Summer 2001

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**Recommended Citation**


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Economic Exchange as the Requisite Basis for Royalty Ownership of Value Added in Natural-Gas Sales

ABSTRACT

Gas royalties allow the lessor to capture economic rent (a surplus above all production costs) and to share "risk" with the lessee. However, the lessor owns no economic rent but owns only a percentage of the sales value of the produced gas. The lessor, as a royalty owner, comes into ownership of value added beyond the wellhead only through some explicit or implicit act of exchange. An act of exchange may take the form of deductions for post-production marketing costs or an actual sharing of such costs. But the implied marketing covenant mandates royalties on the value added with no cost deductions or sharing of lessee's marketing costs. Without acts of exchange accomplished through a sharing of marketing costs, royalties on value added are a breach of property rights and a disincentive to efficient exploration, development, recovery, and marketing of natural gas.

I. THE ISSUE

Gas royalties provide the lessor with an instrument for capturing economic rent and with a means of sharing economic uncertainty and geologic risk with the lessee. The lessor (or royalty owner), however, has

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1. While economists frequently conflate risk and uncertainty, the concepts are distinct; in the context of petroleum economics, "risk" can be applied to the quantifiable probabilities associated with discovery, for example. "Uncertainty" is properly applied to the subjective inferences regarding the future of the market; while the economics profession has struggled to deny the fact, these subjective inferences are not amenable to the use of probabilities in the quantitative sense. FRANK H. KNIGHT, RISK, UNCERTAINTY AND PROFIT 19-20 (1964). On the inherent subjectivity of market uncertainty as it is addressed in decision making, see generally Roman Frydman, Toward an Understanding of Market Processes: Individual Expectations, Learning, and Convergence to Rational Expectations Equilibrium, 72 AM. ECON. REV. 652 (1982). See also LUDWIG VON MISSES, HUMAN ACTION: A TREATISE ON ECONOMICS (THE SCHOLAR'S EDITION) 105-18 (1998).
no ownership claim to economic rent or to the value of the in situ gas. Rather, the lessor owns and has a right to collect a royalty from the lessee in the form of a fixed percentage of the market value of the gas produced from the lease. The lessor's ability to collect royalty payments is possible because, in principle, the lessor is capturing a surplus value (economic rent) over and above all opportunity costs borne by the lessee in producing the natural gas. But if the lessor's percentage royalty is designed to collect economic rent, one may well ask, What portion of the gas sales proceeds from any given period is economic rent? Of course, there is no empirical answer that can be given to this question. This lack of measurability is one of the principal reasons that the concept of economic rent is not considered under royalty law even though the linkage between economic rent and royalties has a critical bearing on the economic management of the lease. Nonetheless, the lessor's enforceable royalty-ownership claims traditionally have absolutely nothing to do with the issue of economic rent or its existence. While there is general agreement that the lessor owns only the

2. The nature of the lessor's claim "affirms that royalty in itself does not include a perpetual interest of oil and gas in the ground. A reservation of royalty is not a reservation of fee ownership. Royalty is a distinct estate." Joan Burk, Petroleum Lands and Leasing 15 (1983) (emphasis added).

3. From an accounting perspective, economic rent can be defined as gross receipts from sales of production minus the sum of (1) operating expenses, (2) depreciation charges on invested capital, and (3) a competitive return on invested capital. See Mason Gaffney, The Objectives of Government Policy in Leasing Mineral Lands, in Mineral Leasing as an Instrument of Public Policy 3, 20 (Michael Crommelin & Andrew R. Thompson eds., British Columbia Inst. for Econ. Policy Analysis, Econ. Conf. Pub. No. 5, 1977). The sum of the three items listed by Gaffney are intended to be an objective calibration of the opportunity costs for all of the inputs employed in the production of the resource. For a lessee making decisions in uncertain markets, however, the actual valuation of opportunity cost will involve subjective judgment on the part of the lessee. Hence, at any particular moment in time, true economic rent becomes an essentially subjective, unmeasurable magnitude.

4. Since economic rent cannot be objectively allocated or quantitatively pro-rated to particular time periods, any attempt to discern this portion of the gas-sales value would be a futile and meaningless exercise. Moreover, the total rent generated over the entire production horizon depends upon the timing of gas production with respect to changes in the gas market. See Stephen McDonald, Percentage Depletion, Expensing of Intangibles and Petroleum Conservation, in Extractive Resources and Taxation 269, 272 (Mason Gaffney ed., 1967). Hence, a prudently established percentage royalty can only approximate the capture of economic rent. During the entire period that the lease is in production, the percentage royalties from sales proceeds may result in collection of income that is either less than or greater than the total economic rent ultimately realized over the entire history of production. The situation is complicated even further by the fact that the temporal allocation of production costs such as depreciation charges will tend to be subjective and contingent on the lessee's conjectures and attitudes about market uncertainty. See Ronald H. Coase, Business Organization and the Accountant, in L.S.E. Essays on Cost 95, 114, 118 (James M. Buchanan & G. F. Thirby eds., 1981). See also von Mises, supra note 1, at 346.

5. The efficiency implications of this latter linkage are examined infra Part V.
royalty percentage of the market value of the produced gas, there is much less agreement as to what gas-sales proceeds are royalty bearing.\(^6\) Some of the proceeds from any sale of gas will include value at the point of production plus a remaining portion that represents value added from transportation, processing, or marketing. Hence, one is confronted with persistent questions. What principles of ownership determine the portion of the gas-sales proceeds that can be properly viewed as "royalty bearing"? In other words, how is production defined? How is value added defined, and by what legitimate means does a portion of it become the property of the royalty owner? Can the lessor's ownership of value added be established by judicial decree? The article pursues these issues with particular focus on the latter two questions as they arise in connection with post-production value added from marketing. Unfortunately, the application of gas-royalty law has not given consistent or even coherent answers to these questions.

The above questions have been a source of dispute and litigation between lessees and lessors from the earliest days of the petroleum industry. However, the principal focus of this article is the contemporary interpretation of the "implied covenant to market" in which the lessee is not only implicitly obligated to market the produced gas but also to do so at no cost to the royalty owner. The royalty owner is able to collect a royalty on an increment in the value of the gas without having borne any cost of creating this increment in value.\(^7\) This source of dispute seems to have been aggravated by the fact that, more recently, gas sales typically occur at points far removed from the wellhead. Moreover, at the time that the gas is sold, it is frequently in a substantially altered condition compared to the substance initially produced at the wellhead. These varying possible circumstances surrounding the sale of the gas have provided ample opportunity for disagreement and litigation. But virtually everything that happens to the gas beyond the wellhead enhances its value whether or not the natural gas is physically altered. To paraphrase the question posed above, does the royalty owner have an ownership claim to any portion of this enhancement in value? If so, how is this ownership established? The

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7. While the value added from post-production marketing is the central focus of this article, the ownership issues raised affect with equal force all forms of post-production value added in natural-gas sales.
article offers a reinterpretation of the basis of royalty ownership in value added and the necessary acts of exchange by which ownership of such value is secured.

II. EXCHANGE AS THE REQUISITE BASIS OF OWNERSHIP OF VALUE ADDED

A. Origin and Basis of Legitimate Ownership Claims

Ownership embraces a trinity of rights that Professor Richard Epstein describes as a *unity*; this unity includes the rights of possession, use, and disposition. Professor Epstein invokes the name of John Locke in advancing the point that "commands of the state" are never a means by which ownership rights are established. Richard Epstein, Murray Rothbard, and others have examined the various ways in which individuals establish legitimate ownership claims in property. Murray Rothbard has expanded upon Locke’s theory of property by presenting the logical progression of actions that secure *rightful* ownership. First, the individual owns himself and, hence, the product of his own efforts. Second, the individual may become a legitimate owner of property through a voluntary gift or grant from another party. Third, the individual may, by appropriating hitherto an unused and unowned resource and through application of his own labor in the use of the unclaimed resource, rightfully claim ownership; this latter means to ownership would be the right of *first possession* discussed by Epstein. Fourth, with the resources that he owns, the individual may acquire ownership by creating or manufacturing goods that have value in

8. Richard Epstein is a professor of law at the University of Chicago. See RICHARD A. EPSTEIN, TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAIN 61 (1985). Epstein’s remarks on ownership were raised in the context of public takings of private property for public use. In his book, Epstein offers a thoughtful examination of ways in which the private rights of property are breached through regulatory edicts without due compensation to the owner. His central point is that such actions by public entities are violations of Fifth Amendment protections. The Fifth Amendment states, “nor shall private property be taken for public use without just compensation.”


10. ROTHBARD, supra note 9, at 78-79.

11. See EPSTEIN, supra note 8, at 61. Epstein notes that “[p]ossession does not come without an expenditure of resources, and their expenditure makes clear the exclusivity of ownership.” Id. The phrase “expenditure of resources” as used by Epstein seems to imply, exclusive of ownership of self, that ownership ultimately devolves from some act of exchange. He makes clear that the phrase “expenditure of resources” has a broader meaning than the mere outlay of money.
use or value in exchange. Finally, the individual may acquire legitimate ownership through the process of voluntary exchange with another party.

Excluding consideration of acquiring ownership through gifts or grants, the logical inference to be drawn from this listing is that in modern commercial society, ownership of any valued object is established by an implicit or explicit act of voluntary exchange that can take one of two forms. First, ownership can be acquired by an act in which one commits one's own resources to the creation, manufacture, or production of the object sought; these actions represent a type of exchange. Second, ownership can be established by a market transaction in which consideration found to be mutually agreeable to both parties (monetary payment, barter exchange, or service) is paid in exchange for the object that one seeks to acquire. As the following discussion will emphasize, ownership of all value added must always emanate from either of these acts of exchange. This simple but universal principle of ownership has direct relevance in defining royalty-bearing proceeds in the sale of natural gas and in examining the controversial feature of gas royalty law that mandates a royalty claim to value added when no such ownership claim has been legitimately established or created.

B. Exchange and Ownership in the Context of Natural-Gas Royalties

As the preceding discussion suggests, the ownership of gas-sales proceeds requires a sharp distinction between the value of two products: first, the market value of the produced natural gas itself and, second, the value that is added to the recovered gas subsequent to what is defined as "production." Since the latter component of proceeds is the object of contention, the focus of the article is largely on the latter—value added viewed as a separate and distinct product and the means by which royalty owners properly acquire ownership rights in this latter product. As the following discussion will argue, the acquisition of ownership of post-production value added should be predicated on deductions for post-production costs incurred or an actual sharing of such costs incurred prior to the sale of the natural gas.13

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12. The issue of how gas production is defined is addressed infra Part IV, A.
13. Deductions for the lessee's post-production cost, or the sharing by the lessor of such costs, presumes the ability to objectively measure a monetary sum discoverable through an audit procedure, an accounting tabulation of objectively countable expenses. However, such an accounting will almost always deviate from actual "opportunity cost" in the lessee's post-production decisions. Nonetheless, the deduction or sharing of post-production cost will and must be based on a percentage share of this accounting tabulation. As Ronald Coase, University of Chicago faculty member and Nobel laureate, notes, "costs are not necessarily the same as payments. It is this fact that makes the 'costs' disclosed by cost accountants something quite different from
This article also highlights a sharp contrast between value added and post-production costs. In discussions of royalty-valuation issues, these items (value added and post-production costs) are frequently treated as though they are one and the same or that they are somehow identical. These assumptions are misleading and misrepresent the nature of economic exchange in the production and marketing of any product. Value added and post-production costs represent opposite sides of exchanges undertaken after production. As viewed generically, the acts required in production of value added are in themselves acts of exchange. The opportunity costs of inputs required to produce the gas represent what the lessee exchanges to obtain the produced natural gas. Similarly, post-production costs represent the acts of exchange undertaken by the lessee to obtain the post-production value added reflected in higher post-production prices for the gas. The post-production costs are necessary in creating the value added but may always differ from the market value added to the natural gas by incurring these costs. For example, the actual rate of return to the lessee from the marketing effort, as would be reflected in value added, could always differ from the rate of return (estimated opportunity

'opportunity cost.'” Coase, supra note 4, at 108. Coase goes on to note, When the satisfaction of a particular contract involves payments and receipts which extend over a period of time, the businessman's attitude to risk taking, which as I have said, is purely subjective, will be an important factor determining the decision actually taken. Since no method of accounting can reproduce on paper the mental processes of a businessman, the decision to be taken is one in which no mechanical process of accounting can disclose.

Id. at 107. In other words, opportunity cost refers to the lessee's valuation of what is relinquished in committing resources to particular marketing efforts under conditions of market uncertainty. For example, the cost associated with depreciation is a subjective judgment reflecting the decision maker's conjecture of the extent to which the value of capital equipment has been reduced through productive use. This judgment regarding the reduction in value from use may differ significantly from the amortization contrived through an accounting rule. See also JAMES M. BUCHANAN, COST AND CHOICE: AN INQUIRY IN ECONOMIC THEORY 49-50 (1969); James Buchanan, Introduction: L.S.E. cost theory in retrospect, in L.S.E. ESSAYS ON COST, supra note 4, at 1-16. See generally R. S. Edwards, The Rationale of Cost Accounting, in L.S.E. ESSAYS ON COST, supra at 72; Jack Wiseman, The Theory of Public Utility Price—An Empty Box, in L.S.E. ESSAYS ON COST, supra at 245; G. F. Thirlby, Economist's Cost Rules, in L.S.E. ESSAYS ON COST, supra at 273.

14. ROTHBARD, supra note 9, at 294-97. Rothbard is, of course, not directly addressing the issue of value added in the marketing of natural gas. His central point is that in any act in which productive factor services are employed to manufacture a good, the actor has, in effect, exchanged factor payments for property rights in the good being produced.
cost on marketing investments) imputed to the resources committed to post-production marketing.\(^5\)

In his book *Oil and Gas Law*, John S. Lowe makes reference to what essentially constitutes the requisite act of exchange necessary to arrive at royalty value. "Where royalty is based on an actual sales price...and production is sold downstream, both economic logic and fairness demand that costs incurred after production be deducted in determining the royalty basis."\(^6\) Although the statement by Lowe is absolutely correct, his observation is not equivalent to a commonly heard declaration that "post-production cost must be deducted to net out value added and arrive at value at the wellhead."\(^7\) In principle, gas cannot be valued at the wellhead unless it is literally sold at the wellhead; the granting of deductions for post-production costs incurred downstream of the wellhead does not change this fact. But the deduction does permit one to calculate the "appropriate royalty basis," as Lowe indicates. As noted above, "post-production costs" and "value added" are two distinct economic concepts and represent opposite sides of acts of exchange. When gas is sold downstream of the wellhead, both the lessee and the lessor know that the royalty will implicitly include an element of value added. The sharing of post-production costs or the granting of deductions for costs does not eliminate the inclusion of value added in the "appropriate gas-royalty basis;" it only establishes the basis for a legitimate ownership claim for the royalty owner. In other words, prior to the granting of deductions for post-production costs, the lessor has no legitimate ownership in downstream value added even though the royalty will be applied to proceeds that include value added. The central point is that

\(^{15}\) As a practical matter, economic competition will mean that value added and post-production costs will tend to be somewhat aligned. A positive difference between value added and post-production costs would be a "profit" and a negative difference would be a "loss" from the perspective of the lessee. On the value added side, significant increments in sales value achieved by post-production marketing investments will be kept in check by the fact that lessees are competing in their gas sales with other sellers of gas. Only occasionally will the lessee be able to sell gas at a price that yields a significant profit above what competitors obtain. These competitive pressures will mean that any major profits enjoyed by the lessee over and above a normal rate of return will tend to be diminished. On the post-production-cost side, competition in the market for the resources required in marketing will mean that the lessee will be the beneficiary of no sustainable windfall in employing these resources. Hence, any substantial differentials between value added from marketing and the costs incurred to market will be temporary. However, at no instance in time should one ever expect them to be identical. See \textit{Von Mises}, supra note 1, at 293.

\(^{16}\) \textit{Lowe}, supra note 6, at 273.

\(^{17}\) The issue of what constitutes "value added" cannot be settled in the absence of a clear definition of "production." This issue is explored at greater length in \textit{infra}, Part IV, A. The value added is defined as the increment in the market value of the gas achieved by incurring post-production costs. But, again, a definition of "post-production costs" requires a legitimate definition of "production."
deductions for post-production costs never actually remove value added from processing, transportation, or marketing. The lessor must always pay for this royalty share of proceeds by making deductions from the accounting tabulations of costs incurred by the lessee in creating any post-production value added; the royalty owner's share of downstream or post-production value added is, in effect, "purchased" through an explicit act of exchange. This interpretation of the deductions differs from that presented by some other writers. The approach offered here, however, is representative of the underlying economics and the fact that adding value to the already-produced gas represents a form of production, whether achieved by processing, transportation, or marketing. As a form of production, the value added requires productive inputs, which, in turn, involve costs. The bearing of the costs determines ownership and the sharing of the costs represents the act of exchange that establishes shared ownership.

The fact that some post-production costs are clearly deductible and have never been matters of dispute is at least an implicit acknowledgement that an act of exchange is required to establish an ownership share in post-production value added. For example, costs that fall into the categories of being gas transportation or gas processing are easily identified as being deductible when the sales price of the gas reflects the enhancement in market value resulting from the provision of these services. These deductions are necessary principally because there is a nearly universal recognition that transportation and processing actually add value to the already-produced gas and that the lessee has born the attendant costs. Granting deductions for these costs is, in effect, an explicit act of exchange for the post-production value that is added by transportation and processing. In the absence of an explicit or implicit act of exchange, the lessor would have done nothing to establish ownership claims to the value added that is reflected in the sales price of the gas. The logic and fairness of deducting

18. This assertion is the central point advanced in this article; it is not settled law. A contrary interpretation would ignore the means by which legitimate ownership is established. The issue that this article raises, however, does not extend to those situations in which the non-deductibility of marketing costs is part of an explicit contractual agreement between the lessee and the royalty owner.


20. The author uses the phrase "nearly universal recognition" not to suggest that any contrary view has been found in the relevant literature. No such contrary viewpoint has been found. The interpretation given here regarding the deductibility of transportation and processing costs is certainly consistent with that found in WILLIAMS & MEYERS, supra note 6, §§ 650-650.4. Lowe makes the following point: "The rationale usually stated for permitting deductions is that because the lessor [as royalty owner] becomes entitled to the royalty when the gas is produced at the wellhead, the lessee should share ratably in costs incurred after production." LOWE, supra note 6, at 273.
these costs to arrive at a legitimate royalty value have never been questioned. However, other post-production value added associated with the "marketing of gas" has come to be treated in a much more illogical manner. The claim that the non-deductibility of marketing costs arises from an implicit obligation under the lease seems to be contradictory or inconsistent with the way in which legitimate ownership claims come into being, i.e., the bearing of opportunity costs associated with explicit acts of manufacture or purchase.\textsuperscript{21}

III. THE IMPLIED COVENANT TO MARKET

A. The Implied Covenants and the Original Mandate of Expedited Marketing

The marketing covenant is only one of several implied covenants viewed as being implicit in oil and gas leases. The implied covenants were originally and historically intended to clarify the rights and obligations of lessees and lessors. These covenants have also been described as "unwritten promises that generally impose burdens on lessees and protect lessors." The implied covenants commit lessees to the following implicit managerial mandates: (1) expeditiously explore the lease,\textsuperscript{22} (2) with "due diligence" conduct development of the lease acreage, (3) protect the lease property from drainage through the activities of lessees operating on neighboring tracts, (4) conduct operations in a prudent and diligent manner, and (5) expeditiously market the oil and gas.

The implied covenants have been "fashioned by the courts to...determine what the lessee is required to do for the mutual benefit of itself and its lessor."\textsuperscript{23} While the phrase "mutual benefit" frequently appears

\textsuperscript{21} One of the major reasons for the differentiated treatment of marketing costs is attributable, in major part, to the implied covenant to market, or rather, to an interpretation of this covenant. This interpretation of the covenant is the principal reason that the ownership of value added has become surprisingly murky and confused from a judicial perspective. The implied covenant to market as it applies to gas royalties is addressed at greater length below. At this point, it may be useful to re-emphasize that the criticism raised in this article is not directed at those situations in which the non-deductibility of marketing costs arises from an explicit contractual agreement between the lessee and the royalty owner. The focus is on the modern-day interpretation of the implied covenant to market in which the lessee is implicitly obligated to market the gas at no cost to the lessor or royalty owner. The general logic outlined in this article, however, applies to all post-production value added.

\textsuperscript{22} One adaptation that has mitigated some of the counterproductive features of this covenant is a clause in the lease agreement that provides for the payment of rentals to delay drilling.

\textsuperscript{23} Judith M. Matlock, Payment of Gas Royalties in Affiliate Transactions, 48 INST. ON OIL & GAS L. & TAX'N 9-1, 9-10 (1997).
in descriptions of the covenants, in fact, the lessee and the lessor are made economic adversaries with mutually opposing interests. The "excessive investment" mandated by the implied covenants is only part of the problem. Of at least equal importance is the fact that the covenants sharply curtail the property rights of the lessee in dealing with the uncertainty of changing markets and in deciding on the appropriate time to explore, develop, produce, and market the gas resource. Depending upon market expectations, these decisions would frequently necessitate deliberate delays. Yet the implied covenants, including the edict of expeditious marketing, condemn this essential and important activity as "speculation" or evidence of "incompetence." Nonetheless, timing decisions that may involve delays are critical in the lessee's ability to efficiently manage the lease and to achieve economic conservation of the gas resource (as distinct from physical conservation). Yet delay is always inimical to the lessor's interests as a holder of an investment asset. The lessor has the opportunity to earn a higher rate of return by quickly recovering funds from royalties receivable and immediately investing in assets that earn a higher, competitive rate of

24. Lowe notes the observations of Professor Patrick H. Martin, who argues, "the law of the implied covenants has ill served the nation because it has resulted in more development than is economically necessary...." *Lowe*, supra note 6, at 336.

25. In aiming toward these objectives, the lessee is principally concerned with the goal of enhancing the *net present value* (capital value) of the lease. These timing decisions are the means by which economic conservation of the resource and efficient management of the lease are achieved. See John Brätland, *Human Action and Socially Optimal Conservation: A Misesian Inquiry into the Hotelling Principle*, 3 *THE QUARTERLY JOURNAL OF AUSTRIAN ECONOMICS* 3, 10 (2000). While not focusing on the implied covenants, Professor Stephen McDonald observes the following: "the optimum time-distribution of production is defined for one point in time only. It changes as its determinants change from point to point in time. In particular, it changes with every change in current and expected costs and prices....Thus continuously maximizing net present value (continuously conserving) requires flexible adjustments in the time-distribution of production as the economic values reflecting sacrifice and gain of satisfaction (costs and prices) change over time." *STEPHEN McDONALD, PETROLEUM CONSERVATION IN THE UNITED STATES: AN ECONOMIC ANALYSIS* 83, 84 (1971) (emphasis added).

26. As with any investor, the lessor seeks the highest rate of return obtainable from alternative investments. Expedited revenue recovery is always optimal for the lessor since royalties receivable, as investment assets, generally cannot appreciate in value at a rate equal to the rate of return on alternative investments. The lessor's interests are based on the gross value of the lease, since his flow of revenue is based on gross market values, whereas the lessee's interests are based on the lease's net present value. The gross value of the lease may be static or declining while the net value may be appreciating. In any case, the lessor always has a vested interest in immediate recovery of the natural gas. But if the rate of appreciation of the net value of the lease exceeds the highest alternative rate of return obtainable by the lessee on alternative investments, delay is most efficient from an economic perspective. Hence, the lessor and the lessee have diametrically opposite incentives in terms of lease management.
return.27 Protected by the covenants, the lessor has little vested economic interest in the efficient management of the lease as a capital asset.28 These latter concerns were probably not well understood or acknowledged during the periods in which the implied covenants eventually became part of royalty law. Hence, one must assume that in their original intent, the covenants were never fashioned to be punitive in a way that would deliberately violate the ownership interests of the lessee. But with respect to more modern day interpretations of the implied covenant to market, an implicit respect for ownership claims appears to be much less clear.

As it emerged from early court decisions, the implied covenant to market seemed to raise no major concerns that bore on property rights. The initial ruling by the Pennsylvania Supreme Court bore on the responsibility of the lessee to develop the gas property. The operative language stated that even in the absence of an explicit development clause, "[t]here would of course have arisen an implication that the property should be reasonably developed."29 An 1899 decision offered by the Pennsylvania Supreme Court ruled for the lessor-plaintiff in a suit brought against a lessee to recover annual royalty payments due on each well "in sufficient quantities to justify marketing the same."30 The court instructed the jury that if the gas were produced in paying quantities, the lessee would be obligated to market the gas or provide reason for a failure to do so.31 But the court also stipulated that the lessee was not compelled to market at a loss but only at a "reasonable profit" with the latter being determined by consideration of distance to market and costs of marketing the gas.32 The court concluded that once a well was producing gas, the lessee was required to continue

27. It should be noted that the lessor's quest for the highest rate of return cannot be successful unless the lessee is denied flexibility or latitude in making timing decisions on the lease.

28. The management of the lease as a capital asset necessitates the timing of lease activities so that present value of economic rent is maximized. Achieving this goal is the essence of the economic conservation of the resource, but, in fact, the implied covenants have the effect of dissipating economic rent. Economic rent is dissipated as the covenants impose exploration, development, and production decisions that can be wasteful from the perspective of "economic conservation." The implied covenants impose very real costs on lessees by compelling exploration, development, and production on expedited schedules that may be inconsistent with the efficient management of leases. In this very real sense, covenants have made the lessor and lessees economic adversaries because what is beneficial to one party is detrimental to the interests of the other. By not allowing some latitude in the commencement of these activities, the covenants are reducing the net present value of natural-gas resources.

29. Williams et al., supra note 6, at 12-1, 12-10 (1995) (quoting Stoddard v. Emory, 18 A. 339, 442 (Pa. 1889)).


31. Id. at 55.

32. Id. at 54.
production and sale of the gas for the common benefit of both the lessor and lessee.\textsuperscript{33} In brief, the implied covenant to market emerging from these early court decisions focused exclusively on the lessee's responsibility to search diligently for a market so that the provisions of the lease are realized.

The essence of the original implied covenant to market has been described in the following way: "[It] imposes upon the lessee the duty to use due diligence to market oil and gas produced within a reasonable time and at a reasonable price. The reasonable prudent operator is a businessperson, and will seek to maximize profit. The implied covenant to market requires the lessee to use the diligence of a prudent businessperson in finding a market and negotiating a sale."\textsuperscript{34} On the early history of the implied covenant to market, Judith Matlock, has noted the following:

\begin{quote}
[T]he implied covenant to market evolved from the common practice of lessors to allow the marketing arrangements to be made by the lessee. In the early days of the industry, there were often limited markets for production from a lease and often all of the production was going to the same market anyway. This was particularly true for gas production since, until recently, regulated interstate and intrastate pipelines were generally the sole purchasers of wellhead production and, because of their respective regulated monopoly status, there would usually be only one pipeline in the field or area. It made no sense for both the lessee and the royalty owner to contact the pipeline in the field about a well connect; it made sense for the lessee to do that for both itself and the royalty owner. However, the end result for the royalty was the same as if the royalty owner had taken its production in kind.\textsuperscript{35}
\end{quote}

The implicit rights and obligations under the original implied covenant to market did not mandate, in any way, the collection of the royalty on post-production value added in the absence of an explicit act of exchange such as the granting of deductions for post-production costs. Certainly, under terms of an explicit lease agreement between the lessee and the lessor, the gas can be legitimately valued for royalty purposes inclusive of any form of value added. The value of the gas beyond the wellhead could include value added from marketing or even transportation or processing. Such voluntary agreements, however, would presumably always include a mutually agreeable economic exchange of consideration between the lessor and the lessee. \textit{In the absence of such an act of exchange,}

\begin{flushright}
33. \textit{Id.} at 55.
34. \textit{LOWE, supra} note 6, at 327-28.
\end{flushright}
payment of royalties on post-production value added would not be logical or fair from the lessee's point of view. These possible forms of exchange are discussed further below.

B. The "New" Interpretation of the Covenant and Its Breach of Ownership

The implied covenant to market has prompted litigation over a variety of issues bearing on the marketing of gas. For example, lessors have taken lessees to court over the price received in the sale of the gas and allegations that the lessee has failed to obtain the highest price available on the market. During the 1980s, lawsuits were initiated over the lessee's shutting in of wells because of inordinately low market prices. But the most contentious feature of the implied marketing covenant is the interpretation mandating that the lessee bears all costs associated with gas marketing in arriving at royalty bearing proceeds. The cost of marketing would include the expense associated with placing the gas in "marketable condition." Marketable condition, as the term applies to gas transactions, has been defined as lease products that are sufficiently free of impurities and otherwise in a condition that the products will be accepted by a purchaser under a sales contract typical for the field or area. A part of the problem is that the term "marketable condition" has no universally accepted definition. In some instances it is treated as a market norm and at other times as an explicit engineering mandate. This mandate includes several procedures, all of which add value to the produced gas and are said to be necessary to place a lease product in "marketable condition." The mandate could include the requirement that the lessee bear the following categories of cost: (1) measuring (placing gas in a calibrated chamber under standard pressure to establish volume), (2) gathering (transporting gas through small pipelines from individual wells to some central facility), (3) compressing (the use of compressors to move gas through pipeline systems to a centrally located facility such as a main pipeline or processing station), (4) sweetening (removal of sulfur), and (5) dehydrating (removal of water vapors from the natural gas). Under the contemporary interpretation of the marketing covenant, the value added to the natural gas from these procedures would be royalty bearing, without deductions for the respective post-production costs. In other words, by governmental decree, the lessor is

36. LOWE, supra note 6, at 272-73.
deemed to be the owner of a property, i.e., value added, without any act of exchange to legitimately establish this ownership.

This interpretation of the implied marketing covenant would ostensibly treat several post-production activities as part of production. Understandably, this issue has become one of the most contentious issues facing the gas industry since it directs the lessee to “market gas” at no cost to the royalty owner or lessor. In today’s gas market, this interpretation would impose a royalty on post-production value that is added through marketing, meaning that the lessor is accorded a property right in post-production value added. Part of the problem is that there is an ambiguity in the way that production is defined. Without a clear definition of production, one can arrive at no consistent definition of royalty-bearing proceeds and value added. None of these terms are capable of a precise clarification without a definition of production that reflects fidelity to the respective property rights of the lessee and lessor.

The conundrum of the implied covenant to market can be traced to a critical turn in its interpretation that occurred in 1940. The interpretation of the implied covenant to market remained as described above until Professor Merrill invented an interpretation of the covenant to market that somehow became the authoritative statement on the subject. In a treatise on covenants implied in oil and gas leases, Merrill offered the following comment: “If it is the lessee’s obligation to market the product, it seems necessarily to follow that his is the task also to prepare it for market, if it is un-merchantable in its natural form.” This observation by itself was not particularly unreasonable; however, Merrill went on to declare the following: “No part of the costs of marketing or of preparation for sale is chargeable to the lessor.” By this interpretation, post-production costs of marketing the gas are not deductible in establishing royalty value. Somehow, the courts in several jurisdictions have viewed this perspective on marketing cost sympathetically. The Merrill interpretation of lessee marketing responsibility was the genesis of a new implied covenant or duty to market; it has since been cited as the primary authority on the subject in legal defenses of the implied covenant to market.

39. MAURICE H. MERRILL, THE LAW RELATING TO COVENANTS IMPLIED IN OIL AND GAS LEASES 214 (2d ed. 1940).
40. Id. 214-15. At a later point in his treatise, Merrill excluded from marketing cost the expense of transporting the gas to a distant point of sale. See id. at 219.
41. See, e.g., Garman v. Conoco, Inc., 886 P.2d 652, 659 (Colo. 1994); Sternberger v. Marathon Oil Co., 894 P.2d 788, 799 (Kan. 1995); Wood v. TXO Prod. Co., 854 P.2d 880, 882 (Okla. 1992). The state courts in each of these cases held that the lessee has the implied duty to place gas in “marketable condition” at no cost to the lessor. A similar ruling was made in an earlier decision, California Co. v. Udall, 296 F.2d 384, 388 (D.C. Cir. 1961).
Understandably, the Merrill perspective has not met with universal acceptance principally because it appears to contradict basic principles of logic and fairness. At the time, Merrill defended his interpretation by saying that his view was "supported by the general current of authority."\textsuperscript{42} To Merrill, the "general current of authority" was exemplified by decisions and legal opinions to which he made reference. Subsequent scholarly examination of the cases cited by Merrill, however, reveals little to warrant the characterization of "general current of authority." For example, in a 1972 issue of the Oklahoma Law Review, Richard Altman and Charles Lindberg stated the following: "we reluctantly, in our opinion, conclude the cases [Merrill] cites do not support his premise."\textsuperscript{43} In an earlier scholarly examination of Merrill's declaration on costs of marketing, George Siefkin, writing in 1953, observes,

There are, then, almost no decisions that tend to support Professor Merrill's contention....Nor does the logic of Professor Merrill's argument appeal to me....To my mind it is equally persuasive to insist that the duty to market is confined to the product in the state in which it is produced at the well, and it does not include any duty, at the lessee's sole expense, to increase its value....The implied covenant to "market" undoubtedly includes numerous "at the well" functions,...necessary to bring the gas out of the hole (to "produce" it) and render it available for marketing at the well—to the extent that the gas or oil which comes from the hole constitutes, in its natural state, a marketable product at that time and place. Conceivably this duty might embrace, also, such simple on-the-premises "processing" as placing oil in storage tanks and permitting the law of gravity to withdraw its impurities....But to my mind dehydration, for example, is as far beyond the boundary of the lessee's "marketing" duty as transporting gas to a distant purchaser.\textsuperscript{44}

\textsuperscript{42} Merrill, supra note 39, at 215. Merrill cites the following cases as the "general current of authority": Hamilton v. Empire Gas & Fuel Co., 230 P. 91 (Ka. 1924); Warfield Natural Gas Co. v. Allen, 88 S.W. 989 (Ky. 1935); Clark v. Slick Oil Co., 211 P. 496 (Okla. 1922); Tremont Lumber Co. v. La. Oil Refining Corp., 175 S. 25 (La. 1937).

\textsuperscript{43} Richard B. Altman & Charles S. Lindberg, Oil and Gas: Non Operating Oil and Gas Interests' Liability for Post Production Expenses, 25 OKLA. L. REV. 363, 370 (1972).

\textsuperscript{44} Siefkin, supra note 19, at 199, 201-02. Siefkin makes reference to a process sometimes described as "simple separation." The gas resource to be valued does not necessarily emerge at the wellhead in a "gas form." At the wellhead, the gas resource is frequently part of a hydrocarbon fluid that includes oil and water in addition to gas. But buyers clearly want the oil and gas resources separated. Thus, the fluids must be separated into the respective resource components. It is this procedure that is sometimes referred to as "simple separation." During simple separation, gravity is used to separate the oil and gas. Oil is heavy compared to gas and, hence, settles to the bottom of the tank used for the separation procedure. The relatively lighter
While Merrill's interpretation of the implied covenant to market may have meant one thing in the year 1940, changes in the gas market raise the question of how the implied-marketing covenant is to be interpreted in the year 2001. Concern over the implied covenant to market has been intensified by recent developments in the gas industry arising from changes in public regulatory policy toward the gas industry. These policy changes were prompted by a growing awareness of the economic costs of price controls and regulation of the gas industry. Legislation by the U.S. Congress and a succession of de-regulatory measures by the Federal Energy Regulatory Commission (FERC) decontrolled wellhead prices and established separate pricing of marketing services that were once performed exclusively on a "bundled basis" by the pipeline companies in their buying and selling of natural gas.45 Whereas pipelines were once individually the principal prospective purchasers, marketing institutions have since emerged that offer the producers competitive options in arranging sales downstream of the lease.

Gas producers have adapted to these changes in regulatory policy by altering the way in which gas is marketed. First, smaller producers without affiliated marketing firms have been able to take advantage of previously nonexistent marketing options to move the point of gas sale downstream of the wellhead. In these transactions, the gas producers bear the costs of marketing services, including the costs of finding a purchaser and negotiating the terms of the sales contracts. As emphasized above,
these costs, in general, are not deductible in establishing royalty value. Second, larger gas producers have responded to these policy changes by marketing gas through newly created affiliated marketers. The transactions of the gas-marketing affiliates, however, have raised new questions in the interpretation of the implied covenant to market. Is the royalty to be levied against the first sale of gas made by the marketing affiliate? Are the costs borne by the marketing affiliate to be treated as costs of marketing under the marketing covenant? An answer of "yes" to these questions would mean that the royalty basis would include value added, no part of which has been paid for through any act of exchange between the lessor and lessee; the lessor would bear no costs that would establish any ownership in value added. Hence, many costs associated with storage and aggregation, for example, would be treated as production costs when clearly they are nothing of the sort. A logical and fair demarcation must be drawn between actual production and marketing activities that add value to the gas once it has left the lease.

IV. OWNERSHIP DEMARCATION BETWEEN PRODUCTION AND VALUE ADDED

A. The Significance of the "Wellhead" as the Logical Termination of Production

A logical and fair demarcation between production and the adding of value rests on a clear understanding of the ownership rights of the respective parties. In their famous treatise, Williams and Meyers raise the demarcation issue in the following way:

Royalty clauses...typically provide that some share of production (or of the proceeds or the value thereof) shall be delivered to the lessor or non-operator "free of the costs of production...." Implicit in such provisions and definitions is the assumption that the royalty or other non-operating interests is or may be subject to certain costs, namely, costs subsequent to production. There arises then a question concerning the costs that are to be borne by the operator alone out of his share of production and the costs that the royalty owner may be called upon to share. The question can be posed in a variety of ways, e.g.: (1) when does production cease and other activities begin? (2) What are the costs of production as distinguished from costs subsequent to production? (3) At what place must his share of the oil or gas

46. *Infra* Part V, B explores some of the public policy concerns associated with this royalty-collection practice.
(or its value or the proceeds thereof) be delivered to the royalty owner “free of costs”?

Williams and Meyers emphasize that production generally terminates at the well and that royalty is payable at the well. They then go on to list the costs that are shared by the lessee and the royalty owner. These costs include the following: “gross production and severance taxes; transportation charges or other expenses incurred in transporting [gas] from the wellhead to the place where the buyer takes possession; expenses for treatment required to make [gas] saleable, viz expenses of dehydration; expenses of compressing gas to make it deliverable into a purchaser’s pipeline; and, manufacturing costs incurred in extracting liquids.” The wellhead is also the point of demarcation, as stated by Lowe:

The sale of natural gas, in particular may involve substantial costs after production. Natural gas often cannot be sold at the wellhead, but must be transported by the lessee to a pipeline or to an end user. In addition, natural gas may require cleaning, dehydrating, processing or compressing before sale. Transporting, cleaning, dehydrating, processing and compressing may be very expensive. These processes may also substantially increase the value of the natural gas. Thus the sale price downstream must be “worked back” to the “amount realized” at the well.

Lowe’s basic point can be stated in another way more consistent with the central theme of this article: the basis for royalty valuation will reflect the net difference between all post-production value added and all post-production costs whether these cost arise from processing, transportation, or marketing. The lessor must pay for his share of the value added either by the granting of deductions for costs incurred by the lessee or through an explicit sharing of the costs. In other words, an act of exchange must establish ownership.

But why should the wellhead be the point of demarcation between production and the adding of value? What is that bedrock principle that makes the wellhead the logical and fair point for the valuation of royalties? In his 1953 paper, Siefkin makes the following observation: “In the absence of specific phraseology in the lease compelling a contrary conclusion, royalty with respect to marketed gas is computed and paid on the basis of its market value at the well....That is the point at which the gas is ‘captured’ and title thereto ‘vests’ (regardless of the local law regarding title to minerals in place and

47. WILLIAMS & MEYERS, supra note 6, at §§ 650-650.4.
49. LOWE, supra note 6, at 273.
unaccrued royalty)." In other words, ownership is established once the gas is captured and the place at which this occurs is at the wellhead. The vesting of ownership at the well provides the logical and fair point at which to conclude production has terminated. All additional activity beyond the wellhead involves adding value to the already produced gas. As emphasized throughout this article, the value against which royalties are collected must reflect the established ownership interests of both the lessor and lessee. The implication of this demarcation of ownership is that the lessor has an ownership right to the specified percentage share of production once ownership comes into being. Beyond the wellhead and the separation facilities, gross proceeds are accounted for by the value of the raw gas plus the gross income accruing to storage, aggregation inputs necessary for recovery, simple separation, treatment, transportation, and/or processing. Hence, in the absence of some explicit act of exchange such as the granting of deductions for costs incurred by the lessee, the latter gross proceeds (as measured downstream of the wellhead) are more inclusive than the former since they include income return to resources to which the lessor has no legitimate property claim.

Nonetheless, as the following discussion will explain, through a mutual recognition of the legitimate property claims of the respective parties, the lessor has a means available to establish proper ownership claims in value added. Clearly a price must be paid for such claims. Several types of economic exchange could justify a royalty on the gas-sales price that is the gross of post-production value added; these all involve the lessor making a commitment of additional resources or explicit sacrifice that would entitle it to a share of the incremental value added in marketing the gas. For example, the lease may include a provision by which the lessor bears a portion of post-production costs of marketing and transportation. A similar "grossing-out" could be done for any processing of gas prior to first sale in those clear instances in which the lessor has jointly invested in any enhancement in the value of the gas. The lessor and the lessee, however, may well arrive at other mutually agreeable acts of economic exchange by which the royalty can be attached to a value post-production of the wellhead. By mutual agreement, the royalty rate may be lowered or the lease may be issued with a lower bonus in exchange for the lessee's payment of royalties on a gas value inclusive of value added post-production of the wellhead. But in the absence of any such acts of exchange,

50. Siefkin, supra note 19, at 184 (emphasis added) (citing an extensive list of sources, omitted herein, and noting that many additional authorities are collected within the listed citations).

no logical or fair means exist by which a royalty on value added can be levied. In the post-production phase downstream of the wellhead, all of the incremental royalty income collected by the lessor would properly accrue to the owner(s) of inputs and productive services to which the lessor has no property rights. This rule applies whether or not the resource is a very high quality gas with high market value or a low quality resource with low market value.

B. Conflict between the "New" Covenant and Legitimate Ownership: A Summary

As noted above, the original "implied covenants of gas royalty law" were intended only to clarify the rights and obligations of lessees and lessors. Historically, the implied covenant to market held the lessee to a "prudent operator standard" in which the lessee was obligated to operate in a manner consistent with the common good of both the lessor and the lessee. When viewed as a "standard of prudent operation," the implied covenant to market is, in essence, a criterion of performance aimed at assuring responsible management of the lease and the marketing of the gas. "[It is simply a duty to market gas (or oil) when a reasonable and diligent operator would do so, and in the manner such as an operator would employ." 52 The early interpretation of the implied covenant to market implicitly embraced a logic that was at least not grossly inconsistent with the institution of secure ownership rights.

The contemporary variant of the implied duty to market is not only inappropriate in today's gas market but has never represented coherent or equitable royalty law. The central issue revolves around court-mandated requirements that ignore the structure of property rights implicit in the lessor-lessee relationship. The enforcement of the modern interpretation of the implied covenant to market accords the lessor a share of the value added that is, according to the principle enunciated by Epstein, entirely the property of the lessee. Those claiming that the implied covenant to market mandates royalty valuation inclusive of post-production value added are obliged to buttress their claim with explanation of the attendant property claims supporting such a requirement. 53 Unless the royalty owner shares the post-production cost associated with marketing the gas, he has engaged in no act of exchange to establish additional royalty ownership or equity

52. Siefkin, supra note 19, at 183.
53. Williams et. al., supra note 6, at 12.02(1). The authors note that "except in those situations where specific lease language has been employed to move the point of royalty valuation downstream, the lessor's equity [ownership] has been generally understood to attach to the produced mineral at the wellhead in its natural state."
interest in value added beyond the point of production—the wellhead. Legitimate ownership claims mandate that the royalty must be charged against a value in which the royalty owner is a partial owner. It is this principle of ownership that is notably absent from the modern version of the implied covenant to market as enunciated by Merrill.

V. AVOIDANCE OF ECONOMIC WASTE AND INEFFICIENCY THROUGH THE REQUISITE ACTS OF EXCHANGE

While the preceding discussion acknowledges that the lessor has no ownership claim to economic rent, the subject of rent cannot be ignored in addressing the way in which the royalty basis affects the management of leases. As noted above, the two principle functions of royalties are to share risk between the lessor and the lessee and to capture economic rent. Economic rent has been described as a surplus arising from the fact that for particular reservoirs or fields, the natural-gas price is significantly above all opportunity costs associated with gas production, bearing in mind that this difference between price and cost is dependent upon the lessee's timing of operations on the lease. An important and critical implication of the definition of economic rent is that, in principle, the economic rent can be appropriated or collected through a tax or royalty without affecting lessees' decision making with respect to the exploration, development, and production of the resource. Efforts to capture more than economic rent through royalties would distort and, in some cases, abort efficient resource-management decisions. The contemporary interpretation of the implied covenant to market represents one such effort. The extent of economic rent defines the practical limits of what the lessor can successfully collect through gas royalties without affecting the lessee's management of the resource. But the implied covenant to market relieves the lessor of the obligation to pay for post-production value added through deductions for post-production cost or an explicit sharing of such costs. This failure of exchange means that the "effective royalty percentage rate at the wellhead" borne by the lessee is higher than the rate that would be sustained by the lessee in a royalty collected on the appropriate royalty basis. It necessarily means that, at the economic margin, some undeveloped discoveries will not

54. ROSS GARNAUT & ANTHONY CLUNIES ROSS, TAXATION OF MINERAL RENTS 17, 20-21 (1983). It is important to reemphasize the fact that royalties cannot, in actual practice, be applied in a manner that does not negatively affect incentives to efficiently manage the gas resource. The remainder of the discussion highlights this fact.

55. Id. at 31.
be developed and some already-developed projects will yield lower returns to lessees; economic efficiency and economic benefits are sacrificed.\textsuperscript{56}

A. Ways in which the Marketing Covenant Further Distorts Conservation Decisions

A so called perfect royalty would collect only economic rent—no more, no less; it would allow the lessor to capture economic rent without adversely affecting decision making with respect to management or conservation of the gas resource.\textsuperscript{57} Such a royalty would be essentially neutral in its consequences. As implemented under the implied covenant to market, however, the royalty owner acquires property without having to pay for the right of ownership; royalties on the lessee's value added impose negative incentives that adversely affect economic conservation of the resource in several interrelated ways. First, use of the implied covenant to market to collect royalties on value added aggravates a negative impact of the incentives required for efficient exploration of gas resources. But the implied covenant to market makes this negative impact more severe than would be the case with a royalty properly collected at the wellhead. McDonald offers the following observations on the effects of royalties on the incentive to explore:

\begin{quote}
It is at once apparent that the higher a royalty rate is, the more likely it will result in some discoveries not being
\end{quote}

\textsuperscript{56} In practice, fixed-rate royalties would tend to recover more revenue than would be represented by "economic rent" were it not for the fact that lessees shut-in or discontinue operations earlier than would otherwise be the case, \textit{i.e.}, early abandonment. This fact applies even in those instances in which there is no effort made to collect a royalty on post-production value added from marketing investment by the lessee. No post-production value added, whether created from transportation, processing, or marketing, is part of economic rent. All post-production value added can be created only by the lessee's investments. Any royalty on post-production value added will function as a tax on the lessee and tends to penalize the lessee in considering the recovery of extra cubic feet of natural gas. The net value to the lessee of recovering the marginal cubic volume is diminished or eliminated, which means that more gas remains unrecovered. But as the following discussion will show, this reduced ultimate recovery is only one way in which royalties can reduce the efficiency of natural-gas conservation. Incentives to explore and develop the lease are also adversely affected since the net incremental value to the lessee of all investment decisions will tend to be depressed. The contemporary interpretation of the implied covenant to market tends to intensify the inefficiency associated with fixed royalty rates since it \textit{raises the effective royalty rate as measured at the wellhead}. See Gaffney, supra note 3, at 4; Stephen McDonald, \textit{The Leasing of Federal Lands for Fossil Fuels Production} 100 (1979) [hereinafter Leasing of Federal Lands]; Garnaut & Ross, supra note 54, at 22-28.

\textsuperscript{57} See Garnaut & Ross, supra note 54, at 22. These authors are using the term "tax" as the fiscal tool to capture mineral rents. However, their use of the term "tax" is equivalent to the term "perfect royalty" as used in this sentence.
developed and in the early abandonment of all. This is because a royalty represents a negative cash flow in the evaluation of expected proceeds from development and production. The higher the royalty rate, the lower is the present value of expected net cash flow, ceteris paribus; thus the fewer discoveries that can be economically developed, and the less complete the exhaustion of deposits when economical production can no longer be sustained.  

To repeat the point, the imposition of an additional royalty on value added from marketing investments raises the effective percentage rate of the royalty at the wellhead. The negative effect on incentives to explore and develop that would normally be associated with any royalty are further intensified by the fact that the lessor does not have to exchange a proportionate share of post-production costs for a share of post-production value added.

Second, in general, the imposition of the royalty on the lessee's value added has the undesirable effect of decreasing total ultimate gas recovery below what it would have been in the absence of the royalty. Moreover, less ultimate recovery in the aggregate means that the market price of the gas resource is increased beyond what would be the case in the absence of royalties on value added. As McDonald notes,

> If the royalty rate is fixed, regardless of the cost of minerals production in relation to price, then the royalty affects the margin of land use for minerals extraction and also, to a degree, the price of extracted minerals...a fixed royalty as a contractual rent form generally does not coincide precisely with pure economic rent. It is the nature of the contract, not the nature of economic rent, that causes the rent payment to affect price...[T]otal mineral production...and [its] present value...are both reduced by the contractual provision for a royalty.  

It necessarily follows that an additional royalty on value added results in an additional economic waste in the recovery of the natural gas. The loss of ultimate gas recovery that arises from the royalty itself is further aggravated by the fact that the lessor does not have to exchange a proportionate share of post-production costs for a share of post-production value added. Hence, royalty collection on post-production value added becomes a tax on additional recovery of natural gas.

Third, the royalty on value added from marketing reduces the present value of the gas reservoir to the lessee; this reduction in the value

58. LEASING OF FEDERAL LANDS, supra note 56, at 100.
59. Id. at 36-38.
of the reservoir means that the level of investment in the project is also reduced. The incentive to invest in additional productive capacity in natural gas recovery rests on the prospect of shifting revenues that would accrue in later years to earlier years. In making these investment decisions, the lessee must balance the benefit of earlier revenue recovery with the additional investment outlay that must be undertaken to obtain revenues sooner. The royalty of post-production value added depresses the value of the net-revenue stream that can be recovered by the lessee and that, in turn, means that there is less net benefit to the lessee from additional investment. Less productive capacity means that the scale of recovery operations is reduced. A smaller scale of operations means that the additional incremental cost of recovering additional volumes of natural gas will be higher than would otherwise be the case. In recovery operations, the lessee eventually reaches a point at which there is no additional net benefit to recovering additional volumes of natural gas. It necessarily follows that this point is reached earlier with royalties on post-production value added. Hence, beyond the effect of the legitimate royalty itself, the introduction of a royalty on value added from marketing would induce operators to invest less and to waste some of the gas resource that would otherwise be recovered. A related concern is the fact that royalties on value added create a bias against the development of lower quality gas resources (marginal, lower quality gas deposits which have been discovered will remain undeveloped because the royalty collected on value added makes the expected net present value of projects either negative or too small to warrant development).

Fourth, royalties on value added tend to distort the timing of all activities undertaken on the lease. Lessees face a greater incentive to further delay all activities on the leased land including exploration, development, and production. In the absence of anticipated royalties on value added, lessees would undertake these activities sooner. Also, as noted above, royalties tend to create the incentive for the lessee to terminate recovery sooner than would otherwise be the case. Once production has commenced on the lease, the lessee (or operator) tends to treat the royalty on value added as another component of cost. Hence, abandonment occurs even earlier than would be the case in the absence of anticipated royalty payments on income to which the lessor has established no legitimate ownership claims. These negative consequences could be avoided if the

60. Id. at 38. McDonald notes the following: "[I]t is likely that the introduction of a royalty would induce operators to install less capacity. (With a royalty to pay, less transfer of cash flow from future to present can be accomplished by a given increment to capacity; hence the less profitable an increment would be...)[T]he present value of rent receipts would be reduced and, depending upon the effect of capacity on marginal extraction costs, ultimate recovery might also be reduced." Id. at 38 n.2.
lessor were obligated to exchange the proportionate share of post-production marketing costs for a share of the post-production value that is added from the lessee's marketing investments.

B. Avoidance of Further Allocative Waste because of Ownership Breach

Each of the four concerns outlined above represents the market distortions that would apply to all royalties even if correctly levied against the sales price net of marketing costs. All of the negative conservation consequences of royalties, however, are only magnified and aggravated by royalty collection procedures that tend to include value added that has not been paid for by marketing-cost deductions or sharing. Valuation procedures respectful of ownership rights would represent moves toward minimization of distortions. In practice, respect for ownership rights necessitates that the resource be valued such that the royalty basis is net of all post-production costs inclusive of processing, transportation, and marketing. But again, this stipulation does not mean that value added has been netted out, since value added and post-production costs are not the same entity—though they may roughly approximate each other in most instances. Rather, it only means that the appropriate royalty basis may implicitly but inevitably include some value added but must be net of all costs incurred beyond the wellhead. Hence, distortions normally associated with gas royalty collection are minimized the more narrowly focused the definition of royalty-bearing proceeds and the more complete the granting of deductions for all post-production costs incurred between the wellhead and the point of actual sale.

61. The degree of distortion is directly a function of the royalty rate. The effect of the implied covenant to market is to levy a royalty on value that is inclusive of value added. If one views the raw gas at the wellhead as the royalty-bearing resource, the contemporary interpretation of the implied covenant has the effect of imposing an effective royalty rate above the rate that may be specified in the lease.

62. The deduction of post-production costs may not leave a positive residual of value added. In some instances the difference between post-production value added and post-production costs may leave a net loss. However, the nature of this differential would not be a proper focus of accountants or auditors. As emphasized above, the actual costs incurred by lessees and providers of post-production services will have strongly subjective dimensions since all investments and contracts related to processing, transportation, and marketing may involve significant exposure to market uncertainty. See, e.g., KNIGHT, supra note 1. “These difficulties centre around the fact that costs and receipts cannot be expressed unambiguously in money terms since courses of action may have advantages and disadvantages that are not monetary in character, because of the existence of uncertainty and also because of differences in the point of time at which payments are made receipts obtained.” Coase, supra note 4, at 103.

63. In this discussion, the author is assuming an essential equivalence between the acts of “making deductions,” “granting allowances,” and “netting back.” For the purpose of this discussion, these terms can be used interchangeably since they are all designed to achieve the
The breach of ownership rights inherent in the modern application of the implied covenant to market has allocative implications that extend beyond the economic conservation of the resource. The breach of ownership rights also acts as an impediment to increased efficiency in the marketing of gas resources. The concept of "efficiency" can be most competently defined in terms of a paraphrase of the definition of economic conservation quoted above. As such, efficiency is action designed to achieve the maximum expected net present value of the resources employed by the firm. Such actions can be observed in the gas industry's response to the deregulation that has occurred in recent years. As noted above, the deregulation of the gas industry has induced several structural changes designed to increase the efficiency with which gas is marketed. One of these changes includes the action on the part of some producers to sell or market gas at locations far removed from the wellhead. For other larger firms, the means to increased efficiency has been to market gas through marketing affiliates. The various goals sought in these efficiency enhancing adaptations may include (1) an effort to increase expected net revenues, (2) specialization in resource use, (3) reduction in expected transactions cost, or (4) more efficient management of financial risk. But depending upon the manner in which the implied marketing covenant is applied, these marketing adaptations may result in the collection of royalties on additional post-production value added. The net effect of this breach of ownership rights is to penalize efforts on the part of lessees to efficiently manage all of the resources required to move the gas from the reservoir to the ultimate user. Royalties on post-production value added are an impediment to increased market efficiency.

VI. CONCLUDING COMMENTS

Gas royalties are usually collected as a percentage of gas sales value. A central question arises, however, in the gas royalty valuation process: Should the royalty basis against which royalties are charged include post-production value added from gas marketing in which the royalty owner has no legitimate property claims? Or should the royalty owner be obligated to buy the royalty proportion of value added by granting deductions for post-production marketing costs? Clearly,

same purpose in royalty valuation—the establishment of an appropriate net-royalty-bearing value.

64. Matlock, supra note 23, at 9-3 to 9-4. In this chapter, Judith Matlock makes the case that one of the principal motivations for the emergence of affiliated marketing firms has been the need to manage risk more efficiently. She focuses in particular on the need to "isolate liabilities" in efforts to market gas; the creation of marketing affiliates helps to achieve this objective.
individual lessors and lessees can arrive at explicit lease agreements that provide precise answers to both questions; however, the modern interpretation of the implied covenant to market answers "yes" to the first question and, apparently, "no" to the second.

The problem with this interpretation of the implied covenant is that it is at odds with answers yielded by the established economic institution of ownership rights. The lessor cannot logically or equitably claim more than the proportionate royalty share of the gas produced at the wellhead unless some act of exchange is undertaken. Without the lessor's having somehow shared in the post-production marketing costs, the lessor cannot claim any royalty ownership in post-production value added from marketing efforts.

The contemporary interpretation of the implied duty to market raises concerns over gas resource conservation. These concerns emanate from the ownership problems that arise in attaching a royalty to the value added from placing gas in marketable condition and from marketing the gas. First, any royalty creates an incentive to recover less of the gas resource than would otherwise be recovered. But, second, attaching a royalty to post-production value added only aggravates this problem. A valuable energy resource is wasted and the economic rent associated with natural-gas production is dissipated.