result . . . ."); *see also id.* at 9 ("*Rights specify efficiency, efficiency does not specify rights.*"); *see also id.* at 17 ("To evaluate costs and benefits in terms of the maximized value of production is to reason circularly to give effect to already extant costs and the rights reflected or given effect therein."); *see also id.* at 27 ("For all practical purposes, the Coasian analysis is power-thought, with evocative qualities more akin to ideology than to science.").

125. *See* Robert Ashford, *Socioeconomics and Professional Responsibilities in Teaching Law-Related Economic Issues,* 41 SAN DIEGO L. R. 133, 157 (2004) ("As a positive matter of economics, however, the same logic that holds that prices determine distribution also holds that distribution determines prices. No standard of efficiency is or can be distributively neutral. Even when transactions costs can be assumed to be zero and externalities are negligible or nonexistent, the assignment of property rights nevertheless affects prices and the allocation of resources.").

criterion has further normative problems, which are the topic of Section IV.F.

C. The Kaldor Test

A policy that has a winner "W" and a loser "L" is said to "pass the Kaldor Test" if and only if W's WATP for the policy to be adopted is greater than L's WTA for that same policy. This is because, if this inequality holds, then it seems that W could "potentially" compensate L and still be better off. (We say "it seems that W could" rather than "W could" because of the Boadway Paradox of Section IV.E.3.)

As explained in Section IV.A.5, for a policy having a winner "W" and a loser "L," W's WATP is equal to W's CV and L's WTA is equal to negative one times L's CV. Therefore, in symbols:

Kaldor Pass: W's CV = W's WATP > L's WTA = (-1) * L's CV

It follows that "a policy passes the Kaldor Test if and only if the sum of the CVs is positive." Similarly,

Kaldor Fail: W's CV = W's WATP < L's WTA = (-1) * L's CV

and "a policy fails the Kaldor Test if and only if the sum of the CVs is negative."

D. The Hicks Test

A policy that has a winner "W" and a loser "L" is said to "fail the Hicks Test" if and only if W's WTA for the policy not being adopted is smaller than L's WATP for rejection of that same policy. This is because if this inequality holds then it seems—not always correctly, as illustrated by the Boadway Paradox of Section IV.E.3—that L could "potentially" pay W full compensation (and a bit more) for the failure to adopt the policy and still be better off than if the policy had been adopted.

As explained in Section IV.A.5, for a policy having a winner "W" and a loser "L," W's WTA is equal to W's EV and L's WATP is equal to negative one times L's EV. Therefore, in symbols:

Hicks Fail: W's EV = W's WTA < L's WATP = (-1) * L's EV.

Thus, it follows that "a policy fails the Hicks Test if and only if the sum of the EVs is negative." Similarly,

Hicks Pass: W's EV = W's WTA > L's WATP = (-1) * L's EV

and "a policy passes the Hicks Test if and only if the sum of the EVs is positive."

As a general principle, the Hicks Test for a policy passes if and only if the Kaldor Test for the reverse of that policy fails. This is because, as we showed in Section IV.A.5, each person's EV for a policy is negative one times that person's CV for the reverse of that policy. Similarly, the Kaldor Test for a policy passes if and only if the Hicks Test for the reverse of that policy fails. This is because, as we showed in Section IV.A.5, each person's CV for a policy is negative one times that person's EV for the reverse of that policy.

However, we cannot conclude that the Hicks Test for a policy passes if and only if the *Hicks* Test for the reverse of that policy fails, nor can we conclude that Kaldor Test for a policy passes if and only if the *Kaldor* Test for the reverse of that policy fails. In fact, as the next section will show, the Hicks and Kaldor Tests in general lack that type of consistency, which, as we will see, is a serious shortcoming.

This concludes our explanation of the Kaldor and Hicks Tests; we can now begin to explain what is wrong with them. Section IV.E deals with their positive shortcomings and Section IV.F with their normative shortcomings.

E. Positive Problems with CV & EV

1. Incompleteness Due to Inconsistencies and Reversals

In Setting Pi, the possibility of inconsistencies between the Kaldor and Hicks Tests has been one of the most important criticisms of the Potential Pareto approach since Scitovsky pointed out in 1941 that such inconsistencies can occur.[126] In this Section we illustrate these problems.

Application of the Kaldor Test for a policy affecting two people turns on the shapes of their *original* indifference curves, whereas application of the Hicks Test turns on the shapes of their *new* indifference curves. But these geometries are largely independent of each other. Therefore, it makes sense that there can be cases in which the two tests give conflicting policy advice, undermining the usefulness of both. In those cases, the Kaldor-Hicks Criteria, if taken together, cannot rank the social states. The combined Kaldor-Hicks Criteria's lack of ability to rank some social states is ironic because the reason L&E abandoned Pareto Efficiency and adopted the Kaldor-Hicks Criteria was that Pareto Efficiency cannot rank all social states. However, the irony is lessened because Kaldor-Hicks can rank more states than Pareto can,

126. See Tibor Scitovsky, *A Note on Welfare Propositions in Economics*, 9 THE REV. ECON. STUD. 77 (1941). The author's last name is also spelled "de Scitovszky."

and may be able to rank all of them, depending on the particular consumer preferences involved.

The problem with inconsistencies is most easily studied in Setting QQqq, and we follow the discussion of Hayashi[127] in that setting. In Figure 12, first suppose Person A's original position is x_A and Person B's original position is x_B. A move from x_A to y_A for Person A (making him better off) and from x_B to y_B for Person B (making her worse off) passes the Kaldor Test because, from those new points y_A and y_B, some Good 1 could be transferred from Person A (moving him left) to Person B (moving her right), and some Good 2 could be transferred to Person A (moving him up) from Person B (moving her down), until Person A reached y'_A and Person B reached y'_B. (The arrow from y_A to y'_A has the same length but opposite direction as the arrow from y_B to y'_B, illustrating these transfers.) If these transfers were done, Person A would be at y'_A, which has higher utility than his original point x_A, and Person B would be at y'_B, which has higher utility than her original point x_B, making both better off than they were originally. Therefore, the moves to y_A and y_B are "Potential Pareto" moves, since from there, there are feasible moves that Pareto-improve on the initial positions.

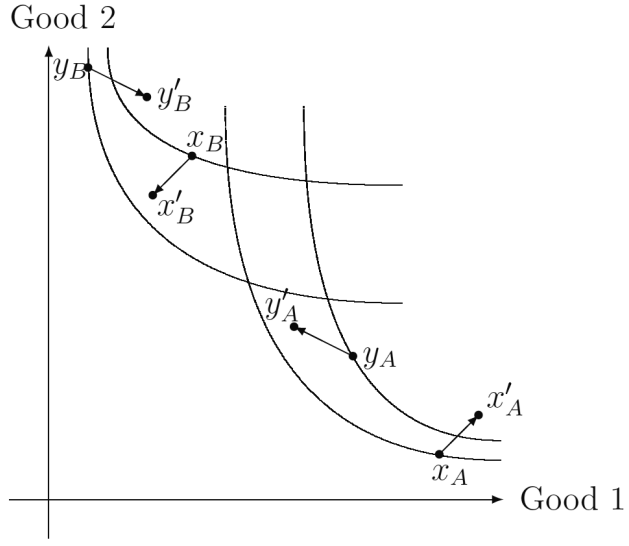

Figure 12. Person A's indifference curves are the ones which x_A and y_A lie on. Person B's indifference curves are the ones which x_B and y_B lie on. Moving from the set of points $\{x_A, x_B\}$ to the set of points $\{y_A, y_B\}$ passes the Kaldor Test (because it would be feasible to move further on to $\{y'_A, y'_B\}$), but moving from $\{y_A, y_B\}$ back to $\{x_A, x_B\}$ also passes the Kaldor Text (because it would be feasible to move further on to $\{x'_A, x'_B\}$). (Source: Hayashi Fig. 2.4.)

127. HAYASHI, *supra* note 103, at 21.

However, now consider being at the final points, y_A and y_B, and reversing the policy, so that the new final points would be x_A for Person A and x_B for Person B. Such a reversal of the original policy would also pass the Kaldor Test, because from x_A and x_B there is a potential to transfer Good 1 and Good 2 from Person B to Person A, so that Person A ends up at x'_A, which has higher utility than y_A, and Person B ends up at x'_B, which has higher utility than y_B. (The transfers are feasible because the arrow from x_A to x'_A has the same length but opposite direction as the arrow from x_B to x'_B.)

In other words, application of the Kaldor Test recommends that the policy of moving from "Person A at x_A and Person B at x_B" to "Person A at y_A and Person B at y_B" be adopted, but if it is adopted, the Kaldor Test then recommends that the policy should be reversed. This is like saying "the grass is always greener on *the other* side of the fence" regardless of which side of the fence one is on. Following this pair of recommendations would clearly be an absurd way to conduct public policy, forever cycling between adopting the policy and reversing its adoption. The upshot is simple: application of the Kaldor-Hicks criteria can lead to contradictory results and therefore, like the Pareto Approach it is designed to replace, it can fail to provide a ranking some social states.

We have analyzed Figure 12 as a policy reversal, but it can also be recast as an inconsistency between the Kaldor and Hicks Tests. We know that the Kaldor Test for Figure 12's reverse policy (from $\{y_A, y_B\}$ to $\{x_A, x_B\}$) passed, meaning that the Hicks Test of the original policy (from $\{x_A, x_B\}$ to $\{y_A, y_B\}$) should fail, because from Section IV.D, the Kaldor Test for any policy passes if and only if the Hicks Test for the reverse of that policy fails. To show that the Hicks Test of the original policy (from $\{x_A, x_B\}$ to $\{y_A, y_B\}$) actually does fail, suppose it is not enacted, so the agents are still in the $\{x_A, x_B\}$ position. Person B is glad the policy is not being enacted, and would be willing to move to x'_B in gratitude for not being forced to move to y_B. Person B's motion from x_B to x'_B enables Person A to move from x_A to x'_A, more than compensating Person A for refusing to allow Person A to move from x_A to y_A. Since Person B, who is the loser of the original policy, is able to "bribe" Person A not to enact the original policy, the original policy does fail the Hicks Test. We already knew that the original policy passed the Kaldor Test. So for the original policy, there is indeed a contradiction between the Hicks Test, which it fails, and the Kaldor Test, which it passes. This is why the title of this subsection refers to "inconsistencies and reversals."

Again for Figure 12, the original policy fails the Hicks Test, and since the original policy passes the Kaldor Test, the reverse of the original policy must fail the Hicks Test. (Proof that it does: a policy of going $\{y_A, y_B\}$ to $\{x_A, x_B\}$ fails the Hicks Test because if it is not enacted, Person A, who benefits from that policy not being enacted, could move

from y_A to y'_A, losing utility but not as much as had the policy been enacted, and thereby enable Person B to move from y_B to y'_B, making Person B better off than had the policy been enacted.) So the Hicks Test said one should not move from $\{x_A, x_B\}$ to $\{y_A, y_B\}$ (the original policy), but if society made that move anyway, and hence society is now at $\{y_A, y_B\}$, then the Hicks Test from there says society should not move back to $\{x_A, x_B\}$. This inconsistency, generated by both the policy and its reverse failing the Hicks Test, is the opposite of the reversal inconsistency discussed above, generated by both the policy and its reverse passing the Kaldor Test; this inconsistency is like saying "the grass is always greener on *this* side of the fence" *regardless* of which side of the fence one is on.[128]

That was in Setting QQqq. Inconsistencies of EV and CV have been studied even more and even longer in Setting Pi and its generalization, Setting *i, often using advanced mathematics. An excellent reference and survey paper of Setting *i is Blackorby and Donaldson's *The Case against the Use of the Sum of Compensating Variations in Cost-Benefit Analysis*. While their title only refers to compensating variations, they assert that "These criticisms apply with minor changes to the sum of equivalent variations." [129] Their title faithfully conveys their disapproval of the Kaldor-Hicks Criteria. They write:

> Neither the sum of compensating variations nor the potential Pareto Principle ranks social alternatives in a reasonable way. In order to eliminate intransitivities over consumption-efficient allocations, all households must be assumed to have quasi-homothetic preferences that are identical at the margin.[130]

Preferences are "quasi-homothetic and identical at the margin" when a one dollar increase in anyone's income is spent—for example, 5 cents on "apples," 8 cents on "bananas," etc.—in exactly the same way by everyone in the economy.[131] These are obviously very special

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128. One can imagine a case exhibiting inconsistencies and reversals different from those illustrated in Figure 12. In such a case, the original policy would fail the Kaldor Test but pass the Hicks Test. The reverse policy would pass the Hicks Test and fail the Kaldor Test. Then it would be the Kaldor Test leading to the "the grass is always greener on *this* side of the fence" inconsistency, and it would be the Hicks Test leading to the "the grass is always greener on *the other* side of the fence" inconsistency.

129. Charles Blackorby & David Donaldson, *The Case against the Use of the Sum of Compensating Variations in Cost-Benefit Analysis,* 23 CANADIAN J. ECON. 471, 492–93 (1990). They add, as a minor caveat for one decision-making unit: "The equivalent variation has an advantage over the compensating variation for a single household. If the equivalent variation for one change is greater than the equivalent variation for another, then the household prefers the outcome of the first to the outcome of the second. The compensating variation does not share this property. . . ." *Id.* at 473 n.5.

130. *Id.* at 473.

131. Chipman & Moore, *supra* note 121 at 551; Blackorby & Donaldson, *supra* note 129, at 473, 487. Quasi-homothetic preferences are also called Gorman Form preferences. *See also* VARIAN, *supra* note 72, at 153.

preferences, much narrower than Arrow-Debreu preferences,[132] and are only somewhat more plausible than the Setting Qq requirement illustrated in Figure 6 that indifference curves be parallel lines. In the real world, preferences are not like this, so using the sum of CV or the Potential Pareto Principle can result in intransitivities (or, in other words, incompleteness and reversals).

2. The Scitovsky Test, the Gorman Paradox, and the Samuelson Test

The situation in Figure 12 is called a "Scitovsky Reversal."[133] Scitovsky proposed a solution to these problems with the Kaldor Test and the Hicks Test: adopt a policy if and only if it passes both Tests. This "Scitvosky Double Criterion" eliminates some difficulties but there are situations in which it does not eliminate contradictions between more than two policies because, for example, in conjunction with the Pareto Criterion, it could rank x below y, y below z, z below w, but w below x. Such a situation is called the "Gorman Paradox."[134] An example of a Gorman Paradox is illustrated in Figure 13, which comes from Hayashi's book.[135] Figure 13 is a graph of "utility possibility frontiers."[136] The axes are the utility of Persons A and B, respectively. Each curve represents the tradeoff between Person A and Person B for a different policy (for example, a different mix of outputs). In the figure, x ranks below y because y is a Pareto Improvement over x (since y has more utility for both persons than x). This implies that the movement from x to y passes both the Kaldor and Hicks Tests, so it is a Scitovsky Improvement. Next, y is ranked below z because if you move to z, it would then be feasible to move along z's utility possibility frontier to a point that is Pareto-superior to y. Thus z is a Scitovsky Improvement over y. Next, w is a Scitovsky Improvement over z because w is a Pareto Improvement over z. Finally, x is a Scitovsky Improvement over w because if you move to

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132. Preferences that are "quasi-homothetic and identical at the margin" are not, however, as special as the quasilinear, "demand curves do not depend on income" preferences needed to support the Coase Theorem in *supra* Section III.G.1(d), needed to make WATP equal to WTA in *supra* Section IV.A, and needed in *infra* Section V.C to make consumer surplus exact. On the other hand, for this result of Blackorby and Donaldson to hold, besides having these preferences, all agents also have to face identical prices; and as Blackorby and Donaldson point out, "In many standard cost-benefit exercises, however, the existence of public goods, semi-public goods, and different labour qualities rules out identical prices. The impossibility of consistent ordering of alternatives in such cases should count (we believe) very strongly against the compensating-variation (willingness-to-pay) test." Blackorby & Donaldson, *supra* note 129, at 489.

133. *See* Scitovsky, *supra* note 126.

134. *See* HAYASHI, *supra* note 103, at 24; *see also* Kotaro Suzumura, *Paretian Welfare Judgements and Bergsonian Social Choice*," 109 THE ECONOMIC J. 204, 204–220 (1999) (referencing Figure 3); *see also* W. M. Gorman, *The Intransitivity of Certain Criteria used in Welfare Economics*, 7 OXFORD ECON. PAPERS (NEW SERIES) 25, 25–35 (1955).

135. HAYASHI , *supra* note 103, at 24.

136. For an introduction to Utility Possibility Frontiers see Figure 2 and its accompanying text.

x, it would then be feasible to move along x's utility possibility frontier to a point that is Pareto-superior to w. Thus there is a cycle.

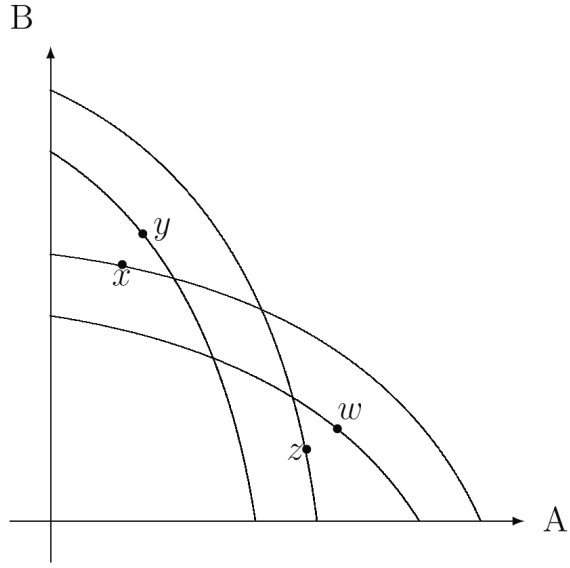

Figure 13. Utility Possibility Frontiers and the Gorman Paradox. (Source: Hayashi Fig. 2.7.)

Hayashi continues:[137]

> [Paul] Samuelson considered a weakening of the condition, stating that one allocation should be better than another when the entire utility possibility frontier given by the former is above the entire utility possibility frontier by the latter. Let us call this [the] Samuelson criterion. This leads to a cycle again when it is combined with the Pareto criterion, however. The same example works. In Figure 13, y is a Pareto-improvement of x, z is a Samuelson-improvement of y, w is a Pareto-improvement of z, but x is a Samuelson-improvement of w.
>
> Now, we are pretty much in deadlock.

Hayashi is right: even the Samuelson condition is clearly not always able to rank policies in a transitive way.

3. The Boadway Paradox

The Boadway Paradox only occurs in settings with prices, such as Settings Pi and *i. We will closely follow the discussion of Feldman and

137. *Id.*

Serrano.[138] In the Edgeworth Box of Figure 14, we wish to use compensating variation to judge the move from x to y. This will involve the "new" price vector, which is given by the slope of the budget line labeled b_y. For Person 1, who is the "winner" of this move, CV is the amount of money (or of Good 2, which is measured along the vertical axes) he would be willing to give up in order to be at y and face the new price vector. This is given by the distance from y to z, since z is on Person 1's original indifference curve at a point where its marginal rate of substitution is equal to the slope of the b_y budget line. The distance from y to z measured in terms of Good 2 is ac. For Person 2, the "loser" of this move, CV is the amount of money (or of Good 2) she would have to be given to compensate her for having to be at y and face the new price vector. This is given by the distance from y to w, since w is on Person 2's original indifference curve at a point where its marginal rate of substitution is equal to the slope of the b_y budget line. The distance from y to w measured in terms of Good 2 is bc, so Person 2's CV is $-bc$. Society's change in CV for the move from x to y is therefore $ac - bc = ab > 0$, so the move from x to y passes the Kaldor Test. However, the move from x to y is a move from one Pareto Optimal point to another Pareto Optimal point, so it is impossible for y to be a Potential Pareto improvement over x (a Pareto Optimal point, such as x, cannot be Pareto-improved upon). The Kaldor Test has therefore classified as Potential Pareto a move which is actually not Potential Pareto.

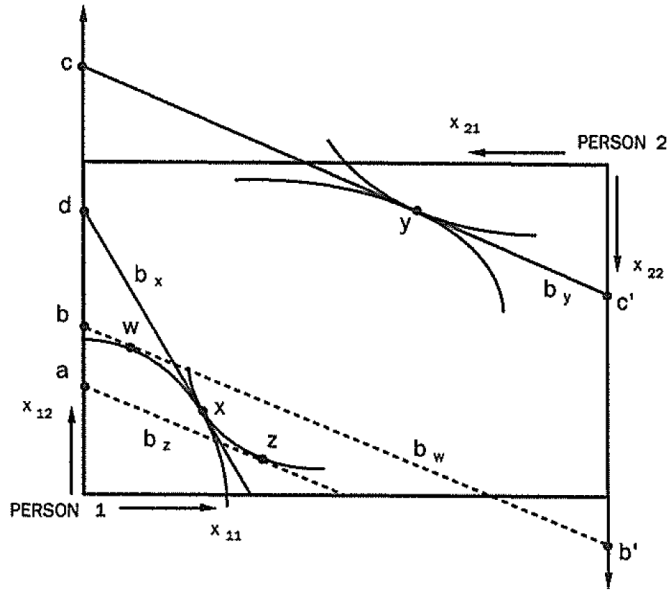

Figure 14. The Boadway Paradox. (Source: Feldman and Serrano Fig. 9.6.)

138. ALLAN M. FELDMAN & ROBERTO SERRANO, WELFARE ECONOMICS AND SOCIAL CHOICE THEORY 208–210 (Springer Science 2d ed. 2006).

Due to such examples, Blackorby and Donaldson say that a wedge can exist between CV and Potential Pareto Improvements:

> A positive sum of compensating variations is not the same thing as an improvement according to the Potential Pareto Principle. [...] Although a positive sum of compensating variations is necessary for an improvement according to the Potential Pareto Principle (when lump-sum transfers are feasible), it is not sufficient.[139]

The upshot is that if prices differ between two situations, or if a policy would result in any price changing, then compensating variation (the Kaldor Test) sometimes falsely indicates that a move is a Potential Pareto move.

Blackorby and Donaldson add: "A similar result may be obtained for the sum of equivalent variations between Walrasian equilibria. Since the equivalent variation from *b* to *a* is minus the compensating variation from *a* to *b*, it follows that the sum of the equivalent variations must be non-positive. . . ." In other words, equivalent variation (the Hicks Test) sometimes falsely indicates that a move fails the Potential Pareto criterion, and thus is socially bad, when actually it is socially neutral according to the Pareto criterion, because it is a move from one Pareto Efficient point to another.

4. Incompleteness Due to Nonexistence of EV or CV

In Setting Pi, Figure 10 showed an example of nonexistence of WATP, and Figure 11 showed an example of nonexistence of WTA. In Setting Qq, the end of Section IV.A.2 explained how WATP and WTA can fail to exist. It follows that CV and EV may fail to exist, in which case the Kaldor or Hicks Test will be undefined.

This completes our discussion of the positive problems of the Potential Pareto approach. While L&E advocates resort to the Kaldor and Hicks Tests to overcome the incompleteness of the Pareto criterion, Section IV.E has shown that those Tests have incompleteness problems of their own (albeit less pervasive). They therefore fail to provide a reliable theoretical foundation for L&E. In the next section we will see that in return for the Potential Pareto's only modest improvement over the Pareto approach as far as its positive ability to rank policies, the Potential Pareto approach carries with it serious normative problems that the Pareto approach does not have.

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139. Chipman & Moore, *supra* note 121, at 472–73.

F. Normative Problems with CV & EV

1. A Positive Sum of CV's Is Insufficient to Identify Potentially Pareto Moves

The Hicks and Kaldor tests suffer not only from positive problems but also from normative ones. Our hypothetical policies involved State confiscation of bananas from Smith and the transfer of the confiscated bananas to Jones. The main moral ground justifying the use of the Kaldor Test to decide whether to carry out such confiscation is that it identifies "potentially Pareto" moves—moves that, combined with some transfer from the winners to the losers, make everyone better off. However, the Boadway Paradox (Section IV.E.3) shows that in a setting with prices, a move from one Pareto Optimal point to another passes the Kaldor Test, even though a move from one Pareto Optimal point to another cannot be combined with some transfer from the winners to the losers to make everyone better off—because if it could be so combined, then the original point could not have been Pareto Optimal. Moves passing the Kaldor Test pass the "Potential Pareto" Criterion by definition, but that does not mean they could form the first plank of a Pareto-improving policy, so there is no ethical justification for some of the moves passing the Kaldor Test (in a setting with prices).

One way to frame the remaining subsections of this Section IV.F is as a response to a defense against our argument in Section IV.B (before introducing the Kaldor and Hicks Tests) that the Potential Pareto Criterion was ethically indefensible. This defense is: despite the possibility of being on the losing side of a Kaldor-Hicks-based decision, someone in a state of Rawlsian uncertainty[140] might assent to society's use of Kaldor-Hicks anyway because using Kaldor-Hicks is better for society as a whole. Assent would be given because, although any one Kaldor-Hicks decision generates losers as well as winners, "If each policy had different winners and losers so that in the long run everyone were a winner as often as he or she were a loser, the unfairness of individual policies taken separately might wash out." [141] Wonnell refers to this argument as "Package Paretianism" [142]: people, perhaps but not necessarily in a state of Rawlsian uncertainty, will support systematic application of the Potential Pareto criterion because, while they will "win" in some decisions and "lose" in others, on average—that is, seen as a "package" of many decisions—they will, overall, win. A more

140. This refers to operating under the "veil of ignorance," also called the "original position," in John Rawls's 1971 book *A Theory of Justice*. John Rawls, *A Theory of Justice* (Harvard Univ. Press 1971). *See Original Position*, WIKIPEDIA, https://en.wikipedia.org/wiki/Original_position (last visited Oct. 9, 2023).

141. Hausman & McPherson, *supra* note 83, at 247.

142. Christopher T. Wonnell, *Efficiency and Conservatism*, 80 NEB. L. REV. 643, 660 (2001).

accurate name for this argument would be "Package Potential Paretianism."

That argument fails if the Potential Pareto criterion systematically discriminates against one group of people. The purpose of the remaining subsections of Section IV.F is to demonstrate that it does, and that group of people is poor people (Section IV.F.2), and that those ethics are problematic (Section IV.F.3). Advocates for the Potential Pareto criterion may not appreciate how devastating it could be to end up on the losing side of multiple Kaldor-Hicks-based decisions, and, correspondingly, how unequal societies using Kaldor-Hicks could become.

2. WATP Justifies Results that Favor the Wealthy (Positive Theory)

In Setting Pi, Section IV.A.3. showed that WATP had to be less than wealth, so certainly WATP is related to wealth. In particular, WATP depends on wealth exactly like any other demand curve (like any other "willingness to pay"); moreover, in the typical case of normal goods, WATP is an *increasing* function of wealth.[143] We alluded to this in connection with our example of Bill Gates's WATP to reduce air pollution near where he lives in contrast to a less wealthy individual; namely, that a simple sum of WATP's weights people more the wealthier they are. (So, probably, does a simple sum of WTA's: my true WTA for living next to a toxic waste dump is less than Bill Gates's.) This "preference for the wealthy"[144] is an inherent, anti-egalitarian, anti-democratic feature of the Potential Pareto approach.

Our common experience tells us that the poor, almost by definition, rarely come out on top of social decision-making processes. Hausman and McPherson explain why, in the Potential Pareto context:

> But the bias built into cost-benefit analysis against the preferences of the poor suggests that the unfairness will not wash out. Exactly those people whom policy makers

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143. Baker, points out that as income rises, the WATP for "inferior goods" such as "cat food bought for human consumption" would fall. Baker, *supra* note 90, at 17.

Nicholas E. Flores and Richard T. Carson point out that, as Carson and Hanemann put it, "the income elasticity of WTP" is actually not the same as "the income elasticity of demand." Nicholas E. Flores and Richard T. Carson, *The Relationship between the Income Elasticities of Demand and Willingness to Pay*, 33 J. ENV'T. ECON. MGMT. 287, 292 (1997); 2 Richard T. Carson and W. Michael Hanemann, *Contingent Valuation, in* HANDBOOK OF ENVIRONMENTAL ECONOMICS, VALUING ENVIRONMENTAL CHANGES 909 (Karl-Göran Mäler & Jeffrey R. Vincent eds., North-Holland Elsevier 2005). A certain amount of caution in these matters is therefore prudent.

Another caveat is that it is not particularly clear how to illustrate a bias toward the wealthy in Frame Qq.

144. *Cf. Option for the poor*, WIKIPEDIA, https://en.wikipedia.org/wiki/Option_for_the_poor (last visited Mar. 21, 2204) (explaining "the preferential option for the poor" in the social teaching of the Roman Catholic church).

> should be most concerned to protect are those who are most likely to be harmed.[145]

Similarly, "the consent argument … for the assignment of common-law entitlements according to the wealth maximization criterion" is rejected by Bebchuk because of "the bias of the WMC [wealth maximization criterion] against the poor."[146] Moreover, the Potential Pareto approach exacerbates this bias over time because a rich person, having benefitted from one public policy decision decided by the Potential Pareto approach, has become even richer, and thus "is progressively more likely to be favored in the next case." [147] Whether this bias is bad or not depends on one's point of view, which is the topic of the next section.

3. WATP Justifies Results that Favor the Wealthy (Normative Theory)

One may ask, is WATP's bias in favor of the wealthy ethically a bad thing? As with all normative questions, the answer depends on whom one asks. Clearly, it is in the eyes of, for example, the authors of some Bible passages.[148] And special concern for the poor is indicated by Islam's practice of almsgiving ("*zakāt*"), one of that religion's "pillars."[149]

There certainly are economists critical of Cost-Benefit Analysis's bias in favor of the wealthy. Posner was not among them; he wrote that objections to assigning a "quantity of pituitary extract" not to the low bidder, "a poor family whose child will be a dwarf unless he gets the extract," but rather to the high bidder, "a wealthy dilettante who wants to use the extract to grow a giant gerbil," "may be superficial" objections—because such objections ignore the existence of private charity, and because "in the long run, there may be more and cheaper pituitary extract, and fewer dwarves, if the society does not try to allocate the product to those who will derive the greatest happiness

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145. Hausman & McPherson, *supra* note 83, at 247.

146. Lucian A. Bebchuk, *The Pursuit of a Bigger Pie: Can Everyone Expect a Bigger Slice?* 8 HOFSTRA L. R. 671, 671–72 (1980). *See also* Liscow, *supra* note 108, at 1651.

147. Baker, *supra* note 90, at 9.

148. *See 1 Timothy* 6:9 ("But those who want to get rich fall into temptation and a snare and many foolish and harmful desires which plunge men into ruin and destruction. For the love of money is a root of the evils"); *Ecclesiastes* 5:10-11, 13 ("Whoever loves money never has enough; whoever loves wealth is never satisfied with his income. This too is meaningless. As goods increase, so do those who consume them. And what benefit are they to the owner except to feast his eyes on them? . . . . I have seen a grievous evil under the sun: wealth hoarded to the harm of its owner . . . ."). The pithy admonition "you cannot serve both God and Mammon" actually appears twice: in *Matthew* 6:24 and in *Luke* 16:13. "It is easier for a camel to go through a needle's eye than for a rich person to enter into the kingdom of God." *Mark* 10:25.

149. Adam Bukowski, *Social Role of Alms (*zakāt*) in Islamic Economics*, *in* 17 ANNALES. ETHICS IN ECONOMIC LIFE 123 (2014), https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=f048f63c1011028417006dbf6bcc12ae7d4e714f.

from it." [150] However, Posner immediately undermined the "charity" argument, admitting that charity usually generates positive externalities and thus is under-supplied under laissez faire. What remains of Posner's argument is extremely speculative, involving three hypotheticals: critics' arguments *may* be superficial because there *may* be more pituitary extract in the long run under Cost-Benefit Analysis, and that increased supply of pituitary extract *may* result in fewer people with dwarfism (rather than merely resulting in more wealthy dilettantes growing more giant gerbils). Contrast the weakness of Posner's argument on this fundamental point with the straightforward, non-speculative argument by critics of Cost-Benefit Analysis, represented here by welfare economics theorists Hammond and Fleurbaey[151]:

> At this stage, many economists of the so-called "Chicago school", following Harberger (1971) in particular, succumb to the temptation of just adding different individuals' monetary measures. "A dollar is a dollar", they might say, regardless of how deserving is the recipient. Implicitly, they attach equal value to the extra dollar a rich man will spend on a slightly better bottle of wine and to the dollar a poor woman needs to spend on life-saving medicine for her child. Of course, any such judgement is a value judgement, even an interpersonal comparison, which lacks scientific foundation. […] Thus, the "surplus economists" who just add monetary measures, often of consumer surplus[152] rather than individual welfare, make their own value judgements and their own interpersonal comparisons. Moreover, their comparisons not only lack scientific content, but most people—especially non-economists—also find them totally unacceptable from an ethical point of view. Surely it is better to avoid interpersonal comparisons altogether rather than make them in such a biased way.

Blackorby and Donaldson similarly write:

1. "The other side of the compensating-variation test is the ethical judgment that 'a dollar is a dollar'—income-inequality is ignored" and that "there is near unanimity about the undesirability of such ethics."[153]

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150. Richard A. Posner, *Wealth Maximization Revisited*, 2 NOTRE DAME J. L. ETHICS & PUB. POL'Y 85, 96 (1985).

151. 2 Marc Fleurbaey & Peter J. Hammond, *Interpersonally Comparable Utility, in* HANDBOOK OF UTILITY THEORY, EXTENSIONS 15 (Salvador Barberà, Peter J. Hammond & Christian Seidl eds., Kluwer Academic 2010).

152. *See* Section V.D.

153. Blackorby & Donaldson, *supra* note 129, at 491–492.

2. "A notion of efficiency that is independent of the distribution of income—an idea that makes no sense in real-world economies," only in economies in which there is only one commodity.[154]
3. "The ethical judgments implied by the compensating-variation test are not defensible. It treats increases in income as equally socially valuable no matter who receives them. Social judgments—revealed by government policy—and the overwhelming majority of individual judgments are not consistent with this indifference toward inequality."[155]
4. Disagreement over "the appropriate level of inequality-aversion" in no way logically justifies economists ignoring inequality, but rather suggests that they should use "criteria that exhibit various degrees of inequality aversion."[156]

Point (2) is coextensive with our discussion of the Separation Hypothesis (Section III.G.1(c)). Point (4) recommends that instead of using Kaldor-Hicks, other criteria that transparently incorporate inequality aversion should be used to make social decisions; Blackorby and Donaldson go on to give examples of such alternatives.[157]

Section IV.B we quoted the criticism of Kaldor by eminent economic theorists Chipman and Moore, who, we add here, flatly concluded that Kaldor and Hicks's "New Welfare Economics must be considered a failure." [158]

Overall, then, the Potential-Pareto/Kaldor-Hicks/Cost-Benefit-Analysis approach has serious positive problems and disqualifying normative problems.

G. Econometrics and Political Power

Whether one can use a Kaldor or Hicks Test to justify having the State confiscate goods from other people and give those goods to oneself depends on the shapes of the indifference curves. Up until now we have assumed those shapes are known, but in the real world those shapes are not known. Instead, those shapes, and the resulting sizes of WATP and WTA that drive all social decisions made under the Kaldor-Hicks

154. *Id.* at 490.

155. *Id.* at 472.

156. *Id.* at 491.

157. *Id.* at 492.

We have investigated other methods for performing distributionally sensitive cost-benefit analysis. One is the employment of welfare ratios (ratios of household incomes to the household's poverty lines) as indexes of well-being (Blackorby and Donaldson 1987). Another is the employment of household equivalence scales in estimated utility functions (Blackorby and Donaldson 1988c). The latter method has been used by Jorgenson and Slesnick (1984a, 1984b).

158. Chipman & Moore, *supra* note 121, at 548.

Criteria, must be indirectly inferred, using statistical techniques (and sometime survey techniques) that are themselves imperfect and potentially subject to manipulation.

Fears that statistical methods give misleading answers are always greater when the statistician or econometrician is forced to extrapolate rather than being able to interpolate, because under extrapolation one is attempting to infer consumer or firm behavior under circumstances that the consumers or firms have never been observed being in. The size of WATP and WTA would then depend on indifference curve shapes located away, and sometimes *far* away, from any observed data points. Such far-away shapes are a *terra incognita,* inheriting the fundamental uncertainties and inaccuracies of all extrapolations.

In addition to being imperfect, statistical estimates of WATP and WTA are potentially subject to manipulation because, unlike professions such as medicine and law, the economics profession has no universal code of ethics, let alone a licensing board tasked with enforcing ethical conduct. Already some decades ago mathematical economist and polymath Nicholas Georgescu-Roegen observed, "in many an econometrician's shop…we see him selecting his tools with a single purpose in mind: to cut the log on his workbench in such a way that he may be able at the end to exclaim triumphantly, 'I told you that inside that log there was a beautifully carved Madonna!'"[159] In other words, we cannot actually know for sure what anyone's indifference curve map looks like, and the fear is that one side's econometric efforts to estimate how it looks might be subject to prejudiced manipulation that could only be detected by conversely-motivated but similarly-compensated consultants, necessitating a comparably well-heeled opponent. In a nutshell, the concern is that the Kaldor/Hicks/Cost-Benefit approach can readily be manipulated by the powerful to convince the State to confiscate goods from the powerless and transfer them to the powerful.[160]

Part IV has been long. However, our overall conclusion from it is that given the positive and normative flaws of the Cost-Benefit/Kaldor-Hicks/"Potential Pareto" approach, only those who have a "preference for the wealthy" (wealthy individuals or firms) have a reason to use it.[161]

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159. Nicholas Georgescu-Roegen, *Further Thoughts on Corrado Gini's "Delusioni dell'Econometrica,"* in ENERGY AND ECONOMIC MYTHS: INSTITUTIONAL AND ANALYTICAL ECONOMIC ESSAYS 266, 266–67 (Pergamon 1976).

160. Neoliberals realized that a strong state was necessary to dismantle the New Deal consensus. *See* MIROWSKI & PLEHWE, *supra* note 16, at 161.

161. While the positive problems with the Potential Pareto approach appear to be insuperable when they occur, they do not always occur; and Potential Pareto's normative problems might be partially solved by econometrically estimating CV and EV to obtain an income-adjusted CV and EV. It would remain problematic, however, to obtain the CV and EV of future generations, particularly if their income will change depending on the decision currently under debate (for example, climate change policy). Furthermore, removing the approach's "preference for the wealthy" would remove its attraction for some of its current proponents.

H. Consensual Uses of WATP/WTA

We end this Part by pointing out that there are consensual, non-controversial, non-"Potential Pareto" uses of WATP/WTA. Suppose an economist or mediator is trying to design a policy that could be joined to a policy which "gives four of Smith's bananas to Jones," to make the joined policy an *actual* Pareto Improvement. If the original policy is joined to a second policy, "transfer from Jones to Smith a number of apples strictly between Jones's WATP and Smith's WTA"—which is feasible only if Jones's WATP is greater than Smith's WTA, that is, only if the initial policy passes the Kaldor Test—then the final position makes both people better off than they were originally. In this procedure, Potential Pareto reasoning is only used as an intermediate stage in designing a policy which, taken as a whole, is a Pareto Improvement.

V. CONSUMER SURPLUS/CONSUMER WELFARE: COERCION, WITH LESS JUSTIFICATION

In 1966, Robert Bork argued that the "consumer welfare standard" should be the sole goal of antitrust law, and that such was what Congress intended when it passed the Sherman Act in 1890.[162] In his influential book *The Antitrust Paradox*, Judge Bork made clear that his term "consumer welfare" was simply a rebranding of the concept of consumer surplus.[163] The L&E movement caught on so swiftly that, during the 1980s, other traditional antitrust goals such as dispersion of economic power[164] and protection of small business[165] were swept away as neoliberal policy began to dominate the antitrust agencies. Today, the domination of the "consumer welfare" standard, that is, consumer surplus, in antitrust law is complete.

Consumer surplus is a measure of welfare, just like WATP and WTA (equivalently, just like compensating variation and equivalent variation). Using consumer surplus (or, more generally, social surplus) is an alternative to using the Kaldor-Hicks/Cost-Benefit Analysis/Potential Pareto approach. Furthermore, the most surprising result of our review of L&E textbooks in Appendix 1 is that while most

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See Abdeldrim Araar & Paolo Verme, *Prices and Welfare*, (Poverty and Equity Glob. Prac. Grp., World Bank Grp., Working Paper No. 7566, Feb. 2016), https://openknowledge.worldbank.org/bitstream/handle/10986/23897/Prices0and0welfare.pdf?sequence=1&isAllowed=y (discussing the use of CV and EV outside of the Potential Pareto framework, illustrating dividing the data into income quantiles).

162. Robert Bork, *Legislative Intent and the Policy of the Sherman Act*, 9 J. L.& ECON 7, 7 (1966).

163. ROBERT BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 90, 110 (Basic Books 1978). *See* Kenneth Heyer, *Consumer Welfare and the Legacy of Robert Bork*, 57 J. L. & ECON. S19, S20 (2014) ("consumer welfare [is] equivalent to consumer surplus").

164. Harlan M. Blake & William K. Jones, *In Defense of Antitrust*, 65 COLUMBIA L. REV. 377, 381 (1965).

165. Kenneth Elzinga, *The Goals of Antitrust Other Than Competition and Efficiency, What Else Counts?,* 125 U. PENN. L. REV. 1191, 1196 (1977).

L&E textbooks *say* they use the Kaldor-Hicks approach, what they *actually* use is the surplus approach.[166] Applied economists sometimes use the surplus approach and sometimes use Cost-Benefit Analysis, often but not always depending on which approach is traditionally used in their subdiscipline (surplus in industrial organization and Cost-Benefit Analysis in environmental economics). Clearly it is important to decide which is better, the surplus approach or the Potential Pareto approach.

The Potential Pareto Approach, flawed as shown in Part IV, is at least built upon the noncontroversial and useful foundation of WATP, WTA, EV, and CV. Those concepts are so noncontroversial that in Section IV.H we even discussed potential consensual uses for them. Consumer surplus is normatively very similar to the Potential Pareto Approach (and so has all of the latter's normative flaws). However, we will show in this Part that the positive foundation of consumer surplus, while an improvement over early nineteenth-century ideas, is inferior to the twentieth-century positive foundation of Potential Pareto. This means that consumer surplus is an inferior basis on which to make social decisions than Potential Pareto.

However, consumer surplus has three attractions for anyone who has a "preference for the wealthy." First, like the Potential Pareto approach, it reflects such a preference. Second, it is so simple that it is easily taught to undergraduates, unlike EV/CV; and it *is* taught to every undergraduate economics major, and to many students who only take a single undergraduate economics course. Third, its description of consumer behavior is so incorrect that it masks what is otherwise readily apparent—that "value" has a binary nature. Thus, consumer surplus theory functions like proverbial rose-colored glasses, hiding the messiness of EV not equaling CV, and the inconsistencies and incompleteness and arbitrariness which that causes, behind lenses tinted so strongly that none of those problems can be perceived.

To understand why consumer surplus theory is inferior to the Potential Pareto approach, one must first understand its origins and prior uses.

A. Consumer Surplus: An Advance Over the Expenditure Approach

We begin by explaining how consumer surplus is an advance over an even more mistaken view, the view that the total expenditure on a good is a credible measure of its value.

Suppose Figure 15 shows one demand curve for a commodity like diamonds, D_d, and another for a commodity like water, D_w, and their

166. *See infra* Appendix 1 (showing only the four texts of Cole & Grossman, Hirsch, Friedman, and Polinsky deviate in various ways from the pattern of "claiming to use Kaldor-Hicks but not using it").

corresponding supply curves, S_d and S_w. A straightforward, but misleading, way to answer the question "what is the value of diamonds?" is the *expenditure* on diamonds, the rectangle $p_d\ Q_d$. According to this "Expenditure Approach"—it could also be called the "Total Revenue" Approach since the buyer's spending is the seller's receipts—the value of water would similarly be $p_w\ Q_w$. Since the rectangle $p_d\ Q_d$ is larger than the rectangle $p_w\ Q_w$, this results in the conclusion that diamonds are more valuable than water. This answer is paradoxical because water is a requirement for life while diamonds are mostly merely used as decoration and adornment. This is called "the diamond-water paradox," and it shows why the Expenditure Approach to value is flawed.[167] (Replace water with a free commodity, air, for an even more dramatic example.)

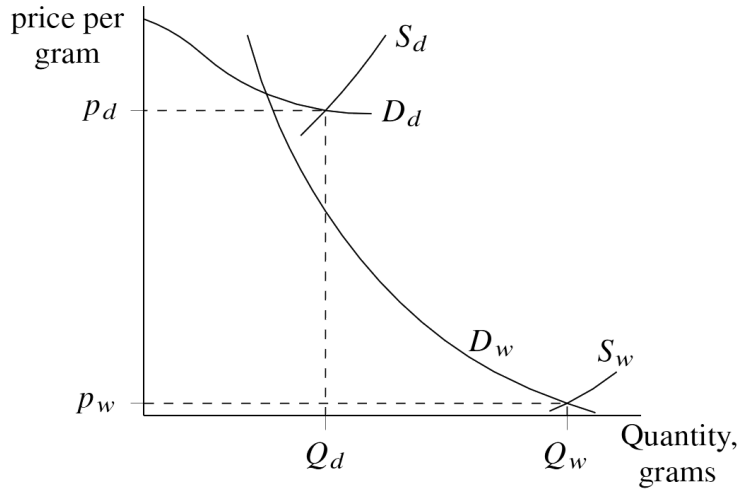

Figure 15. The Diamond-Water Paradox.

To see how the "Consumer Surplus" approach to value improves on the Expenditure Approach, refer to Figure 16, showing the demand curve for a commodity, and consider this way of thinking through how to answer the question "what is the value of Q_1"? Suppose first that the consumer only had access to the good at a price of p_a. In that case, as reflected in Figure 16, the consumer would be willing and able to pay for Q_a units of the good—hence paying $p_a Q_a$ in total for those units. Geometrically, this is the area under line $p_a A$. Having bought Q_a units of the good, suppose the consumer is offered additional units of the good at a new, lower price of p_b. He is then willing and able to buy an

167. ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS, Book I Chapter IV (1776) ("Nothing is more useful than water: but it will purchase scarce any thing; scarce any thing can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it."). *See also Paradox of Value,* WIKIPEDIA https://en.wikipedia.org/wiki/Paradox_of_value (last visited Oct. 14, 2023).

additional $Q_b - Q_a$ units of the good at this lower price, resulting in a total payment of $p_b * (Q_b - Q_a)$ for those units, i.e., the area under line GB. Having bought Q_b units of the good in total, suppose the consumer is offered additional units of the good at a new, even lower price of p_c. He is willing and able to buy $Q_c - Q_b$ units of the good, resulting in a total payment of $p_c * (Q_c - Q_b)$ for those units, i.e., the area under line HC.

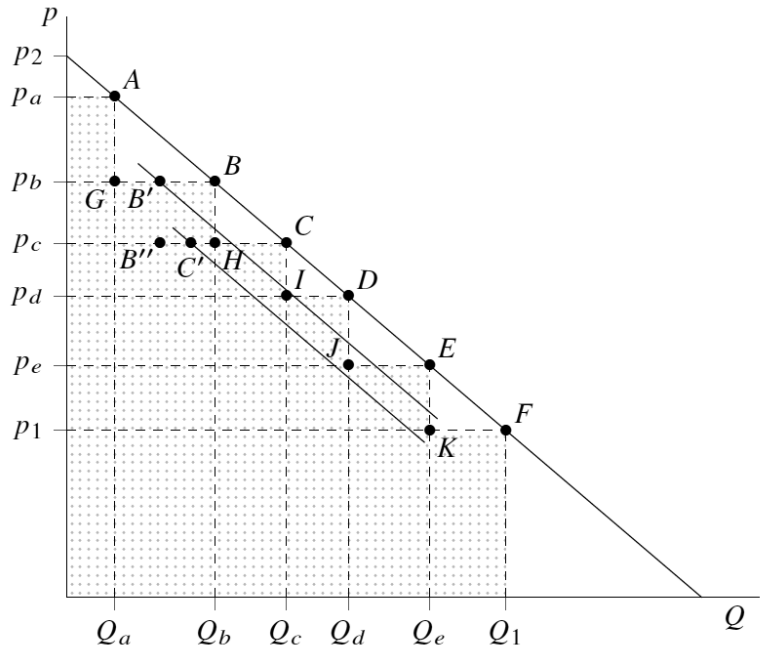

Figure 16. Problems in the derivation of Consumer Surplus.

In a similar manner, the consumer's willingness and ability to pay for Q_1 will include the area under the lines *ID*, *JE*, and *KF*. The consumer's willingness and ability to pay will be, in total, the sum of the areas under the lines p_aA, *GB*, *HC*, *ID*, *JE*, and *KF*. If the distance from p_2 to p_1 had been divided into more intermediate prices, the consumer's willingness and ability to pay would converge to the area under the line p_2F. "Consumer surplus" is this area minus the consumer's p_1Q_1 outlay for Q_1, so *consumer surplus is the triangle* p_2 *F* p_1. (If the demand curve is not a straight line, consumer surplus is not a triangle, strictly speaking, but instead is a triangle-like shape with one leg curved not straight.). Thus we see that the Expenditure Approach is wrong to think that the value of Q_1 is only p_1 Q_1; instead, a better answer is that the value of Q_1 is p_1 Q_1 plus the consumer surplus.[168] The Consumer Surplus approach

168. This insight is due to work by Dupuit in 1844; *see* R. W. Houghton, *A Note on the Early History of Consumer's Surplus*, 25 ECONOMICA (New Series) 49, 49–50 (1958). In some sense, though, the idea goes back to Aristotle. *See* HERMAN E. DALY, STEADY-STATE ECONOMICS: SECOND EDITION WITH NEW ESSAYS 186 (Island Press 2d ed. 1991) (pointing out that "Marx, and Aristotle before him,

resolves the Diamond-Water Paradox because, as is evident in Figure 15, the area under the diamond demand curve is smaller than the area under the water demand curve, making Q_d diamonds "less valuable" than Q_w water.

The success of the consumer surplus approach in explaining the Diamond-Water Paradox turned out to be the apex of its influence on economics. As we describe in Section V.C, by the early twentieth century, shortcomings of the consumer surplus approach became apparent, and in the opinion of most economic theorists, Kaldor and Hicks's development of EV and CV should have spelled the end of consumer surplus. However, before we continue with our narrative in Section V.C, we take a detour to address a mistake in the L&E treatment of surplus and "wealth."

B. Consumer Surplus is Not Part of Wealth

In Section V.A, we criticized the Expenditure Approach because it was not a good measure of the value a consumer gains from a commodity, and we demonstrated that adding consumer surplus to expenditure provides a better measure. By "the value a consumer gains from a commodity"—"value" for short—we are trying to describe how the commodity affects the consumer's "utility," which cannot be measured directly, which is ordinal, and which is what we are ultimately concerned with. We sometimes refer to the consumer's utility as the consumer's "welfare"—but not in the same sense as Bork's "consumer welfare," which is cardinal and means "consumer surplus" or "producer and consumer surplus." While utility, as manifest in the form of (many) graphs of indifference curves, underlay everything we did in this paper's "Potential Pareto" Part IV—and while Part III, on Pareto Optimality, was even more directly about utility—we did not mention utility or indifference curves once in Section V.A. That is not a promising sign for consumer surplus as a measure of welfare/utility, and Section V.C will show that, as its title says, "consumer surplus is not a credible measure of welfare."

Posner criticized the Expenditure Approach in 1981, not on the grounds that we used—that it is a bad measure of *utility/welfare*—but instead on the grounds that it is a bad measure of "*wealth*." In this section we explain why the "bad measure of utility/welfare" criticism is different from the "bad measure of wealth" criticism, in so far as the word "wealth" is used by economists. Once we show that "wealth" is not welfare/utility, it will be clear that "wealth" is irrelevant to the subject of this paper; yet Posner has been strongly advocating "wealth

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pointed out that the danger of money fetishism arises when society shifts its focus from use value to exchange value"); *see also* ARISTOTLE, THE NICHOMACHEAN ETHICS, Book I Chapter 5 (distinguishing between *oikonomia* and *chrematistike)*; ARISTOTLE, POLITICS, Book I Parts VIII, IX, and X.

maximization" to lawyers since the 1970's,[169] as has Robert Bork.[170] Accordingly, it is important to expend some effort bringing clarity to its definition.

In 1981, Posner wrote:[171]

> Coleman and Korhauser argue that wealth maximization cannot be an ethically attractive system because it depends on prices. The wealth of society (in their view) is the sum of the outputs of all goods and services, weighted by their prices. [. . .] But their definition of social wealth is incorrect. It leaves out consumer and producer surplus. When these are included, as they are whenever economists talk about the wealth of the society, it becomes clear that [. . ..]

Accordingly, we need to clarify what macroeconomists mean when they "talk about the wealth of society," and then we need to clarify what microeconomists mean when they talk about the wealth of an individual.

When macroeconomists talk about "wealth," they mean that term in the context of National Income Accounting. In "supply and demand" graphs like Figure 15, the quantity on the horizontal axis is assumed to be purchased during a defined period of time, such as one month. Therefore expenditure, such as $P_w\ Q_w$, is best understood as a flow (e.g., dollars per month). The sum of expenditures on all the goods produced in the economy would be the sum over all goods *i* of $P_i\ Q_i$. This is roughly how Gross Domestic Product ("GDP") is defined; GDP is often interpreted as "the value of final goods and services produced in [a country]"[172] during a particular period of time, typically one year. GDP is equal to "Gross Domestic *Income.*"[173] "National *Wealth,*" on the other hand, is not a flow but a stock; one way to confirm this is that National Wealth is measured in dollars, not in dollars per a unit of time.[174] There is, however, a relationship between total expenditure (GDP) and wealth: GDP minus depreciation is equal to consumption plus the change in

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169. Richard A. Posner, *Utilitarianism, Economics, and Legal Theory*, 8 J. LEGAL STUDIES 103, 119 (1979).

170. ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 90 (Basic Books 1978) ("Consumer welfare, in this sense, is merely another term for the wealth of the nation.").

171. Richard A. Posner, *A Reply to Some Recent Criticisms of the Efficiency Theory of the Common Law*, 9 HOFSTRA L. REV. 775, 786 (1981).

172. *See* U.S. BUREAU OF ECONOMIC ANALYSIS, *Gross Domestic Product*, https://www.bea.gov/data/gdp/gross-domestic-product (last visited Sep. 28, 2023).

173. Stephanie H. McCulla & Shelly Smith, *Measuring the Economy: A Primer on GDP and the National Income and Product Accounts* 4, BUREAU OF ECON. ANALYSIS, U.S. DEPART. OF COM. (Dec. 2015), https://www.bea.gov/sites/default/files/methodologies/nipa_primer.pdf.

174. *See* EUROPEAN COMMUNITIES, INTERNATIONAL MONETARY FUND, ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, UNITED NATIONS AND WORLD BANK, SYSTEM OF NATIONAL ACCOUNTS 2008 257 (2008). For the general distinction between stocks and flows, see *Stock and Flow*, WIKIPEDIA, https://en.wikipedia.org/wiki/Stock_and_flow (March 15, 2023, 8:46 AM).

national wealth.[175] By contrast, there is no relationship or equation in the System of National Accounts that involves "surplus." Accordingly, in macroeconomics, surplus is not part of wealth.

Microeconomists have a different definition of "wealth." Mas-Colell, Whinston, and Green write: "The consumption bundle [...] is affordable if its total cost does not exceed the consumer's wealth level w, that is, if $p \cdot x = p_1 x_1 + \cdots + p_L x_L \leq w$."[176] Their footnote reads:

> "Often, this constraint is described in the literature as requiring that the cost of planned purchases not exceed the consumer's *income*. In either case, the idea is that the cost of purchases not exceed the consumer's available resources. We use the wealth terminology to emphasize that the consumer's actual problem may be intertemporal, with the commodities involving purchases over time, and the resource constraint being one of lifetime income (i.e., wealth) [. . .].

The mathematics make it clear that "wealth" in microeconomics is a sum of expenditures, which directly contradicts Posner's statement that surplus is "included whenever economists talk about the wealth of the society."[177]

Just because the Expenditure Approach is the correct way to measure "wealth" (which it is in microeconomics) or "income" (which it is in macroeconomics) does not mean it is a good way to measure what we (and, we hope, Posner) are interested in, which is welfare/utility. What Posner should have said is that "expenditure plus consumer and producer surplus" is a better measure of welfare/utility than "expenditure" alone is. That is a true statement. It does not go very far *at all*, as Section V.C. will show, but at least it is true. Relating such things to "wealth," however, was a mistake on Posner's part.

Posner's quotation mentions "producer surplus." In much the same way as a consumer would be willing to pay more for Q_1 than he "needs to if the price is uniform at p_1," a firm with a rising supply curve would be willing to supply Q_1 upon being paid less than "it is actually paid if the price is uniform at p_1." The argument is the analog of Figure 16's: if offered a very low price p_z, the firm might produce Q_a, receiving $p_z\ Q_a$ in revenue; but if it is later offered a slightly higher price p_y the firm might produce an additional quantity $Q_b - Q_a$, receiving $p_y * (Q_b - Q_a)$ in additional revenue; and so forth. "Producer surplus" is the difference between what the firm receives when facing a uniform price, in contrast to facing the nonuniform prices. L&E authors usually include producer

175. McCulla & Smith, *supra* note 173, at 4.
176. MAS-COLELL, WHINSTON & GREEN, *supra* note 74, at 20–21.
177. Posner, *supra* note 171.

surplus with consumer surplus as part of their measure of value.[178] What L&E authors almost never mention, however, is that "social surplus" is not only the sum of consumer and producer surplus, but should also include the surpluses generated in input markets, such as the market for labor. Input markets, if characterized by a uniform price for the input, generate surpluses for the input demander and the input supplier in a completely analogous way to the consumer and producer surpluses generated in output markets. The surplus accruing to an input supplier even has its own name: "economic rent." "Social surplus," thus, properly includes all of the surpluses. (A completely correct analysis considers the effect of any policy change on *everyone* who is affected, not only those affected through the market and who thus have or could have a surplus—workers, other input suppliers, owners, and customers; competing and complementary firms' workers, other input suppliers, owners, and customers; and anyone engaged in commerce with any of these people—but also those affected outside of the market, such as family members of those affected through the market, and people experiencing negative or positive externalities from any of the affected firms, including people in future generations.)

C. Consumer Surplus is Not a Credible Measure of Welfare

However much of an improvement consumer surplus was over the Expenditure Approach in measuring welfare/utility/value, consumer surplus (added to expenditure) cannot literally be the correct answer to the question "what is the value of Q_1" because, as we already saw in Part IV.A, that question has not one answer ("the consumer surplus plus expenditure") but two.[179]

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178. See Heyer, *supra* note 163, at S20:

> Bork's use of the term 'consumer welfare' is unfortunate and confusing in this context. It is clear, as will be demonstrated below, that by consumer welfare Bork meant total welfare [....] To avoid confusion, I use the term "total welfare" to mean just that: total welfare (equivalent to consumer plus producer surplus and economic efficiency).

Our point is to show that L&E now values producer surplus as much as consumer surplus, not to endorse the rest of Heyer's definition. Heyer presents this as a not-entirely-settled point; his Section 4, "Current Scholarly Debates," begins with Section 4.1, "Consumer Welfare versus Total Welfare." He writes, "Although economic efficiency is frequently equated with total wealth, Salop observes that business conduct that increases total wealth does not necessarily increase total welfare. So long as any individual is left worse off, total utility could fall." *Id*. at S27. That is more properly viewed as a complaint about using *any* kind of surplus as a measure of utility.

179. Realizing this is difficult even for non-specialist professional economists because Ph.D.-level textbooks such as Varian (VARIAN, *supra* note 72, at 222) and Mas-Colell (MAS-COLELL, WHINSTON & GREEN, *supra* note 74, at 325) repeat a demonstration from undergraduate textbooks that "maximizing consumer surplus plus producer surplus" yields the competitive equilibrium, which is Pareto Optimal, in a partial equilibrium context while dangerously de-emphasizing the fact that this requires assuming consumers have quasilinear preferences, which is an unrealistic, "knife-edge," cardinal assumption of no relevance to the real world, as we have explained before and will revisit in the paragraph after next. De-emphasizing these restrictive assumptions has a long history, the most ironic of which appears in J. R. Hicks, *The Rehabilitation of Consumers' Surplus,* 8 THE REV. OF ECON. STUD. 108, 109 (1941), in which Hicks calls "a fiddling business, fortunately not likely to be of much importance" the concept which every economics Ph.D. student now actually calls the

The flaw in Section IV.A's argument is easy to explain. Recall what we claimed above, concerning Figure 16:

> Having bought Q_a units of the good, suppose the consumer is offered additional units of the good at a new, lower price of p_b. He is willing and able to buy an additional $Q_b - Q_a$ units of the good at this lower price, resulting in a total payment of $p_b * (Q_b - Q_a)$ for those units, i.e., the area under line GB.

This is actually wrong. It is wrong because the statement that "He is willing and able to buy an additional $Q_b - Q_a$ units of the good at this lower price" rests on the assumption that the consumer has available his initial level of income, say I_1, when in actuality the consumer has already spent $p_a * Q_a$ dollars buying Q_a, so he has less than I_1 dollars left over when the new, lower price of p_b is offered. If this good is a "normal" good, having less income means demand for it shifts down, for example to B' for a price of p_b. Hence, instead of being "willing and able to pay" the area under GB when the price is p_b, the consumer is only WATP the area under GB' when the price is p_b. When the price falls to p_c, the demand curve will have shifted down again, and the amount of money spent when the price is p_c would be only $B''C'$ instead of HC. The conclusion is that the actual WATP for Q_1 will be *less* than the area under $p_2\ F$. If this good were "inferior" instead of "normal," then the demand curves would shift up rather than down, and the actual WATP for Q_1 would be more than the area under $p_2\ F$.[180]

The reader will recognize that the flaw in the consumer surplus derivation is the same flaw that invalidated the Coase Theorem (discussed in conjunction with Figure 4 above), because both arguments depend on making a series of steps along a demand curve (the *MEC* curve in Figure 4 functioning as the demand curve for clean air). The flaw in that Coase Theorem argument was that once money had left the consumers' pockets, the *MEC* curve did not stay where it was before, but rather shifted in precisely the same way and for precisely the same reason as the demand curve shifts in our discussion in this section.

The curves do not merely shift in our Figures, but also shift in the real world. Only in the theoretically uninteresting and empirically irrelevant "quasilinear preferences" case in which[181] the good is exactly

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Hicksian demand curve ("…to adjust the ordinary demand curve so as to allow for the effects of the changes in real income as we pass along the curve").

180. Doubts about consumer surplus along the lines discussed here were raised as early as Bordas in 1847. *See* Houghton, *supra* note 168 at 51–52. MARSHALL, *supra* note 64, clearly understood these same problems, although he unfortunately downplayed them. Marshall wrote that "In regard to different people allowance may have to be made where necessary for differences of sensibility and for differences of wealth: but it is seldom needed in considering large groups of people." *Id.* at 108–09, margin notes for Book III ("On Wants and their Satisfaction") Chapter VI ("Value and Utility") Section 3.

181. *But see supra* note 132 for a discussion on quasi-homothetic preferences.

on the borderline between being normal and being inferior—in which, that is, "demand curves do not depend upon income" as we described in Part III.G.1(d) (on the Coase Theorem) and Part IV.A (on WATP equaling WTA in Setting Pi)—will the demand curve not shift, and will consumer surplus, the area under $p_2\ F$, be exactly equal to WATP for Q_1. So unlikely is that case that 2015 Economics Nobel laureate Angus Deaton flatly says "there is no valid theoretical or practical reason for ever integrating under a Marshallian demand curve" (that is, for calculating consumer surplus).[182] We concur.[183]

In the uninteresting case in which the demand curve does not shift, demand does not depend upon income, meaning that even though the "winner" of a policy, when faced with the Kaldor "if the policy is adopted" question, will be richer than if he is instead faced with the Hicks "if we do not adopt the policy" question, his increase in wealth will not affect his answer to the valuation question. In other words, his CV (WATP) will equal his EV (WTA). In Setting Pi, income effects of price changes are what drives a wedge between CV and EV, so in this case of zero income effects, CV, EV, and consumer surplus all become identical, value's binary nature merges into one nature, and the positive problems of CV, EV, and consumer surplus all disappear, leaving only their normative problems. Because of this, it is not surprising that some authors have attempted to salvage Consumer Surplus, despite its defects. In the next section we explain why we find these efforts unavailing.

D. Willig's Claim that Consumer Surplus Approximates EV and CV Does Not Save Consumer Surplus

In Section V.C we showed that consumer surplus was not an accurate measure of value. In an advanced treatment due to Willig,[184] consumer surplus earns respectability because in Setting Pi, consumer surplus lies between compensating variation and equivalent variation, thus forming an approximation to both of them. We here explain why Willig's argument does not undermine Deaton's conclusion about consumer surplus.

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182. Marco Becht, *The Theory and Estimation of Individual and Social Welfare Measures*, 9 J. ECON. SURVEYS 53, 77 (1995).

183. If the area under $p_2\ F$ is not the WATP for Q_1, is there some way of calculating the WATP for Q_1 using market demand curves as in Figure 16? Given that the demand curves shift as the figure shows, the answer to this question would seem to be "no," but with sufficiently advanced mathematics, it is possible to take into account the demand curve's shifts and arrive with a numerical "value for Q_1." That value is the integral of the Hicksian demand curve; *see* MAS-COLELL, WHINSTON, & GREEN, *supra* note 74, at 83. The reader may wonder which value measure, WATP or WTA, is arrived at by this procedure, and the answer is both, depending on whether an "if we do this" or an "if we do not do this" question is asked.

184. *See* Robert D. Willig, *Consumer's Surplus Without Apology*, 66 THE AM. ECON. REV. 589–597 (1976).

First, Willig is only able to show that consumer surplus is numerically close to WATP and WTA when WATP and WTA are themselves numerically close to each other, which happens when policy changes are marginal, in the sense of being minor or small. Many other problems we have discussed in this paper would also disappear when policies are small: not only would the gap between WATP and WTA be small, making the binary nature of value less important, but it would be impossible for WATP to fail to exist (Figure 10's geometry could not happen), and it would be impossible for WTA to fail to exist (Figure 11's geometry could not happen).[185] However, many policy changes are not marginal—think of free trade between the USA and China and its dramatic results of industrialization in China, and deindustrialization and "deaths of despair" in the USA. Indeed, it is reasonable to conjecture that when the stakes are big enough to motivate a party to pay economists to calculate consumer surplus and to pay attorneys to bring or defend against a corresponding lawsuit, the policy is not small. (A policy may be "small" to some people, such as customers, and "big" to others, such as competing firm owners forced into bankruptcy, and their employees.) When a policy is not small, WATP and WTA will not generally be numerically close to each other. In that case consumer surplus cannot simultaneously be close to both of them, Willig's argument lacks applicability, and consumer surplus is therefore robbed of importance.

Next, Hausman showed that if one has the statistical information necessary to estimate consumer surplus, one also has the statistical information necessary to estimate CV and EV directly, rendering consumer surplus unnecessary.[186] CV and EV are the exact measure of value change—they have a direct link to utility while consumer surplus does not—so there is no reason to calculate consumer surplus. Furthermore, only by calculating CV and EV can one determine whether there are any inconsistencies between the Kaldor and Hicks Tests.

Another point made in Hausman's paper is that even in situations where consumer surplus is close to both EV and CV, the change in *social* surplus as the result of a policy (namely the change in consumer surplus plus the change in firm revenue) may not be a good approximation to the change in social value (EV or CV plus the change in firm revenue). This is important because it is the change in social value (the so-called

185. For infinitesimally small changes, in Frame Qq value is a single number, the marginal rate of substitution, as referred to in *supra* note 99; and in Frame Pi, the Slutsky Equation guarantees that the income effect, and thus WATP and WTA, exist. *See generally* VARIAN, *supra* note 72, at § 8.2, not the discrete version in § 8.10.

186. Jerry A. Hausman, *Exact Consumer's Surplus and Deadweight Loss*, 71 AM. ECON. REV. 662, 662–76 (1981).

"deadweight loss") of a policy, not simply the change in consumer surplus, that economists care about.[187]

Lastly, an additional problem with consumer surplus is that if more than one price change is made, consumer surplus changes troublingly depend on the *order* in which those price changes are made. For example, the change in consumer surplus if "the price of apples changes from $4 to $3 and then the price of bananas changes from $10 to $8" is not the same as the change in consumer surplus if "the price of bananas changes from $10 to $8 and then the price of apples changes from $4 to $3."[188]

As an aside, Willig's work only applies to Setting Pi, which makes sense because consumer surplus of the sort we have been discussing also only applies to Setting Pi,[189] but some observations about the gap between WATP and WTA in Setting Qi seem appropriate. In Setting Qi, numerous empirical studies find large differences between WATP and WTA. Knetsch says that "in perhaps the earliest report of a large disparity between the measures, bird hunters said they would be willing to pay an average of $247 to preserve a marsh area that contributed to the propagation of ducks, but would demand an average of $1044 to agree to its destruction (Hammack and Brown, 1974)."[190] No Setting Qi approximation could ever simultaneously be "a good approximation to $247" and "a good approximation to $1044." Hanemann pointed out in 1991 that if the policy under consideration were, for example, your own life—as it would be if doing a Cost-Benefit Analysis of positioning a potentially-explosive gas pipeline close to your house—"there is no reason why WTP and WTA could not differ vastly: in the limit, WTP could equal the individual's entire (finite) income, while WTA could be infinite."[191] Since nothing could be a good approximation to both a finite

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187. *See also* MAS-COLELL, WHINSTON, & GREEN, *supra* note 74 at 89–91, where in addition to confirming the above points, the authors exhibit a function which approximates the change in CV better than consumer surplus does.

188. "Theorem 3.5: There is no regular preference such that consumer surplus is path-independent when both price vector and income vary." HAYASHI, *supra* note 103 at 53. "Theorem 3.6: When income is fixed, consumer surplus is path-independent if and only if the preference is homothetic as well as strongly monotone and strictly convex." *Id.* "Theorem 3.7: When prices of a subset of goods *K* and income vary, consumer surplus is path-independent if and only if preference exhibit no income effect on every good in *K*." *Id.* at 54. This problem with consumer surplus was also pointed out by Harold Hotelling, *The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rate*s, 6 ECONOMETRICA 242 (1938).

189. We have been discussing changes in consumer surplus resulting from a *price* change—Setting Pi, as noted above. Another type of change in consumer surplus results from a *quantity* change—Setting Qi. Using Hicks's language and the ideas described in *supra* note 115, Setting Pi consumer surplus is an approximation to Setting Pi "price-equivalent variation" and "price-compensating variation," not to Setting Qi "quantity-equivalent variation" and "quantity-compensating variation."

190. Jack L. Knetsch, *Biased valuations, damage assessments, and policy choices: The choice of measure matters,* 63 ECOLOGICAL ECON. 684, 685 (2007).

191. Hanemann, *supra* note 102, at 635–47. *See also* Mishan, *supra* note 90, at 19. Also, Carson & Hanemann, *supra* note 143, at 907, say that:

WATP and an infinite WTA, it would be pointless to look for an approximation to both WATP and WTA in Setting Qi, and this reasoning extends to Setting Qq, as we mentioned in connection with Figure 5.

E. Another Problem with "Wealth Maximization"

Section V.B already showed that the first word in Posner's famous phrase "wealth maximization" is inappropriate, but we can now see that the second word, "maximization," is inappropriate as well, for a completely different reason. In the Kaldor-Hicks approach, value has a binary nature, so it is not a function and, therefore, cannot be maximized, as discussed in Section IV.A.2. Posner's use of "maximization" shows that Posner is not actually following the Kaldor-Hicks approach, but rather the social surplus approach, which falsely holds that value is unitary and hence can be maximized.

It is clear that one of the main characteristics and flaws of the consumer surplus approach is that it represents value by a single number. It is this insistence on a single number that makes it appear that value maximization is possible, even though it is not. The insistence on a single number also, as stated in the introduction to this Part, functions like proverbial rose-colored glasses, hiding the problems of EV not equaling CV, and the attendant inconsistencies, incompleteness, and arbitrariness that follow.

F. Normative Issues in Using Consumer Surplus

As with the Potential Pareto approach, consumer surplus theory suffers from normative as well as positive problems, and some of those normative problems are almost the same as the normative problems of the Potential Pareto approach. Policy decisions using the consumer surplus standard work by adding up the consumer surpluses of different people, just like policy decisions using the Potential Pareto approach work by adding up the CVs or EVs of different people. This means that, just like the Potential Pareto approach, the consumer surplus approach is coercive, with "winners" and "losers," and approves policies in which, *ex post*, the winners could in theory give enough surplus (which means

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> WTA could be infinity while WTP was a small positive number" and explain further: "Randall and Stoll (1980) were the first to expand Willig's framework to consider the imposed quantity changes but the full import of the differences between the two cases was not clear until Hanemann (1991). The discovery of these differences first found in the context of CV studies, coupled with the initial belief that Willig's results were more widely applicable, caused some researchers to claim the observed CV results violated economic theory. Hanemann (1991), in a standard neo-classical theoretical framework, shows that for imposed quantity changes, WTP and WTA can be infinitely far apart due to interactions between income and substitution effects. Kahneman and Tversky (1979) had earlier put forth an alternative they called 'prospect theory' where losses are valued more highly than gains.

See also Giraud, *supra* note 116; *see also* Schmidt & Traub, *supra* note 116.

enough money) to the losers to make everyone gain in surplus, even if the winners will not actually give any money to the losers. The very serious normative problems arising from adopting a policy which hurts people, based on the existence of a different policy which hurts no one, were well covered in Part IV.

In one important aspect, though, the surplus approach is normatively worse than the Potential Pareto approach. The Potential Pareto approach is built upon CV and EV (WATP and WTA), and even though Potential Pareto puts CV and EV to a bad use, CV and EV themselves are quite useful: they are exact measures of value. CV and EV could even be put to use, by for example a mediator, to construct an *actual* Pareto-improving policy (as in Section IV.H), and it is this "potential" for doing good—though never to be realized under the Potential Pareto approach—that gives the Potential Pareto approach what pitifully little normative attraction it has. The surplus approach does not even have this. A mediator, knowing each person's surplus changes (but not their CV and EV), would not know enough to be able to construct an actual Pareto-improving policy. This is because unlike CV and EV, which are tightly connected to utility via their links to indifference curves, knowing surplus changes is insufficient to allow one to determine whether a policy has caused the net utility of any individual to go up or down. If the State increases the price of apples from one to two dollars per pound, and if Smith's CV (WTA) for this action is $5, then we know that giving Smith less than $5 will leave her worse off, giving her $5 will leave her equally well off, and giving her more than $5 will leave her better off than she was originally. But if instead of knowing Smith's WTA, we only knew Smith's loss of surplus—which will not be $5 unless there is exactly zero income effect—we would have no way of knowing what payment to Smith would leave her as well off as she was originally.[192] As Paul Samuelson wrote in 1947, in a book section entitled "Why Consumer's Surplus is Superfluous," any questions one might use consumer surplus to answer "can more conveniently (and more honestly!) be answered in terms of the consumer's ordinal preference field."[193]

Consumer surplus depends on wealth because individual demand curves depend on the individual's wealth; in the typical case of normal

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192. If one, in addition, happened to know that the typical but not universal inequality WATP < WTA applied in this case, one could infer that (with "CS" standing for consumer surplus) WATP < CS < WTA from Willig's result, and so would know that WTA > CS, but that would only imply that the payment to Smith which would leave her equally as well off as before was larger than CS; it would not reveal how much larger than CS that payment would have to be. Similarly, in the unlikely case that one knew that WATP > WTA, then the payment to Smith which would leave her equally as well off as before would be smaller than CS; but it would not be known how much smaller than CS that payment would have to be.

193. PAUL A. SAMUELSON, FOUNDATIONS OF ECONOMIC ANALYSIS 197 (Harvard Univ. Press 1947). Samuelson points out that he published most of his criticisms of consumer surplus already in 1942. *Id.* at 189 n.20, 198.

goods, consumer surplus is an increasing function of wealth. This is just like WATP. Thus, it follows that the consumer surplus criterion has the same "preference for the wealthy" that the Potential Pareto approach has. When consumer surplus' "preference for the wealthy" is coupled with its positive characteristics—its ability to be maximized, and its lack of consistency problems, both resulting from the fact that it measures value incorrectly—it becomes an attractive tool to promote Neoliberalism (unscrupulously).

We have reached an end of the road with "consumer welfare," much like we reached with the Kaldor-Hicks Criteria and with Pareto Efficiency: none of these alternative versions of economic efficiency meet either the positive or the normative standards society would want a decision-making criterion to have.

VI. CONCLUSION

Economics can undoubtedly make important contributions to legal analysis. For example, econometric techniques can be used to analyze data and draw conclusions about the impact of legal violations. Economics may be able to model the impact of changes in policy or even suggest Pareto efficient settlement structures in mediation. What economics cannot do is offer a scientific method for making legal decisions; yet, this is precisely what the "law and economics movement" purports to do.

L&E claims to do this by offering a "value-free" decision principle of "efficiency" but those claims are bankrupt.

The Pareto version of efficiency is not value-free, and it cannot rank situations in which there is a loser, which is essentially all situations in U.S. courts.

The Potential Pareto approach of Kaldor and Hicks likewise fails to provide a viable measure of efficiency for the law, for positive reasons, and it raises deeply troubling normative concerns.

L&E's resort to consumer surplus theory is similarly unavailing. The surplus version of efficiency is based on the fallacy that "value does not have a binary nature," which it clearly does.

All of these defects manifest themselves in L&E textbooks. Their main problem is not that some of them have a crude understanding of normative issues, nor that most of them think they are using the Kaldor-Hicks approach when they are in fact using the surplus approach—though those are certainly problems. The main problem with L&E textbooks is that they attempt to give economic efficiency, in any form, a status it should not have. Economic efficiency is not about justice, but the law presumably is. Accordingly, L&E's obsession with efficiency, whether real or contrived, has little place in the law.

In contrast, economic efficiency definitely has an important, almost indispensable, place if one's view of the law's purpose is not in dispensing justice, but rather in imposing on society the will of the well-to-do.[194] The well-to-do fare nicely under each of L&E's efficiency notions: under Pareto efficiency, they cannot be hurt; and under the surplus, Kaldor, and Hicks efficiencies, their desires get heavier weight per capita than the desires of others.

Much of what we have done is to weave together the critiques that others have made concerning the various notions of efficiency. Marshall knew about the flaws of the surplus approach a century ago, although he downplayed them (*supra* note 180). For the Potential Pareto/Kaldor-Hicks/"Cost-Benefit Analysis" approach, we have cited leading welfare economists John Chipman and James Moore. They concluded that:

> . . . Unfortunately, as we have seen, the welfare criteria suggested by Kaldor and Hicks, even with the qualifications added by Scitovsky and Kuznets, could not escape the possibility of giving rise to an inconsistent sequence of policy recommendations, unless either the distribution of income and wealth or the forms and degree of dissimilarity of consumers' preferences were assumed to be suitably restricted.
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> . . . .
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> . . . [W]e are forced to come back to Robbins' 1932 position. We cannot make policy recommendations except on the basis of value judgments, and these value judgments should be made explicit.[195]

Most expert economic theorists from the mid-twentieth century to today—authors such as Samuelson, Blackorby, Donaldson, Deaton, Hammond, and Fleurbaey—agree with this assessment. The arguments on the other side have been weak; as the next quotation shows, Kaldor's response to Robbins comes very close to saying that economists should dissemble in order to protect their jobs, a response so weak that for all intents and purposes it refutes itself:

> If the incomparability of utility to different individuals is strictly pressed, not only are the prescriptions of the welfare school ruled out, but all prescriptions whatever.

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194. Similar: "[J]urisprudence is but the will of your class made into a law for all . . . ." KARL Marx & FREDERICH Engels, MANIFESTO OF THE COMMUNIST PARTY, Ch. II (Samuel Moore trans. in cooperation with Frederick Engels, Progress Publishers 1969) (1848) (In the original German, "[E]uer Recht [ist] nur der zum Gesetz erhobene Wille eurer Klasse . . . ." KARL MARX & FRIEDRICK ENGELS, MANIFEST DER KOMMUNISTICHEN PARTEI, https://www.marxists.org/deutsch/archiv/marx-engels/1848/manifest/2-prolkomm.htm.).

195. Chipman & Moore, *supra* note 121 at 548, 581. Renowned welfare economist E. Mishan wrote that "Criteria based on compensation tests have turned out to be untrustworthy, indeed misleading." E. MISHAN, INTRODUCTION TO NORMATIVE ECONOMICS 368 (Oxford Univ. Press 1981).

> The economist as an adviser is completely stultified, and unless his speculations be regarded as of paramount aesthetic value, he had better be suppressed completely.[196]

If Kaldor's motivation was protecting economists' jobs, it is hard to imagine that none of the participants in the L&E movement had a grander motivation: to advance a questionable and in our opinion false value judgment—the superiority of the neoliberal free market ideology—by camouflaging it under the cloak of efficiency, the latter presented as a coherent and useful methodology to resolve real-world legal disputes. We have seen that there were voices in legal scholarship who were troubled by L&E from the start—voices like Coleman, Samuels, Baker, and Hale. But they have been drowned out in L&E, as voices critical of the Potential Pareto and surplus approaches have been drowned out in some other subdisciplines of economics, by the voices of economists who have convinced many non-economists of the falsehood that economics can solve disputes and controversies in an objective, scientific, just way. We hope to have convinced the reader that this is not true.

Except for a few remarks in *infra* note 209, we have refrained from discussing where we think L&E should go from here. Certainly, though, L&E should accept that economic efficiency is an inappropriate goal for society. Modern welfare theorists are clear that policy decisions need to have ethical and moral, not economic, concerns as their prime motivations. If we accept Robbins' famous definition of economics as the "relationship between ends and scarce means which have alternative uses,"[197] then ecological economist Herman Daly makes the illuminating point that the economist's ends-means spectrum consists of ultimate means (scarce natural resources), intermediate means (technology), intermediate ends (being fed, being clothed), and the ultimate end; and so what economic wisdom calls for is employing the first three of these in service of the final one.[198] The reason that Robbins, and later Chipman and Moore, called on us to have "confidence in ultimate values" is because that is what is required for each of us to specify what we believe the ultimate end is.[199] Despite such confidence, philosophers, religious

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196. Kaldor *supra* note 82, at 549.

197. LIONEL ROBBINS, AN ESSAY ON THE NATURE AND SIGNIFICANCE OF ECONOMIC SCIENCE 15 (MacMillan and Co., Ltd. 1935), https://scholar.google.com/scholar_lookup?title=An+Essay+on+the+Nature+and+Significance+of+Economic+Science&author=L.+Robbins&publication_year=1935&.

198. Herman E. Daly, *Introduction to Essays toward a Steady-State Economy*, *in* DALY & TOWNSEND, *supra* note 84, at 20.

199. This phrase comes from Robbins, *supra* note 67, at 639, which Chipman & Moore used as an epigraph to their paper ("Was it not only the timidity of an age which had lost all confidence in ultimate values which led us to attempt to claim 'scientific' justifications for attitudes which in the nature of things could not be justified (or refuted) by appeal to laboratory methods?"). Chipman & Moore, *supra* note 121.

leaders, and ordinary people will have many viewpoints as to what the ultimate end is, and thus what proper economic and political policies and judicial philosophies to support. The controversies arising from those conflicting viewpoints are an enduring part of the human condition and as such are never going to be short-circuited by economics, regardless of the genuine value economics has in illuminating the tradeoffs they embody.

APPENDIX 1: "EFFICIENCY" AS TAUGHT IN LAW & ECONOMICS TEXTBOOKS

A reader familiar with the material we have covered so far is well-equipped to uncover the concepts of efficiency presented in L&E textbooks for what they really are, rather than what they purport to be or what their authors believe them to be. We begin with the textbook by Posner, whose earlier editions set the background for all the other textbooks.

A. Posner (2014)

In the ninth (2014) edition of *Economic Analysis of Law,*[200] Posner introduces Pareto Efficiency, but quickly writes, "the conditions for Pareto superiority are rarely encountered in the real world," and then moves to adopt a different notion of efficiency.[201] This pattern—introducing Pareto Efficiency, saying its relevance is limited, then dismissing it and moving on to a different definition of efficiency—is a very common approach in the L&E textbooks we review, and it dates back at least to the third (1986) edition of Posner's book.[202]

Posner writes:

> The economic value of a good or service is how much someone is willing to pay for it or, if he has it already, how much money he demands for parting with it. These are not always the same amounts, and this can cause difficulties, which we shall consider later.[203]

In the first sentence, Posner is trying to express WATP and WTA, but his definition is not quite right. WATP and WTA are different ways of valuing *the same* policy, either *gaining* "a good or service" or *not gaining* that same "good or service." Posner instead is defining WATP in the context of *gaining* the good (say, a policy of going from 3 to 4 bananas) and WTA in the context of *losing* a good (say, a policy of going from 3 to 2 bananas). This is the error Hanemann describes in *supra* note 111. The second sentence is a commendable observation that WATP is not always equal to WTA. Unfortunately, when Posner takes up that issue "later," it is in his section entitled "Irrationality and Hyperrationality: Herein of Behavioral Economics and Game Theory,"[204] where he incorrectly suggests that WATP is equal to WTA for rational

200. RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 14 (Wolters Kluwer 9th ed. 2014).
201. *Id.* at 14.
202. RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 12 (Little, Brown 3d ed., 1986).
203. Posner, *supra* note 200, at 13.
204. *Id.* at 19.

consumers.[205] Fortunately, he later backs away from that error and acknowledges wealth effects.[206]

Posner gets into more permanent trouble when explaining the meaning of "the Kaldor-Hicks concept of efficiency." Instead of presenting a definition, he develops it by presenting an example of a transaction that "the concept" would endorse. The example begins, "if A values the wood carving at $50…."[207] That alone is enough to bring an economist to a dead stop. What does that mean? Is the $50 the WTA value that A would accept to give up the wood carving A currently possesses? The WATP value that A would pay to avoid giving up the wood carving A currently possesses? The WATP value that A would pay to re-obtain the wood carving if it has been transferred to B? The WTA value to compensate A for not re-obtaining the wood carving once it has been transferred to B? Posner does not say. In effect, while Posner admits that WATP may not equal WTA, he fails to appreciate the most important consequence of that inequality, which is that "value" has a binary nature.

Posner's cavalier treatment of value is reflected in his equally cavalier use of language. He tells the student he is using "the Kaldor-Hicks concept of efficiency." He also writes about "the value to consumers, as measured by their willingness to pay;"[208] of course, "willingness (and ability) to pay" is one of the main concepts of the Kaldor-Hicks approach. However, the fact that Posner treats value as being unitary instead of binary, and that Posner treats value as something that can be maximized, as in his phrase "wealth maximization", means that despite his claim Posner is *not actually following* the Kaldor-Hicks approach. (We first pointed this out in Section V.E, based on other writing by Posner.) Kaldor-Hicks acknowledges the binary nature of value—that is actually why the approach bears both names: one aspect of value is illuminated by Kaldor and the other by Hicks. An approach that does not acknowledge the binary nature of value simply is not a Kaldor-Hicks/Cost-Benefit Analysis/"Potential Pareto" approach. The only other approaches are: the Pareto approach, which Posner has rejected; the modern "social welfare function" approach,[209] which makes ethical positions

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205. There are texts in environmental economics, like the one written by Tietenberg & Lewis, that come close to making this error. *See* TIETENBERG & LEWIS, *supra* note 116.

206. Posner, *supra* note 200, at 20.

207. *Id.* at 14.

208. *Id.* at 12.

209. For some properties and examples of using social welfare functions see: MAS-COLELL, WHINSTON, & GREEN, *supra* note 74, at Chapter 22; Blackorby & Donaldson, *supra* note, 129 at 492–93; Blackorby & Donaldson, *supra* note 157; Daniel L. Slesnick, *Empirical Approaches to the Measurement of Welfare*, 36 J. ECON. LITERATURE 2108–65 (1998); MARC FLEURBAEY & DIDIER BLANCHET, BEYOND GDP: MEASURING WELFARE AND ASSESSING SUSTAINABILITY 83 (Oxford Univ. Press 2013); *Measures of national input and output,* WIKIPEDIA, https://en.wikipedia.org/wiki/Measures_of_national_income_and_output (last visited Sep. 7, 2023) (discussing the Human

transparent and paramount, and so is antithetical to Posner's point of view; and the social surplus approach, which, by process of elimination, must be what Posner is actually following.

Posner's error of calling the social surplus approach "the Kaldor-Hicks approach" has had a profound influence on L&E: it is repeated by most of the textbooks that we discuss below. How textbooks have managed to get away with calling the fundamental, unifying concept in all of Law and Economics, its concept of efficiency, by the wrong name is puzzling, but the pedagogical effect is clear: students will have no idea that the real Kaldor and Hicks Tests are actually different from each other and can be inconsistent, nor, equivalently, that economists' actual value measures, EV and CV or WATP and WTA, are different from each other and that that means value has a binary nature and is not something that can be maximized.

The ideological consequence of this error is also clear: in this way, L&E textbooks guarantee that students are indoctrinated into the simplistic and fallacious "social surplus maximization" dogma, with its false message that it is conceptually easy to measure economic efficiency and theoretically possible to maximize it, and with its "preference for the rich" always present but rarely illuminated by an author—although to be fair, Posner does point out "the preference for the rich," as we discuss in the paragraph after next, and so do Seidenfeld and Barnes & Stout.

It is useful here to recall the historical context. The social surplus approach is a modern expansion of the consumer surplus approach that Marshall used. Kaldor's idea of CV was *a* (not *"the"*) *correction* of that surplus approach, and Hicks's idea of EV is another *correction* of the surplus approach to value. Critically, Kaldor and Hicks wrote in opposition to the very ideas that Posner is presenting under the "Kaldor-Hicks" name. The effect of this is to protect Posner's approach from deserved criticism because, as we know from Part V, the surplus approach has even more flaws than the approach Kaldor and Hicks actually endorsed—and Part IV showed that the approach Kaldor and Hicks endorsed has flaws aplenty.

Enough about Posner's positive economics. (For more on Posner's positive economics, as reflected not in his textbook but in his scholarly

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Development Index, the Index of Sustainable Economic Welfare, the Genuine Progress Indicator (GPI), gross national happiness (GNH), sustainable national income (SNI)). *Supra* note 161's idea that an income-adjusted CV or EV can be thought of as implicitly embodying a social welfare function approach. So is the practice of conducting Cost-Benefit Analysis using "distributional weighting," as described in Matthew D. Adler & Eric A. Posner, *Rethinking Cost-Benefit Analysis,* 109 YALE L. J. 165, 193 n.80 (1999). (The "Impossibility Theorem" of Economics Nobel Laureate Kenneth Arrow showed that there is no guaranteed way to make social decisions being sensitive to the opinions of everyone. The "social welfare function" approach does not try to be sensitive to the opinions of everyone—though it is usually sensitive to the personal utility of everyone—and so is not affected by Arrow's result.)

writing, see Appendix 2.) As for Posner's normative economics, he begins in a promising way:[210]

> But what if A in our example valued the wood carving at only $70 and B at $120 not because A likes wood carvings less than B—he may like them much more—and not because there is any appealing concept of deservedness that B might invoke to validate his claim to be able to buy the wood carving, but rather because A is destitute and has to sell his wood carving in order to eat, while B, rather than being passionate about wood carvings, merely wants to diversify his enormous wealth by holding a variety of collectibles. These circumstances are not inconsistent with the sale's making both A and B better off; on the contrary, they explain *why* it makes both better off. But the circumstances undermine the moral foundations of a social system oriented to Pareto superiority, let alone potential Pareto superiority, by showing that the pattern of consumption and production is determined by the distribution of wealth. If that distribution is unjust, the pattern of economic activities derived from it will not have a strong claim to be regarded as just either. And insofar as the distribution of wealth is itself largely determined by the market, the justice of the market cannot be derived from some independent notion of the just distribution.

However, Posner's naïve understanding of value completely derails this train of thought:[211]

> Because economics cannot tell us whether the existing distribution of income and wealth is good or bad, just or unjust, the economist cannot issue mandatory prescriptions for social change. Yet this turns out to be less of a handicap to the normative use of economics than might appear. Economists can usually appeal to a generally accepted goal, such as maximizing the value of output, rather than having to defend the goal.

We know from Section III.G.1(c) that "the value of output" reflects the existing distribution of wealth, so choosing this goal is not value-neutral. This goal probably is, we regret to admit, "generally accepted"; however, it is so only in the sense that it is consistent with the preferences of those at the top of the income distribution, who usually "call the shots." We also agree with Posner that "economists"—meaning Kaldor and Hicks and Harberger but not Blackorby or Donaldson or Hammond or Chipman or Moore or Paul Samuelson—rarely in practice

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210. Posner, *supra* note 200, at 15.

211. *Id.* at 16.

have to "defend the goal," even though we think they ought to be forced to do so; rather, the State usually defends the goal on behalf of the politically powerful. "The State" obviously includes the courts (whom Posner is implicitly instructing to "defend the goal"). With this flimsy reasoning, Posner unfortunately retreats from the conclusion he earlier came to, that the Potential Pareto approach "will not have a strong claim to be regarded as just." (As we pointed out earlier, what Posner thinks of as the potential Pareto approach is really a surplus approach, so the topic is the justice of a surplus approach, not the justice of the actual potential Pareto approach; but the surplus approach inherits all the normative problems of the Potential Pareto approach, as discussed in Section V.F.)

B. Harrison and Theeuwes (2008)

Jeffrey Harrison and Jules Theeuwes[212] begin by teaching the "social surplus" approach to value. They write,[213] "the point is that when economists speak in terms of social welfare, they mean the sum of both consumer and producer surplus," though of course experts in welfare economics such as Blackorby, Donaldson, Hammond, and Deaton do not mean this, because of all the problems with the "surplus" approach we discussed in Part V.

Later, Harrison and Theeuwes discuss Pareto, "Kaldor-Hicks," and "wealth maximization" in a way common to L&E textbooks[214]and hewing roughly to the pattern in the third edition of Posner's textbook: they introduce Pareto Efficiency; dismiss it because it cannot rank all choices; introduce "The Kaldor-Hicks Criterion" as a replacement for Pareto Efficiency; define it using an example (here, an autographed copy of *Crime and Punishment* instead of Posner's wood carving); and give the process of applying the "Kaldor-Hicks Criterion" the synonym "wealth maximization"—both "wealth" and "maximization" being words that are deeply problematic for the different reasons discussed in Sections V.B and V.E.

Harrison and Theeuwes do specify, when discussing "the Kaldor-Hicks Criterion," that they wish to compare the WTA of the book's owner and the WATP of a new potential owner of the book with regard to a single policy: transferring the book from its current owner to a new owner. This precision is an improvement over Posner's treatment. However, there is also the possibility of the book's owner being willing and able to pay the potential new owner not to take the book, and the potential new owner's WTA not to take it, and Harrison and Theeuwes

212. JEFFREY L. HARRISON & JULES THEEUWES, LAW AND ECONOMICS 25 (W.W. Norton 2008).
213. *Id.*
214. *Id.* at 26–29.

do not consider these WATP and WTA. In short, they ask Kaldor's question but not Hicks's.

Also, Harrison and Theeuwes attempt to analyze "wealth maximization" as literal maximization of something called "wealth";[215] that only sows confusion because the Potential Pareto approach does not literally maximize anything, only surplus approaches do that.

Turning to Harrison and Theeuwes' normative treatment, we find it quite a bit inferior to Posner's. They write, speaking about Hicks:[216]

> [Hicks] also tackled the question of whether the hypothetical transfers ought to actually take place when a policy is enacted. He admits there is no decent answer, as the question is distributive and is based on moral and political concerns. Mainly, he points out that distributive questions should not hamper policies that clearly increase efficiency.

The second sentence is exactly what Chipman and Moore had in mind when they criticized proponents of the Potential Pareto approach for wanting "to wash one's hands of the responsibility for one's own actions" (*supra* Section IV.B and note 121). (In this respect the Potential Pareto and surplus approaches share identical normative positions.) Such proponents advocate State confiscation of private property because, they claim, it increases the "welfare of the members of society" (when the Kaldor or Hicks Tests are passed); but when asked whether the losers should be compensated, they say that the welfare of *those* members of society is, on the contrary, none of their business—a response as illogical as it is cowardly. Recall Chipman and Moore's echo of Robbins's call for "confidence in ultimate values" instead of "timidity" (*supra* note 199), and for that matter see all the normative criticisms of the Potential Pareto approach in Sections IV.B and IV.F, and the very similar normative criticisms of the surplus approach in Section V.F.

The second and third sentences in Harrison and Theeuwes' quote reflect the Separation Hypothesis, the idea that distribution is separate from efficiency, disproven as regards Pareto efficiency in Section III.G.1(c). The third sentence links the Separation Hypothesis with the contradictory position that distribution is *not* separate from efficiency, but that there is an Equity-Efficiency Tradeoff, which we argued against in Section III.G.1(e). The value of these positions to L&E's ideological agenda is to provide a "one-two punch" against considerations of distribution, equity, and justice. The first punch is the allegation that distribution is separate from efficiency, and since distribution is totally subjective, while efficiency is an "objective" concept from "economic science," unprejudiced actors should ignore distribution and only make

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215. *Id.* at 31.
216. *Id.* at 30.

decisions based on efficiency. The second punch is the allegation that more equal distribution actually hurts efficiency, so one's outlook on more even distribution of wealth should not merely be neutral, it should be antagonistic.

Putting these criticisms in perspective, Harrison and Theeuwes only spend two sentences pushing this line of thought; we will see that other authors push it much harder. On the other hand, this problematic line of thought is absent from Posner's textbook.

A praiseworthy aspect of Harrison and Theeuwes is how straightforwardly they admit that "Kaldor-Hicks" is coercive.[217]

C. Hirsch (1999)

Early in the exposition of Hirsch we read, "When resources are being used where their value is greatest, they are being employed efficiently, they produce the largest possible output."[218] Unfortunately, at this point Hirsch has not defined the words "value" or "efficiently," nor explained how to measure the size of "output" (it is distribution-dependent, as we remarked in Section III.G.1(c)). This renders the passage meaningless.

On the next page, Hirsch writes, "The question has also been asked whether value is indeed determined by people's willingness to pay or whether it is not determined rather by people's ability to pay for a good or service."[219] That question indeed has been asked, and it has been answered: income in general affects all demands in neoclassical economics. Beyond this Hirsch does not explain efficiency or value at all. He does not mention Kaldor, Hicks, or "Kaldor-Hicks."

As far as normative concerns, Hirsch writes,

> The theory is best equipped to deal with resource-allocation efficiency, but justice and fairness, which relate to distributional issues, must also be considered [citation to John Rawls' *A Theory of Justice*]. Our task would be so much easier if efficiency could be rigorously defended as the only and ultimate objective. Instead we face two all-too-often opposing objectives—efficiency and equity.[220]

He adds a warning that "virtually every redistribution scheme is costly in that it distorts incentives."[221] (Richard Henry Tawney argued that incentives are distorted because wealth has *not* been

217. *Id.*
218. WERNER HIRSCH, LAW AND ECONOMICS: AN INTRODUCTORY ANALYSIS 7 (3d ed. 1999).
219. *Id.* at 8.
220. *Id;* Rawls, *supra* note 140.
221. HIRSCH, *supra* note 218, at 9.

redistributed.[222]) While Hirsch wrote that efficiency should not be "the only and ultimate objective," his defense of the Equity-Efficiency Tradeoff fallacy ends up being much more insistent than that of Harrison and Theeuwes.

D. Malloy (1990)

Robin Malloy begins his discussion of Pareto and Kaldor-Hicks efficiency by saying "Economics is constantly concerned with efficiency, or in other words in acting with a minimum of expense, effort, and waste."[223] Actually, Pareto Efficiency in a pure exchange economy has nothing to do with expense or effort or waste because there is no production. This is not an auspicious beginning.

Malloy also tells the student that "Kaldor-Hicks theory is … concerned with…whether or not society's aggregate utility has been maximized,"[224] which is wrong because "aggregate utility" is a cardinal quantity, and reflects Utilitarian ethics, while Kaldor-Hicks assume only ordinal utility and are not Utilitarian. The surplus approach, which is probably what Malloy means when he instead writes "Kaldor-Hicks," does have Utilitarian overtones, with its directive to maximize social surplus, but it is modern enough to avoid referring to "aggregate utility." Malloy then proceeds to teach Utilitarianism under the erroneous name of the "Kaldor-Hicks approach," measuring "value" in dollars to make value cardinal, with no hint of value's binary nature.

Malloy admits that "Kaldor-Hicks" can justify "a governmental taking," but makes no observations on the normative issues that should raise.[225]

E. Cole and Grossman (2005)

Daniel Cole and Peter Grossman begin their discussion of efficiency in a way that resembles Hirsch, using important undefined words which we have set in italics: "Productive efficiency concerns the utilization of resources to achieve the highest possible *level of production* of a *desired* mix of goods and services. Allocative efficiency relates to the distribution of goods and services in an economy to maximize *social welfare*."[226] These definitional oversights present more questions than they answer: how is one to measure "level of production"? In what ways is that measure affected by the distribution of wealth? "Desired" by whom? What if different people desire different things? What is "social

222. TAWNEY, *supra* note 84.

223. ROBIN P. MALLOY, LAW AND ECONOMICS: A COMPARATIVE APPROACH TO THEORY AND PRACTICE 38 (West Publ. 1990).

224. *Id.* at 40.

225. *Id.* at 42.

226. DANIEL H. COLE & PETER Z. GROSSMAN, PRINCIPLES OF LAW AND ECONOMICS 10 (Pearson Prentice Hall 2005).

welfare"? They write next, "When economists discuss efficiency, they most often mean either productive or allocative efficiency," but as we know from Section III.C, when economists discuss efficiency, they most often mean Pareto efficiency, which is a completely relevant concept in pure-exchange economies that have no production and hence no "productive" or "allocative" efficiency, only distributive efficiency.

Cole and Grossman next advance an incorrect definition of Pareto Optimality:

> Let's assume (arbitrarily) that Bill has 50 umbrellas and 50 hats, Hillary 50 umbrellas and 40 hats. If both parties are satisfied with the allocation and cannot be made better off with more hats or umbrellas, then this allocation is considered *Pareto optimal*. But consider a case where Bill loves hats but feels he only needs a few umbrellas, while Hillary likes both, but she has more than enough hats and could use a few more umbrellas. . . .[227]

Writing "cannot be made better off with more" and "he only needs" and "has more than enough" implies that Bill and Hillary's preferences have reached regions of negative marginal utility,[228] where more of a good makes a person less well off. Such regions probably exist, but they have nothing to do with the definition of Pareto Optimality, and that definition depends in no way on being in such a region (which consumers in any kind of market would never be observed in anyway, because what rational agent would pay good money for commodity increments that decrease utility?).

A fairly conventional discussion follows, dismissing Pareto Efficiency because it cannot rank all choices, but then there is a twist:

> Two economists, Nicholas Kaldor and Sir John Hicks . . . came up with complementary theories, which when taken individually were significantly flawed, but when put together proved useful and robust. . . . Their combined efficiency criterion has come to be known as Kaldor-Hicks efficiency. [229]

In economics (as opposed to L&E), there is no such thing as "Kaldor-Hicks efficiency." There is a rigorously-defined Kaldor Test; a rigorously-defined Hicks Test; a loosely-defined "Kaldor-Hicks approach" (or "Potential Pareto" approach) that consists of applying one or both Tests without saying what to do if the Tests contradict each other; and a rigorously-defined Scitovsky Double Criterion (*supra*

227. *Id.*

228. The sign of marginal utility is an ordinal characteristic of consumer preferences although its magnitude is not.

229. COLE & GROSSMAN, *supra* note 226 at 11–12.

Section IV.E.2), which says that a policy should pass if and only if it passes both the Hicks Test and the Kaldor Test. What economists call the Scitovsky Double Criterion is what Cole and Grossman call Kaldor-Hicks efficiency. On the plus side, in the course of this discussion Cole and Grossman actually define the Hicks Criterion, which none of the other authors did. On the minus side, the Scitovsky Double Criterion has inconsistency problems, as shown in *supra* Section IV.E.2.

Turning to normative concerns, Cole and Grossman write, "the Pareto criterion, and much of conventional economic analysis, is concerned with allocating entitlements to resources in order to maximize the welfare of society as a whole." [230] This is wrong because the entire point of the Pareto criterion is to *avoid* any concept resembling maximization of "the welfare of society as a whole" because Pareto is in opposition to Utilitarianism, not in harmony with it.

On the same page appears the fallacious "pie" analogy of the Separation Hypothesis: Cole and Grossman write, "economics is concerned with the size of the economic pie, not with how the pie is sliced and distributed." [231]

Cole and Grossman also write that "efficiency, thus, becomes the economists' proxy for social welfare."[232] That constitutes their definition of "social welfare." They later write that the Scitovsky Double Criterion (which they call "the Kaldor-Hicks criterion") "will be used throughout this book in discussing the efficiency of many […] decisions that affect resource allocations."[233] Putting these together, Cole and Grossman equate "social welfare" with "using the Scitovsky Double Criterion." With this in mind, their assertion that the Scitovsky Double Criterion "assumes, correctly, that net social welfare can be enhanced by changes in entitlements, even if some individuals suffer losses as a result"[234] means much less than at first appears. It does not mean that the Potential Pareto approach, which advocates for some uncompensated transfers, is "correct." Normative criteria, of which the Potential Pareto approach is one, are impossible to classify as "correct" or "incorrect," instead the question concerning them is whether they are just or unjust (and "consistent" or "inconsistent," and "arbitrary" or "non-arbitrary," and "complete" or "incomplete"). All Cole and Grossman's sentence actually does is to confirm that the Scitovsky Double Criterion fits under the "Potential Pareto" umbrella of criteria which assume, controversially as we know, that some policies which hurt some people are good for society.

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230. *Id.* at 11.

231. *Id.* For an explanation of the fallacious nature of the "pie" analogy, see *supra* Section III.G.1(c).

232. *Id.* at 10.

233. *Id.* at 12.

234. *Id.*

F. Miceli (2004)

Thomas Miceli goes through the typical steps of defining Pareto Efficiency; dismissing it because it cannot rank all choices; and introducing a vaguely defined "Kaldor-Hicks Criterion" in its place. By "vaguely defined" we mean that Miceli writes:

> . . . suppose that the movement . . . yielded person two an increase in wealth of $500 but cost person one $400. Person two would thus still enjoy a net gain of $100 after compensating person one. . . .[235]

But Miceli has not defined "wealth," nor described how its increase was measured (WATP for receiving a good? WTA if he had not received it?). Similarly, he does not precisely describe what the $400 "cost" actually is (WATP for foregoing the movement? WTA compensation for the movement?).

Miceli gives the "Kaldor-Hicks Criterion" its usual misleading synonym "wealth maximization." As in Harrison and Theeuwes, Miceli takes "wealth maximization" literally: "if all changes dictated by Kaldor-Hicks were made, aggregate wealth would be maximized."[236] By now, we all recognize this error: value, having a binary nature, cannot be maximized, so this concept is flawed, almost certainly constituting a "social surplus" error; and for "wealth" refer as usual to Section V.B.

Turning to normative concerns, Miceli very briefly appeals to the Equity-Efficiency Tradeoff fallacy[237] and he also makes use of the fallacious "pie" analogy of the Separation Hypothesis.[238] He is our first author to supply a "Package Potential Paretian" argument[239] of the sort we criticized in Section IV.F.1. On the plus side, in that same section Miceli straightforwardly admits that Kaldor-Hicks embodies "nonconsensual exchange."[240]

G. Friedman (2000)

Near the beginning of the chapter on efficiency in David Friedman's L&E textbook we read the following passage:

> How do you put a pie containing everything that happens to every human being on earth, or even in the United States, on a scale, so as to get a single measure of its size?

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235. THOMAS MICELI, THE ECONOMIC APPROACH TO LAW 6 (Stanford Economics and Finance 2004).

236. *Id.*

237. *Id.* at 3 ("competing goals").

238. *Id.* at 6. For an explanation of the fallacious nature of the "pie" analogy, see *supra* Section III.G.1(c).

239. *Id.* ("The hope is that those who lose from one policy will benefit from others and that, on net, everyone will gain as aggregate wealth is increased.").

240. *Id.*

> A little over a hundred years ago an economist named Alfred Marshall proposed a solution to that problem. It is not a very good solution. It is merely, for many although not all purposes, better than any alternative that anyone has come up with since. Marshall's argument starts by considering some change . . .The result of the change is to make some people better off and some worse off. In principle one could measure the magnitude of the effects by asking each person affected how much he would, if necessary, pay to get the benefit (if the change made him better off) or prevent the loss (if it made him worse off). If total gains were larger than total losses, making the net effect positive, we would describe the change as an economic improvement.[241]

"Willingness to pay" is Kaldor and Hicks, not Marshall, who used the older, surplus approach to measuring value. However, underlying Friedman's mistaken attribution is that Friedman, alone among these L&E authors, correctly realizes the point we made when discussing Posner's positive economics: although most L&E authors call their approach "Kaldor-Hicks," because it has none of Kaldor and Hicks's "binary nature of value" aspects, their approach is actually the "consumer surplus" approach of Marshall (perhaps updated to include different types of surpluses). L&E textbooks should change from describing their approach to efficiency as "Kaldor-Hicks" to adopting Friedman's practice of calling it "Marshall's approach."[242] Friedman, in turn, should stop using "willingness to pay" language, which is part of the Kaldor-Hicks approach, and start using the language of the social surplus approach.

Friedman does not point out the positive problems of the social surplus approach ("Marshall's approach") which were outlined in Part V and which Kaldor and Hicks fixed by elucidating the binary nature of value.

Friedman admits the normative dependence-on-income flaw of "Marshall's approach" but defends that approach in five ways.

First, he posits that "the [alternative] statement that we should choose just rules, while emotionally satisfying, does not convey much information."[243] This conclusion carries very little force. The Equal Protection Clause of the 14th Amendment to the U.S. Constitution "does not convey much information" either ("nor shall any State . . . deny to any person within its jurisdiction the equal protection of the laws"), but that does not mean we ignore it. Justice is a valid goal even though figuring out how to do it is hard work.

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241. Friedman, *supra* note 117, at 18.
242. *Id.* at 19.
243. *Id.* at 22.

Second, Friedman proffers that "In many cases principles we think of as just correspond fairly closely to rules that we discover are efficient."[244] Evidently then one *can* perceive justice, contrary to what Friedman argued in the last paragraph—so why not pursue it directly?

Third, he suggests that "Defining value by what I act to get may not always give the right answer, but it is hard to see how one can do better."[245] One might instead propose this way to do better: define someone's values by what they act to get when their income is doubled, or tripled, or equals the income of Bill Gates. Then you will be able to see that they really *do* value their children's health; the reason you cannot see that now, when they are "choosing" to live next to a toxic waste dump, is because that is the only place they can afford to live.

Fourth, Friedman opines that "'pro-rich' or 'pro-poor'" laws are usually neither."[246] Even if true, it is unclear how this is a valid defense for the surplus approach.

Fifth, Friedman resorts to the pie analogy.[247]

After this, Friedman gets around to introducing Pareto Efficiency and attacking it:[248]

> If we want to make an overall evaluation of the effects of such changes, we are stuck with the problem of balancing gains to some against losses to others, a problem that Marshall solves, even if imperfectly, and Pareto only evades. It is therefore Marshall's approach defining economic improvements and the efficiency of legal rules that I will be using—and that other economists routinely use, whether or not they say so.
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> […] I consider the Paretian approach that [readers] encountered in their textbooks, along with the more elaborate version due to Hicks and Kaldor that they may have also encountered, evasions of, not solutions to, the problem of evaluating changes that affect many people in a variety of ways.

We have already demonstrated the fallacy of these statements. Contrary to Friedman's second sentence, when economists discuss efficiency, they most often mean Pareto efficiency, not "Marshall's approach" (see Section III.C and our discussion of Cole and Grossman). As for the first sentence and the last, rather than "solving" the problem of balancing gains and losses, "Marshall's approach" suffers from all the problems detailed in Part V. Indeed, "Marshall's approach" is inferior to

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244. *Id.*

245. *Id.* at 23.

246. *Id.*

247. *Id.* at 24. For an explanation of the fallacious nature of the "pie" analogy, see *supra* Section III.G.1(c).

248. Friedman, *supra* note 117, at 25.

the Potential Pareto approach of Kaldor and Hicks because it makes the (positive) mistakes we pointed out in discussing Figure 16, the very same mistakes that prompted Kaldor and Hicks to write in the first place. Of course, the Potential Pareto approach has problems too. That is why, if the "other economists" Friedman is referring to are modern theorists of welfare economics, most of them are going to use a "social welfare function" approach;[249] the only choices are not Pareto, Kaldor-Hicks, or Marshall.

H. Cooter and Ulen (2004)

Robert Cooter and Thomas Ulen start with the fallacious Separation Hypothesis: "we will focus on efficiency not distribution."[250] They then supply four arguments to support their position that "private legal rights are usually the wrong way to pursue distributive justice."[251]

Their first argument is that the income tax system is a better instrument to reduce income inequality. Without expressing an opinion on that, "income inequality" is not the only concern of distributive justice. Changing income taxes is not going to give rise to less deadly working conditions for meatpackers during a pandemic, for example.

Their second argument is that "the distributive effects of reshuffling private rights are hard to predict."[252] This is no doubt sometimes true, but as we remarked when discussing Friedman, just because something is hard to do does not mean it is not worth doing.

Their third argument is that attorney's fees are higher than fees of income tax preparers. Yes, but *each* taxpayer has to pay an income tax preparer, whereas one successful legal action brought on behalf of a class of consumers or workers can benefit large numbers of people now and in the future, so the eventual, per-beneficiary cost of the legal fees could be low.

Last, Cooter and Ulen offer:

> Besides these three reasons, there is a fourth: redistribution by private law distorts the economy more than progressive taxation does. For example, assume that a law favoring consumers of tomatoes causes a decline in the return enjoyed by investors in tomato farms. Investors will respond by withdrawing funds from tomato farms and investing in other businesses.

249. For a general discussion of the social welfare function approach, see *supra* note 209.

250. Robert Cooter & Thomas Ulen, *Law and Economics* 8 (Pearson-Addison Wesley 4th ed. 2004). For an explanation of the fallacious nature of the Separation Hypothesis, see *supra* Section III.G.1(c).

251. *Id.* at 9.

252. *Id.*

> Consequently, the supply of tomatoes will be too small and consumers will pay too high a price for them. [253]

To demonstrate the fallacy of this reasoning, suppose that a new law protects the health of consumers of tomatoes by limiting the type of pesticides farmers can apply to that crop. On what grounds can Cooter and Ulen argue that the new supply of tomatoes is "too small"? The supply of healthful tomatoes is much larger than it was before. The supply of unhealthful tomatoes has shrunk, which is a good thing. "Too small" compared to what? Similarly, yes, 'the price of tomatoes will go up, but who is to say the new price is "too high?" Drinking water standards in the U.S. are rather stringent; by Cooter and Ulen's logic, these standards should be made more unhealthful because they cause the price of drinking water to be "too high." Arguing that lower prices and a filthier, more dangerous environment are *always* better from an economic point of view is completely fallacious.

Cooter and Ulen conclude "that private legal rights are usually the wrong way to pursue distributive justice. Unfortunately, these facts are generally not appreciated by lawyers who have not studied economics."[254] Unfortunately for Cooter and Ulen, their "facts" fly in the face of the economic arguments given above.

Later, Cooter and Ulen go through the usual procedure of introducing Pareto Efficiency;[255] dismissing it because it cannot rank all choices; and introducing what they call "The Kaldor-Hicks Criterion,"[256] even though their discussion shares none of Kaldor or Hicks's understanding of the binary nature of value. They contemplate difficulties with situations in which "the gainers gain more than the losers lose," with only ten words: "There are both theoretical and empirical problems with this standard." They give no hint to the student that measuring what "the gainers gain" and what "the losers lose" is fraught with difficulties and can give rise to contradictions.

I. Shavell (2004)

Shavell's work is not a textbook, and his discussions are much more careful than those of most of the textbooks we have discussed. Shavell describes the "social welfare function" approach to welfare economics, [257] which is the approach taken by most experts in the field, as described in *supra* note 209, while other L&E authors ignore that approach. When Shavell appeals to the "size of the pie" analogy,[258] he

253. *Id.*
254. *Id.*
255. *Id.* at 16.
256. *Id.* at 48.
257. STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 597 (Harvard Univ. Press 2004).
258. *Id.* at 651.

makes not the generic, fallacious-with-respect-to-Pareto-efficiency point, but rather a specific point about the cost of tax administration. While we disagree (because the *marginal* cost of administering a more-equitable tax regime may be identical to administering a less-equitable tax regime: everyone still has to fill out a tax form, and the two may not differ in complexity), Shavell's argument cannot be dismissed out of hand. Shavell argues that high income taxes generate an incentive to decrease supply of useful labor.[259] Again, we disagree (*supra* note 93), but Shavell is following in the long tradition of the "optimal income tax" literature.

Unfortunately, in Shavell's section on "Should Income Distributional Effects of Legal Rules influence their Selection," Shavell *assumes* the Equity-Efficiency Tradeoff.[260] It is true that he later admits that the Equity-Efficiency Tradeoff might not exist: "If legal rules allowed income to be redistributed more cheaply than the income tax system does, then the conclusion that legal rules should not be chosen on the basis of their redistributive effects would not necessarily hold."[261] However, over the next few pages, he reverts to assuming an Equity-Efficiency Tradeoff, then demonstrates that models with an Equity-Efficiency Tradeoff built into their assumptions do exhibit an Equity-Efficiency Tradeoff in their conclusions. This approach demonstrates competence in model-building but says nothing about the real world. We of course have argued that, in the real world, there *is* no Equity-Efficiency Tradeoff (see Section III.G.1(e)).

J. Barnes & Stout (1992)

"Wealth maximization" is clearly commonly used in L&E but Barnes and Stout, the leading case book on L&E, define "wealth" in a unique way: as "the dollar value of scarce resources as measured by individuals' willingness and ability to pay for them."[262] Their use of "and ability" is welcome. However, as we know from Section IV.A.5, in a Kaldor (CV) Test, WATP is the valuation of the person whose utility a policy would increase; in a Hicks (EV) test, WATP is the valuation of the person whose utility a policy would decrease. Kaldor and Hicks Tests work by comparing one person's WATP with the other person's WTA, not by comparing two WATPs, so it is unclear how Barnes and Stout's definition of wealth could be used to make social decisions.[263]

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259. *Id.* at 651–52 n.7.

260. *Id.* at 655 n.9.

261. *Id.* at 656–57.

262. DAVID BARNES & LYNN STOUT, CASES AND MATERIALS ON LAW AND ECONOMICS 6 (West Pub. 1992).

263. If one defines "wealth" as the sum of WATP, then for each consumer, summed over all goods, wealth would just equal the consumer's income, and for society as a whole, wealth would just equal national income, which is Net National Product (GNP minus depreciation) by the national income accounting identity (or perhaps wealth would equal net domestic income, which is Net

Barnes and Stout write, "[i]n this book, an efficient allocation of resources is one that cannot be improved in either the Paretian or Kaldor-Hicks senses."[264] If by "Kaldor-Hicks" they mean the actual Kaldor-Hicks approach (rather than the surplus approach), this means that they define efficiency as situations in which there are neither Pareto improvements nor Potential Pareto improvements possible. But if a Potential Pareto improvement is possible, a Pareto improvement is also possible (ignoring the results in *supra* Section IV.F.1). Accordingly, the authors' definition of efficiency ends up being just Pareto Efficiency, which they do not seem to understand; nor do they understand that this conflicts with their advocacy of Potential Pareto Efficiency instead of Pareto Efficiency alone.

On normative issues, Barnes and Stout utilize the fallacious "pie" analogy.[265] However, they admit that "[w]ealth maximizing inevitably requires that a greater share of resources go to wealthier people,"[266] which acknowledges the effect of the Potential Pareto approach and the surplus approach on inequality. Furthermore, unlike the typical approach of hastily dismissing Pareto Efficiency as impractical—for example Heyer's regrettable position that "[n]o serious antitrust analyst would propose that business conduct be permitted only if it leaves less efficient rivals equally well off"[267]—Barnes and Stout are to be commended for making the very important point that "United States v. Causby examines one possible method of expanding the usefulness of Pareto's classifications: compensation for forced reallocations."[268]

K. Polinsky (2019)

Like Malloy, Polinsky measures value in dollars ("the dam…creates benefits of $40 and costs of only $30"), with no hint of the binary nature of value.[269] Unique among L&E textbooks, Polinsky explicitly makes an assumption which eliminates the binary nature of value. That assumption is essentially the same as the highly unrealistic assumption of quasilinear preferences, that is, that the income effect lies precisely

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Domestic Product (GDP minus depreciation)). Consistent with this, Barnes & Stout say that "GDP is a familiar measure of wealth" (although they add that there is a problem with externalities). *Id.* at 9. However, using WTA would be different because it is not constrained by income. Also, if people save, their WATP for all their current consumption is less than their income, and if they borrow, then it is more.

264. *Id.* at 17.

265. *Id.* at 9. For an explanation of the fallacious nature of the "pie" analogy, see *supra* Section III.G.1(c).

266. Barnes & Stout, *supra* note 262, at 10.

267. Heyer, *supra* note 163, at S28 n.9.

268. *Id.* at 15.

269. A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 8 (Wolters Kluwer 5th ed. 2019).

on the "zero" knife-edge.[270] Polinsky refers to this as a "standard" assumption of economic analysis,[271] but it is much more restrictive than the standard Arrow-Debreu assumptions. In Setting Pi, quasilinear preferences not only make EV and CV identical, they also make EV and CV equal to consumer surplus, making the social surplus approach equivalent to the Potential Pareto approach and eliminating the positive problems of these approaches (while not affecting their normative problems). Therefore, there is a sense in which the other L&E authors' arguments require quasilinear preferences as well—only with quasilinear preferences are the Kaldor-Hicks approach (which they claim to be using) and the surplus approach (which they are actually using) identical.

On normative issues, Polinsky begins with the fallacious "pie" analogy,[272] then moves to the Equity-Efficiency Tradeoff fallacy.[273] He admits that there might not be an Equity-Efficiency Tradeoff, but concludes that "income redistribution generally is costly,"[274] which means there generally *is* an Equity-Efficiency Tradeoff in his opinion. He then argues, like Cooter and Ulen (and, less insistently, Shavell), that in the face of this Equity-Efficiency Tradeoff, "efficiency should be the principal criterion for evaluating the legal system. This argument rests on the observations […] that it is often impossible to redistribute income through the choice of legal rules and that, even when it is possible, redistribution through the government's tax and transfer system generally is cheaper and more precise."[275] We disagree, as explained in our discussion of Cooter and Ulen.

L. Seidenfeld (1996)

On positive issues, Seidenfeld introduces an idiosyncratic way to distinguish "Kaldor-Hicks" from "wealth maximization": using our terminology, he says that "Kaldor-Hicks" is in Setting Qq while "wealth maximization" is in Setting Qi.[276] Although idiosyncratic definitions are not wrong *per se*, Seidenfeld errs in claiming that Setting Qq has much

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270. He assumes "the values that individuals place on their benefits and costs are 'stable' in the sense that these values are not affected by changes in public policy. For example, an individual's evaluation of the desirability of cleaner air is assumed not to depend on whether the legal system establishes a right to clean air." *Id.* at 10–11.

271. *Id.* at 10.

272. *Id.* at 7. For an explanation of the fallacious nature of the "pie" analogy, see *supra* Section III.G.1(c).

273. POLINSKY, *supra* note 269 at 8 ("there may well be a conflict between efficiency and equity").

274. *Id.* at 9.

275. *Id.* at 10.

276. MARK SEIDENFELD, MICROECONOMIC PREDICATES TO LAW AND ECONOMICS (Anderson Publ'g Co. 2d ed. 1996).

larger informational requirements than Setting Qi.[277] He writes that Setting Qi does "not require that policy-makers know the preference function of every individual affected by a legal rule," but that Setting Qq does require this.[278] Instead, the two settings have very similar informational requirements: they both require knowing how much a consumer is willing to pay or accept for a gain or a loss (or a foregone gain or loss) of a certain amount of one commodity, in terms either of a second commodity or of money.

On the more basic issue of acknowledging the binary nature of value, Seidenfeld is silent, and none of his examples reflect value's binary nature. Therefore, his "Kaldor-Hicks" and his "wealth maximization" frameworks should be understood as different ways of measuring social surplus—that is, as a "Part V" approach, not a "Part IV" approach.

On normative issues, Seidenfeld is the best textbook we review, doing an excellent job of pointing out where economic notions of efficiency raise normative concerns. Unique among these authors, he points out the normative problems raised by Pareto Efficiency, which we discussed in Section III.G.1(c).[279] He notes correctly that "With respect to the criticism that notions of efficiency do not sufficiently take fairness into account, however, wealth maximization is more problematic than the Pareto measure."[280] He even discusses "other social welfare functions"—the only other author to do that is Shavell—and he discusses John Rawls's Maximin Principle.[281]

Having discussed so many different authors, it is not easy for us to summarize this Appendix. However, it is clear that while a few authors have made progress in appreciating the normative problems with L&E's approach to economic efficiency, the field is still in a state of confusion about fundamental positive concepts such as what notion of economic efficiency it is actually using and what the flaws of that notion are.

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277. Speaking pedantically, there is no such thing as a mis-definition: to drive home that point, President Jimmy Carter's Chairman of the Council on Wage and Price Stability, Alfred E. Kahn, decided to call economic depressions "bananas." *Business: Yes, We Have no Bananas*, TIME, Dec. 11, 1978, https://content.time.com/time/subscriber/article/0,33009,919922,00.html. But Wittgenstein warns us that "philosophy is a battle against the bewitchment of our intelligence by means of our language," and confusing definitions serve not philosophy but sophistry. *See* LUDWIG WITTGENSTEIN, PHILOSOPHICAL INVESTIGATIONS 47e, at § 109 (Macmillan and Co., Ltd. 1958), https://www.oxfordreference.com/view/10.1093/acref/9780191826719.001.0001/q-oro-ed4-00011662. In the original German: "Die Philosophie ist ein Kampf gegen die Verhexung unsres Verstandes durch die Mittel unserer Sprache.")

278. Seidenfeld, *supra* note 276, at 55.

279. *Id.* at 54.

280. *Id.* at 55.

281. *Id.* at 56. Hirsch did reference Rawls in a footnote. Hirsch, *supra* note 218, at 8. For social welfare functions *see also supra* note 209.

APPENDIX 2: POSNER'S POSITIVE ECONOMICS

Richard Posner is such an important author in L&E that it seems worthwhile to explain some of the flaws in the positive economics of his scholarly articles—with the caveat that Posner's ideas have evolved and we are only critiquing what he wrote at different moments in the past.

Based on what this paper has already discussed, we can characterize Posner's earlier works as constructing something of an Alice-in-Wonderland realm, where "Kaldor-Hicks" is the supreme law of the land but no one ever mentions the Hicks Test; where "wealth maximization" is society's *summum bonum* but "wealth" does not mean what any economist thinks "wealth" means, and where "maximization" is applied to a correspondence which is not a function, even though such correspondences are impossible to maximize; and where the Arrow-Debreu assumptions, which much of the economics profession has spent the last half century trying to weaken, are thought to be too weak.

Concerning the Separation Hypothesis, Posner invokes the fallacious "pie" analogy: "efficiency in the Kaldor-Hicks sense—making the pie larger without worrying about how the relative size of the slices changes…." [282] Similarly, he implies that one can know what "productive activity" and "wealth" are without inquiring about distribution. [283] We described the error in this approach in Section III.G.1(c), and authors such as Ashford are aware of it: "There is no one single paramount optimal efficiency to guide Judge Posner's Efficiency Ethic of the Common Law, but many distribution-dependent relative efficiencies." [284]

While Posner usually identifies "wealth maximization" with what he calls "the Kaldor-Hicks Criterion," Posner has, over the years, given other definitions.

In 1987, Posner said wealth maximization was the same as maximizing social surplus.[285] This is closer to the truth than saying it has anything to do with Kaldor or Hicks (see Section A).

In 1990, Posner said wealth maximization was Cost-Benefit Analysis using the greater of WATP (he calls it WTP) and WTA.[286] To see

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282. Richard A. Posner, *Cost-Benefit Analysis: Definition, Justification, and Comment on Conference Papers*, 29 J. OF LEGAL STUDIES 1153–1177, 1155 (2000). For an explanation of the fallacious nature of the "pie" analogy, see *supra* Section III.G.1(c).

283. Richard A. Posner, *Wealth Maximization and Tort Law: A Philosophical Inquiry*, *in* DAVID G. OWEN, PHILOSOPHICAL FOUNDATIONS OF TORT LAW 110 (David G. Owen ed., Oxford 1995) ("Maybe a system of tort law oriented by the principle of wealth maximization is the best approach for the Kantian. It seeks to accommodate conflicting activities in such a way that the scope for productive activity is maximized.").

284. Ashford, *supra* note 125.

285. Richard A. Posner, *The Justice of Economics*, 1 ECONOMIA DELLE SCELTE PUBBLICHE 15, 17–18 (1987). "Wealth is, however, much easier to measure than happiness even though hypothetical prices play so important a role in determining wealth. It is much easier to estimate a demand curve (and so consumer surplus) than to estimate any sort of aggregate happiness function." *Id.* at 19.

286. POSNER, *supra* note 1, at 356:

the problems with assessing value this way, suppose, as in Posner's example, that A's WATP for receiving B's stamp collection is $100, while B's WTA for giving up his stamp collection is $90. Then "the greater of WATP and WTA" is $100, and the transfer of the stamp collection from B to A passes the Kaldor Test (the "CV" question of "if we do transfer the stamp collection to B"). However, for this transfer to also pass the Hicks Test (the "EV" question of "if we do not transfer the stamp collection to B"), A's WTA compensation for *not* receiving the stamp collection would have to be larger than B's WATP money to *avoid* turning over B's stamp collection. Empirically, WTA is usually greater than WATP (because WATP is constrained by income while WTA is not), so suppose A's WTA is $110 (i.e., greater than $100) and B's WATP is $85 (i.e., less than $90). According to these Hicks-Test measures, "the greater of WATP and WTA" is $110. When Posner says that "wealth maximization" is Cost-Benefit Analysis using the greater of WATP and WTA, does he mean the greater of WATP and WTA of the Kaldor (CV) Test, which is $100, or the greater of WATP and WTA of the Hicks (EV) Test, which is $110? It does not appear that Posner is even aware that in any situation there are not one but two pairs of WATP and WTA, one for the Kaldor Test and the other for the Hicks Test.

In 2000, Posner said wealth maximization was Cost-Benefit Analysis using WTA.[287] But whose WTA? After all, in the stamp collection example, B's (Kaldor) WTA is $90 and A's (Hicks) WTA is $110.

> I must pause to define "wealth maximization," a term often misunderstood. The "wealth" in "wealth maximization" refers to the sum of all tangible and intangible goods and services, weighted by prices of two sorts: offer prices (what people are willing to pay for goods they do not already own); and asking prices (what people demand to sell what they do own). If A would be willing to pay up to $100 for B's stamp collection, it is worth $100 to A. If B would be willing to sell the stamp collection for any price above $90, it is worth $90 to B. So if B sells the stamp collection to A (say for $100, but the analysis is qualitatively unaffected at any price between $90 and $100—and it is only in that range that a transaction will occur), the wealth of society will rise by $10. Before the transaction A had $100 in cash and B had a stamp collection worth $90 (a total of $190); after the transaction A has a stamp collection worth $100 and B has $100 in cash (a total of $200). The transaction will not raise measured wealth—gross national product, national income, or whatever—by $10; it will not raise it at all unless the transaction is recorded, and if it is recorded it is likely to raise measured wealth by the full $100 purchase price. But the real addition to social wealth consists of the $10 increment in nonpecuniary satisfaction that A derives from the purchase, compared with that of B.

Posner confirmed his belief in this definition five years later:

> 'Value' is determined by what the owner of the good or service would demand to part with it or what a non-owner would be willing to pay to obtain it—whichever is greater.

POSNER, *supra* note 283, at 99.

287. POSNER, *supra* note 282, at 1155 ("I would, however, use willingness to accept rather than willingness to pay as the value measure when the policy the costs and benefits of which are being measured takes away property rights, as in the case where farmland will be flooded as a result of the building of a dam. Willingness to accept provides better protection for property rights, which have an important economizing role in a market economy.").

Posner's strangest claim, however, was that wealth maximization is the same as Pareto Optimality. He first put forth this claim in 1980[288] and extended it in 1990[289] Posner asserts the following syllogism, when discussing changes made under uncertainty:

(a) Some *ex ante* Pareto Improvements lead to *ex post* losses.
(b) All Potential Pareto Improvements lead to *ex post* losses.
(c) Therefore, there is no difference between Pareto Improvements and Potential Pareto Improvements.

The Venn Diagram of true statements (a) and (b) is Figure 17, which shows that (c) does not, in fact, follow from (a) and (b).

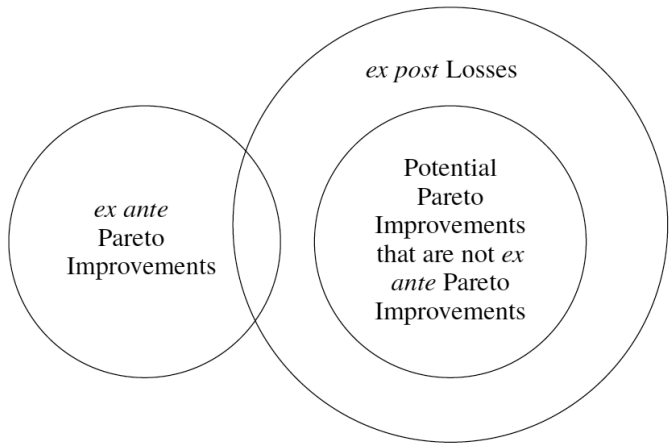

Figure 17. Pareto Improvements under uncertainty can lead to ex post losses, but this does not mean that Pareto Improvements and Potential Pareto Improvements are identical.

All this said, Posner proposed his most revealing definition in 1990, when he said that wealth maximization was the same as laissez-

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288. Richard A. Posner, *The Ethical and Political Basis of the Efficiency Norm in Common Law Adjudication*, 8 HOFSTRA L. REV. 487, 495 (1980) ("…while Kaldor-Hicks is not a Pareto criterion as such, it will sometimes function as a tolerable, and, more to the point, administrable approximation of the Pareto-superiority criterion.").

289. POSNER, *supra* note 1, at 389.

It may seem paradoxical to derive a norm of wealth maximization from the principle of Pareto superiority, when the hallmark of the latter is compensation of all potential losers (for remember that no one must be made worse off by the transaction if it is to be Pareto superior), while wealth maximization requires only that the winners' gains exceed the losers' losses. But if, as in the contract example, compensation is permitted to be *ex ante*, the paradox disappears. The difference between the *ex ante* and *ex post* perspectives is fundamental, and failure to attend to it underlies much confused thinking about markets and transactional competence. Because many choices are made, unavoidably, under conditions of uncertainty, a fair number must turn out badly. *Ex post*, they are regarded as mistaken and engender regret, yet *ex ante* they may have been perfectly sensible.

faire economic policies.[290] That cemented his agreement with the Neoliberal agenda.

In reviewing a book by Posner on a different topic, economics Nobel laureate Robert Solow remarked that "in some respects, [Posner's] grasp of economic ideas is precarious."[291] Yes; but Posner unquestionably got many of his ideas from economists. Clearly, Posner was wrong to treat "the" Kaldor-Hicks "sense" as a single idea, as if there were no difference between the Kaldor Test and the Hicks Test, but there are also economists who make this error. [292] It is about them that Griffin writes, "when professionals say or write K-H in their work, they risk having their work questioned. There's not just one compensation test, and there are normative questions that should not be swept under a rug by [implying] a single test." [293] Yes, Posner's understanding of WATP and WTA was flawed, and he should have indicated, in his contradictory writings on that subject, how his viewpoint was changing; but at least he showed curiosity about the implications for social decision-making of WATP not equaling WTA, a topic missing from the almost-1000-page-long tome of Mas-Colell, Whinston, and Green.[294] It should surprise no one that Posner used the incorrect surplus method to measure welfare change when Paul Samuelson, who, in a specialist text, said that consumer surplus had little importance,[295] went on to write in his extremely-widely read introductory textbook that "[t]he gap between the total utility of a good and its total market value is called *consumer surplus*" in the midst of a presentation of (cardinal!) utility and consumer surplus so uncritical and out of date that even Marshall knew better.[296] Similarly, who can blame Posner for advocating the fallacious

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290. POSNER, *supra* note 1 at 382 ("The strongest argument for wealth maximization is not moral, but pragmatic. Such classic defenses of the free market as chapter 4 of Mill's *On Liberty* can easily be given a pragmatic reading….We look around the world and see that in general people who live in societies in which markets are allowed to function more or less freely not only are wealthier than people in other societies but have more political rights, more liberty and dignity, are more content (as evidenced, for example, by their being less prone to emigrate)—so that wealth maximization may be the most direct route to a variety of moral ends.").

291. Robert M. Solow, *How to Understand the Disaster*, N.Y. REV. OF BOOKS (May 14, 2009), https://www.nybooks.com/articles/2009/05/14/how-to-understand-the-disaster. Solow is speaking in the context of macroeconomics, not L&E.

292. POSNER, *supra* note 283.

293. Ron Griffin, *Some margin notes for the 2004 JHS text*, COURSE BLOG (December 2015), http://www.waterecon.com/courses/agec636/margin_notes.html. In Griffin's work, the acronym "JHS" refers to RICHARD E. JUST, DARRELL L. HUETH, & ANDREW SCHMITZ, THE WELFARE ECONOMICS OF PUBLIC POLICY (Edward Elgar 2004).

294. MAS-COLELL, WHINSTON, & GREEN, *supra* note 74, at 831 (devoting four sentences and two homework exercises to "paradoxes" in a related context).

295. Samuelson, *supra* note 193, at 197 ("It is for these reasons that my ideal *Principles* would not include consumer's surplus in the chapter on welfare economics except possibly in a footnote, although in my perfect *Primer* the concept might have a limited place, provided its antidote and alternatives were included close at hand.").

296. PAUL A. SAMUELSON & WILLIAM D. NORDHAUS, ECONOMICS 456 (McGraw-Hill 13th ed. 1989). The only nod to a correct treatment of the topic appears in a completely unexplained three-word phrase beginning a sentence in the chapter summary: "In simplified cases, we can measure

Separation Hypothesis when Nobel laureate Jean Tirole writes in the introduction to his graduate-level textbook on Industrial Organization that:

> The goods and industries considered in this book generally represent only a small share of consumer expenditure. Price changes are therefore likely to generate small income effects, and it may be appropriate to assume that demand is downward-sloping and that consumer surplus is a good approximation of welfare…. In this book, I will treat income distribution as irrelevant…. I will focus on the efficiency of markets…. The "compensation principle" of Hicks (1940) and Kaldor (1939) hold that we need only be concerned with efficiency; if total surplus increases, the winners can compensate the losers and everyone is made better off. [297]

Tirole asks that it be "borne in mind in all our welfare conclusions" that "compensation need not occur," but expecting the reader to bear in mind this "classic drawback" for the rest of a more-than-1000-page-long book which will not mention it again veers close to being disingenuous, as does saying that it "may be appropriate" to use consumer surplus as a measure of welfare and then to do so unquestioningly for the rest of the book. [298] In conclusion, if Richard Posner's economics has flaws, large responsibility rests with the economists he learned from.

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consumer surplus as the area between the demand curve and the price line." *Id.* at 459. And even this is wrong: consumer surplus is always the area between the demand curve and the price line. That is its definition. What can only "in simplified cases" be measured as the area between the demand curve and the price line is the change in *welfare*. Both Samuelson and Nordhaus are Nobel Laureates in economics.

297. JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 31–32 (MIT Press 1988). For an explanation of the fallacious nature of the Separation Hypothesis, see *supra* Section III.G.1(c).

298. *Id.* at 32.

V. CONCLUSION

While ISA funding that does not emphasize returns and time-dependent payment caps may each offer more robust protections to students enrolled in an ISA, the regulations proposed by the ISA Student Protection Act of 2022 offer an incredibly promising start to shaping ISAs into a viable, non-predatory option for financing secondary education. The ideas put forth in the Act should be passed because they will carve out a space for predictable federal regulation over ISAs and for better metrics and transparency on the impact of ISAs. Once such regulations are passed, considerations like ISA funding sources and time-dependent payment caps can and will be explored and advocated for more fully because ISA regulation will be more centralized and will be more reliably data-driven. More importantly, with the ratification of such regulations, students can be assured that ISAs will serve as an increasingly sensible tool to gain access to education.