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Confusion About "Change in Value" and "Return on Equity" Approaches to the *Penn Central* Test in Temporary Takings

by William W. Wade

Editors' Summary: In this Article, William W. Wade evaluates the conceptual measurement of economic impact within the Penn Central *test for income-producing properties recently adjudicated in the U.S. Court of Federal Claims and U.S. Court of Appeals for the Federal Circuit. The discussion considers measurement of the denominator of the takings fraction related to* Penn Central*'s parcel as a whole and whether it differs between permanent and temporary takings. He concludes that the Federal Circuit's recent decision to rely on change in value appraisal methods upsets a strong line of precedent that relied on the more appropriate return on equity approach.*

I. Introduction

The *Penn Central Transportation Co. v. New York City*[1] decision created two ironclad requirements for finding a regulatory takings: (1) the *Penn Central* test; and (2) the principle of valuing the "parcel as a whole." The *Penn Central* test dictates that three factors must be examined to reach a decision to pay compensation: (1) the economic impact of the regulation on the claimant; (2) the extent to which the regulation has interfered with distinct investment-backed expectations; and (3) the character of the government regulation.[2]

Penn Central also required that losses be measured against the "parcel as a whole," which simplistically means that claimants cannot petition for reimbursement of the taken element of the property without considering the severity of this loss compared to the claimant's entire investment in the property.[3]

The *Penn Central* test, properly measured and evaluated, serves the function of defining when government action goes "too far" and thereby constitutes a taking, as originally envisioned in *Pennsylvania Coal Co. v. Mahon*.[4] Two of the prongs of the test require use of economics, and those calculations have to be undertaken and evaluated based on standard financial practice. Knowledge of the law is necessary but not sufficient to conduct the *Penn Central* test; knowledge of standard economic practice is equally important.

A 2006 article by the author[5] concluded that while the U.S. Supreme Court has failed to be clear about the economic prongs of the *Penn Central* test, the U.S. Court of Federal Claims and the U.S. Court of Appeals for the Federal Circuit have advanced the framework of the *Penn Central* test and measurement of damages through their decisions. These decisions have clarified how to apply, measure, and evaluate the economic elements of the *Penn Central* test to determine when a compensable taking has occurred. Court of Federal Claims and Federal Circuit cases have incrementally advanced standard applications of good economics in recent years—until the *Cienega Gardens v. United States (Cienega X)*[6] decision, which is the focus of this Article.

II. *Cienega X* Undermined a Standard Approach to Measure the Economic Impact of a Regulatory Taking for Income-Producing Property

Score one for obfuscation of standard finance and economics in regulatory takings cases. The government has argued persistently in temporary regulatory takings cases that plaintiffs' return on equity approach to measure economic impact obscures the true results and that change in value ap-

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1. 438 U.S. 104, 8 ELR 20528 (1978).
2. *Id.* at 124.
3. *Id.* at 130-31.
4. 260 U.S. 393 (1922).
5. William W. Wade, *"Sophistical and Abstruse Formulas" Made Simple: Advances in Measurement of* Penn Central*'s Economic Prongs and Estimation of Economic Damages in Federal Claims and Federal Circuit Courts*, 38 URB. LAW. 337, 345 (2006).
6. 503 F.3d 1266 (Fed. Cir. 2007), *petition for cert. filed*, 76 U.S.L.W. 3471 (U.S. Feb. 22, 2008) (No. 07-1101).

praisal methods should be used. This Article has a narrow objective to evaluate the conceptual measurement of economic impact within the *Penn Central* test for income-producing properties recently adjudicated in the Court of Federal Claims[7] and in the Federal Circuit.[8] This discussion considers measurement of the denominator of the takings fraction (commonly misunderstood as the ratio of value taken to value remaining) related to *Penn Central*'s parcel as a whole and whether it differs between permanent and temporary takings.

A. Background to Cienega X

In its September 25, 2007, decision in *Cienega X*, the Federal Circuit held that the Court of Federal Claims in *Cienega IX*[9] erred by not considering the impact of the regulatory restriction on the property as a whole. Instead,

> the Court of Federal Claims applied a "return-on-equity" approach, considering the income from the project for each individual year as a separate property interest. . . . [T]he court compared the return on equity that the owner received under the restrictions with the return on equity that the owner would have received absent the restrictions.[10]

This conclusion by the Federal Circuit implies that the standard financial tool, return on equity, cannot properly evaluate the economic impact of a temporary regulatory proscription on the use of one's property. Return on equity, a fundamental benchmark of business and investment valuation, is found in every annual report for every company listed on a stock exchange and taught in every college and graduate course of finance. Yet the Federal Circuit decided that this tool is insufficient to evaluate the effect of income losses on the *Penn Central* test for two groups of real estate investors: (1) Cienega Gardens; and (2) Chancellor Manor. Together, these groups own a total of eight apartment buildings originally built as low-income housing with certain government restrictions imposed by the U.S. Department of Housing and Urban Development (HUD), which had guaranteed the loans used to develop the properties.

When it came time for the owners to exit the program after 20 years and convert their buildings to market rents, Congress, concerned about the loss of affordable housing units, acted to stop the conversions.[11] Federal statutes and legal actions that ultimately allowed the conversions to market rents in all but one case caused the eight buildings to incur lost rental income. After the impediments to conversion were removed, the owners brought takings cases against the United States in the Court of Federal Claims seeking just compensation for their losses. *Cienega IX* awarded amounts ranging from $1.5 to $13 million per building. The awards were based on amount of rent lost per unit, number of units, and length of the temporary taking.[12]

B. Government Has Persistently Argued for the Change in Value Approach

To place the Federal Circuit's 2007 decision in context, the reader needs to know that the government argued persistently in these HUD cases that a before-and-after appraisal of fair market value (FMV) of a property best measures loss incurred by the plaintiffs and is the correct approach to evaluate the economic impact prong of the *Penn Central* test. Rejecting that argument, the 2005 decision of the Court of Federal Claims in *Cienega IX* concluded that "the return-on-equity approach best measures the impact of [lost income during the taking] on the plaintiffs. Measuring an owner's return on equity better demonstrates the economic impact [of] temporary takings of income-generating property than a measurement of the change in fair market value."[13] This decision followed the analytic approach settled in 2003 by the Federal Circuit in *Cienega Gardens v. United States (Cienega VIII)*[14] and that the claims court applied to damage estimates in 2004 in *Independence Park v. United States*.[15]

CCA Associates v. United States,[16] subsequently decided January 31, 2007, in the Court of Federal Claims reiterated the appropriateness of the return on equity approach:

> [Return on Equity] best measures the impact . . . on the owners' . . . properties because the alleged taking involves lost streams of income at an operating property, not the physical transfer of a piece of undeveloped property to the government and subsequent return of that property to the owner.[17]

That decision's discussion of extensive case law disavows the change in market value of the real estate including a bedrock citation to *Kimball Laundry v. United States*[18]: "[M]easuring the economic impact by assessing the change in fair market value runs the risk of substantially understating the effect on the owner's property interest."[19] *CCA* concludes the four-page recitation of the law and precedent supporting its decision by upbraiding the government: "In all the circumstances, the government's objections to use of the return on equity approach for measuring economic impact are not well received."[20]

These well-argued decisions from the Court of Federal Claims that implemented the Federal Circuit's *Cienega VIII* decision advanced good economic practice. One would have thought that the government's appraisal approach to lost earnings definitely had no traction.

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7. Cienega Gardens v. United States (Cienega IX), 67 Fed. Cl. 434 (Fed. Cl. 2005); CCA Assocs. v. United States, 75 Fed. Cl. 170 (Fed. Cl. 2007). The government appealed the *CCA* case to the Federal Circuit on August 17, 2007. *See* CCA Assocs. v. United States, No. 2007-5094 (Fed. Cir. Aug. 17, 2007).
8. *Cienega X*, 503 F.3d at 1291.
9. 67 Fed. Cl. 434.
10. *Cienega X*, 503 F.3d at 1280 (citing *Cienega IX*, 67 Fed. Cl. at 475-76).
11. The interested reader can discover a more detailed description of the laws passed to stop conversion of the properties in the author's 2006 article discussed *supra*, note 5.
12. *Cienega X*, 503 F.3d at 1277 n.10 (identifying the amounts awarded at trial) (citing *Cienega IX*, 67 Fed. Cl. at 438).
13. *Cienega IX*, 67 Fed. Cl. at 475.
14. 331 F.3d 1319, 33 ELR 20221 (Fed. Cir. 2003).
15. 61 Fed. Cl. 692, 34 ELR 20090 (Fed. Cl. 2004).
16. 75 Fed. Cl. 170 (Fed. Cl. 2007).
17. *Id.* at 195-96 (internal citations and quotation marks omitted).
18. 338 U.S. 1 (1949).
19. *CCA Assocs.*, 75 Fed. Cl. at 197 (citing *Kimball Laundry*, 338 U.S. at 7).
20. *Id.*

C. Federal Circuit Cienega X *Decision Re-Muddies the* Penn Central *Water*

Surprisingly the government received better traction in the Federal Circuit, which vacated and remanded the *Cienega IX* for a new *Penn Central* analysis in its September 25, 2007 *Cienega X* decision. To understand how this came about, one must join *Cienega X*'s view of *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*,[21] temporal parcel as a whole with misconceptions about financial valuations as these relate to the *Penn Central* test. Although decided nearly 30 years ago, regulatory takings doctrine remains uncertain about how to apply the *Penn Central* test, and whether the application should differ between permanent and temporary takings. *Cienega X*'s reversal of the carefully developed analytic approach to the *Penn Central* test laid out in *Cienega VIII* and *Cienega IX* re-muddies the water and provides strong motivation for the Supreme Court to define how to measure and evaluate the three prongs of the *Penn Central* test.[22] Central to this is clarification of measurement of economic impacts and the distinction, if any, between temporary and permanent takings in valuing the parcel as a whole.

Cienega X relied on *Tahoe-Sierra* to invoke "the impact on the value of the property as a whole [a]s an important consideration [in a temporary taking], just as it is in the context of a permanent regulatory taking."[23] The decision then addressed the question of whether valuation of the lost income from use of the plaintiff's property or valuation of the change in real property value measured before and after the taking period is the more appropriate measure of both the *Penn Central* test and damages.

Invoking *Tahoe-Sierra* is misplaced for two reasons. First, that decision dealt with the very narrow question of whether a temporary moratorium on residential land development constitutes a taking of property under the *Lucas* theory. In *Lucas v. South Carolina Coastal Council*,[24] the Court decided that the property owner had been permanently denied "all economically beneficial or productive use of land."[25] Subsequently, this has been described as a total or categorical taking, requiring no further analytic consideration of owners' losses.[26] *Tahoe-Sierra*, in fact, denied the *Lucas* taking and concluded that the facts of that case would be "best analyzed within the *Penn Central* framework."[27] *Tahoe-Sierra*, relied upon in *Cienega X*, provides no guidance on how the *Penn Central* test should be applied for income-producing properties.[28]

Second, in contrast to *Lucas*, where economic wipe-out was adopted as a given, the HUD line of cases key on measurement of the economic impact prong of the *Penn Central* test where the alleged taking affects income losses from income-producing properties. No income losses are in the *Tahoe-Sierra* record. Consequently, *Tahoe-Sierra* provides no instruction as to how to measure and benchmark losses from income-producing properties or what the parcel as a whole might be where other than fee simple raw land is at stake.[29]

The *Cienega X* decision struggles to find the value for the parcel as a whole, citing the *Keystone Bituminous Coal Ass'n v. DeBenedictis*[30] decision in search of the basis for the all-important denominator of the takings fraction:

> Our test for regulatory taking requires us to compare *the value that has been taken from the property with the value that remains in the property*, [and] one of the critical questions is determining how to define the unit of property "whose value is to furnish the denominator of the fraction."[31]

Subsequent decisions that cite to *Keystone*'s fateful "value taken to value remaining" fraction fail to recognize the empirical fact of *Keystone* that no value taken was associated with the parcel comprised of the mandated support coal for the mines that initiated the law suit. The owners did not show deprivation of any economically viable use of that parcel. No lost earnings were at issue in *Keystone*. The support coal had no demonstrable economic value prior to the regulation; the regulation cannot be said to have deprived the mine owners of any economic value. The decision correctly ruled no taking because the stick at issue had no demonstrated economic value,[32] not because of any reduction in the taking fraction. No analysis in the case evaluated a takings fraction to determine if it had any determinative merit. The value of the *Cienega IX* stick—lost earnings—was not zero and its importance to the integrity of the entire bundle is paramount. The Keystone mine owners possessed full value for their operations before and after the mal-alleged taking.

Thus, the *Cienega X* panel's reliance on *Keystone* and *Tahoe-Sierra* is misplaced. The panel reverses a line of cases that brought clarity to the *Penn Central* test. Not surprisingly, Judge Pauline Newman, who was on the *Cienega VIII* and *Cienega X* panels, had reasonably harsh words for

21. 535 U.S. 302, 331, 32 ELR 20627 (2002).

22. Otherwise, the government will continue to advocate as does former Deputy City Attorney for San Francisco, Andrew W. Schwartz, who argued for the city of San Francisco in San Remo Hotel Ltd. Partnership v. City & County of San Francisco, 41 P.3d 87, 32 ELR 20533 (Cal. 2002): "The only workable system of land use regulation is to limit compensation to those categorical, bright line cases of a complete economic wipeout or a physical occupation. The Supreme Court's efforts to find a middle ground have resulted in confusion and inconsistent decisions. . . ." Andrew W. Schwartz, *Reciprocity of Advantage: The Antidote to the Antidemocratic Trend in Regulatory Takings*, 22 UCLA J. Envtl. L. & Pol'y 1 (2004).

23. *Cienega X*, 503 F.3d at 1281.

24. 500 U.S. 1003, 23 ELR 20297 (1992).

25. *Id.* at 1015.

26. Steven J. Eagle, Regulatory Takings §7-3(a) (3d ed. 2005).

27. *Tahoe-Sierra*, 535 U.S. at 321.

28. *Penn Central*, 438 U.S. at 124.

29. *Tahoe-Sierra*, 535 U.S. at 332 ("Logically, a fee simple estate cannot be rendered valueless by a temporary prohibition on economic use because the property will recover value as soon as the prohibition is lifted.").

30. 480 U.S. 470, 17 ELR 20440 (1987).

31. *Cienega X*, 503 F.3d at 1281 (quoting *Keystone Bituminous*, 480 U.S. at 497 (emphasis added)).

32. *Keystone Bituminous*, 480 U.S. at 493. The decision cites to *Andrus v. Allard* at various places: "[W]here an owner possesses a full 'bundle' of property rights, the destruction of one 'strand' of the bundle is not a taking because the aggregate must be viewed in its entirety." Andrus v. Allard, 444 U.S. 51, 65-66, 9 ELR 20791 (1979). The petitioner's lawyers brought this takings case with no economic damages, and with only a gobbelty-gook response to the question about the economic effects of the Subsidence Act on their clients: "An assessment of the actual impact that the Act has on petitioners' operations 'will involve complex and voluminous proofs,' which neither party [is] currently in a position to present." *Id.*

her colleagues. "This panel has no authority to revoke our prior decision [in *Cienega VIII*]."[33] "[Considering the] creative theories propounded by my colleagues for redetermining whether a taking occurred ignore the law of this case . . . I must, respectfully, dissent."[34]

III. Cash Flows Are the Essential Attribute of Investments

Cienega X is a radical back-step in the application of economic analysis to regulatory takings. The reliance of *Florida Rock Industries, Inc. v. United States (Florida Rock V)*[35] and *Cienega VIII* on recoupment and return on investment as benchmarks for takings demonstrates that contrary to *Cienega X*, return on equity approach is able to evaluate the economic impact of changes to temporal segments of cash flows on the property as a whole.[36] In sidestepping the return on equity precedent from *Cienega VIII*, the *Cienega X* majority appears to be swayed by the government's claim that "[b]ecause the trial court ignored the 'change in value' approach, and instead relied upon the 'snapshot' approach, its conclusions were economically unreliable and legally unsupportable."[37]

A. Cienega VIII *Extended* Florida Rock V*'s Partial Takings Analysis to Temporary Takings*

The analysis of *Florida Rock V* provides quantitative answers to two straightforward questions related to a change in the federal regulatory regime that prevented Florida Rock from mining on its property: (1) Has the value of the property been significantly diminished? (2) Do revenues after regulatory change recoup investment in the property? The first question was deemed "not dispositive" and the second question was answered by comparing returns on investments to discover that restricted returns barely recovered one-half of the owner's invested capital.[38]

Cienega VIII extended *Florida Rock V*'s partial takings analytic approach to temporary takings.[39] *Cienega VIII* follows *Florida Rock V* in deciding that diminution in value of the property is not dispositive of the magnitude of the economic impact; diminution alone is not sufficient to reveal whether economic viability has been destroyed.[40] *Cienega VIII* confirms that economic viability must be measured with reference to both recoupment of investment and return on investment in order to evaluate a standard financial performance measure.[41] *Cienega VIII* makes clear that profit, meaning recoupment of the investment plus a reasonable return, is a factor to consider in assessing economic impact of a regulation.[42]

Investment-backed expectations, whether "distinct" in *Penn Central*[43] or "reasonable" in *Cienega VIII*,[44] must be shown to be frustrated to establish a regulatory taking. This means that returns must be demonstrated to erode economic viability of the investment in the whole property after imposition of the unanticipated change in regulations.[45] Economic decision rules play an obvious role in determining when a regulation undermines investment-backed expectations sufficiently to award compensation, i.e., when the regulation "goes [so] far" that it crosses a relevant threshold. *Cienega VIII* defines that threshold akin to the way that economists and financial practitioners define it—in terms of the relation between the expected returns from the investment and the opportunity cost of the investment.[46] A relevant threshold is not a bright line. Rather, different circumstances move the line and empirical details and assumptions must be sorted out. Ad hocery has nothing to do with this expert analytic research.[47]

Cienega VIII conformed case law to match economic practice: when the return on investment is less than the opportunity cost of the owners' investment, economic viability is frustrated. So far, so good. The relevant question raised in the government's appeal briefs in both *Cienega X* and *CCA* is whether the temporary losses of income during the periods of taking for each property eroded financial returns to the owners' equity investments during the period of the takings sufficiently to frustrate economic viability not only during but beyond that period.

The government's brief in the *CCA* appeal misconstrues the *Keystone Bituminous* takings fraction as informing how to measure economic impact and answers the question by arguing that only the "change-in-value test" is "the proper

33. *Cienega X*, 503 F.3d at 1291-92 (Newman, J., dissenting).

34. *Id.* at 1295 (Newman, J., dissenting).

35. 45 Fed. Cl. 21 (Fed. Cl. 1999) clarified conditions under which a partial reduction in value ("partial taking" of plaintiff's property) would justify payment of damages. *Florida Rock V* established "a logical framework [to evaluate a partial taking] based upon well-established rules and principles . . . a stable framework," to undertake the balancing called for in the *Penn Central* three factor balancing test. *Id.* at 39.

36. *Cienega X*, 503 F.3d at 1277.

37. Brief for Defendant-Appellant at 40, Chancellor Manor v. United States, No. 02-5052, 33 ELR 20222 (Fed. Cir. June 12, 2003).

38. *Id.* at 38.

39. This section truncates to a few words a 2006 article by the author, which traces the application of economic methods through the Federal Circuit and the Court of Federal Claims since 1999—before *Cienega X*. *See* Wade, *supra* note 5.

40. *Cienega VIII*, 331 F.3d at 1319.

41. *Id.* at 1333.

42. *Id.* at 1319.

43. *Penn Central*, 438 U.S. at 124.

44. *Cienega VIII*, 331 F.3d at 1345-46 (citing Ruckelshaus v. Monsanto Co., 467 U.S. 986, 1005, 14 ELR 20539 (1984); Loveladies Harbor, Inc. v. United States, 28 F.3d 1171, 1177, 24 ELR 21072 (Fed. Cir. 1994)).

45. Kaiser Aetna v. United States, 444 U.S. 164, 175, 10 ELR 20042 (1979), changed "distinct" to "reasonable" for no discernable purpose. This change confounded subsequent courts' views of reasonable expectations vis-à-vis plaintiffs' notice of regulatory prohibitions with reasonable expected return on investments. Recent cases have followed the logic of *Cienega VIII*, applying reasonable investment-backed expectations (RIBE) in context with notice and frustration of investment-backed expectations under the economic impact prong. *Cienega VIII*, 331 F.3d at 1355. Arguably, the original language meant to measure the economic impact on the claimant by the interference with investment-backed expectations—which is exactly what *Cienega VIII* did. Prof. Steven Eagle argues that the language change set the stage for the fundamental reassessments of investment-backed expectations. Steven J. Eagle, *The Rise and Rise of Investment-Backed Expectations*, 32 Urb. Law. 437, 442 (2000).

46. *Cienega VIII*, 331 F.3d at 1319. Economists and financial practitioners speak of the opportunity cost of capital, meaning the return from the next best opportunity foreclosed by the investor's decision. Returns from the investment at issue must be sufficient to attract and hold capital or the money will migrate to the next best opportunity.

47. *Penn Central*'s fateful language is invoked at 438 U.S. at 124. "In engaging in these essentially ad hoc, factual inquiries. . . ." Perhaps too much emphasis has been placed on "ad hoc" and not enough on "factual" in courts' misunderstandings of financial underpinnings of the *Penn Central* test.

measure of economic impact."[48] This is an error to be demonstrated in the remainder of this Article.

B. Cash Flows Are the Essential Stick of the Bundle of Rights

The government has been honing the change in value argument for some years despite repeated opposition testimony and admonishment in the Court of Federal Claims. In its post-trial brief in *Cienega IX*, the government argued: "The change-in-cash flow model has numerous flaws. First, because plaintiffs' model only seeks to measure the change in cash flow, it examines only one stick in the bundle of rights. . . . Second, the model fails to consider the properties' overall value."[49] In the Federal Circuit, the government argued: "First, the trial court's economic impact approach makes no effort to measure the economic impact over the durations of the alleged taking. . . . Second, the trial court's economic analysis only considers one of the 'rights' in the bundle held by plaintiffs-appellees."[50]

The government's remedy for these purported short-comings of the return on equity approach is labeled the "change in value" approach, which is described as the ratio of the "value of the . . . property encumbered by regulation [to] the value of the same property not so encumbered . . . . Because the change in value approach considers everything that affects the property's value, it provides the most reliable measure of a regulation's impact upon the property."[51]

The government fails to recognize that the cash flow from an investment in an income-producing asset is the essential stick in the bundle of rights. John Maynard Keynes, who may be the godfather of modern economics, defined investment as the right to obtain a series of prospective returns during the life of the asset. Keynes emphasized the expected cash flow or profitability of investments as the key motivating determinant for investment.[52] Any discussion of whether a temporary regulatory taking has occurred is pure sophistry without measurement of the change in cash flows of an income-producing property. Like Old Marley being dead for seven years, you must understand this or the rest of the story makes no sense.[53]

C. Cienega X *Confuses Methods to Value Tangible Assets and Intangible Assets*

Cienega X loses sight of the necessity of cash flow and misconstrues the economic and legal precedents for valuation of income losses at several places. Citing to *Rose Acre Farms, Inc. v. United States*,[54] the court stated: "We note that in a temporary taking situation, there appears to be at least two ways to compare the value of the restriction to the value of the property as a whole so as to determine if there has been severe economic loss."[55] The court further explained:

> First, a comparison could be made between the market value of the property with and without the restrictions on the date that the restriction began (the change in value approach). The other approach is to compare the lost net income due to the restriction (discounted to present value at the date the restriction was imposed) with the total net income without the restriction over the entire useful life of the property (again discounted to present value). Neither approach appears to be inherently better than the other, and on remand the Court of Federal Claims should consider both as well as any other possible approaches that determine the economic impact of the regulation on the value of the property as a whole.[56]

While the opinion is partially correct that two ways (at least) apply to value property, valuation based on FMV appraisals apply to real property mostly where property transfers are at issue. Real property valued from the perspective of buyers and sellers makes sense for real property transactions. Plaintiff in a partial or temporary takings case has lost income from the use of his property. Plaintiff's factual basis for that income matters to the valuation, not an average value from selected property market comparable sales. A partial or temporary takings involves no transfer of the property. So the FMV of recorded property transactions is irrelevant where income losses are at stake and easily measurable with cash flow models.

Citing *Rose Acre Farms* as a case that shows either that the cash flow method is wrong or that profitability is not allowed in takings computations is mistaken.[57] The failing of *Rose Acre Farms* is not what valuation method was applied in the Court of Federal Claims. Rather, the issue was that the trial court reached a decision for the plaintiff with no reliance upon the *Penn Central* test. The plaintiff's expert economist demonstrated substantial revenue losses due to foregone egg production, but never benchmarked the losses to any denominator value, the necessary comparison to evalu-

48. Brief for Defendant-Appellant at 41, CCA Assocs. v. United States, No. 2007-5094 (Fed. Cir. Aug. 17, 2007). The government further asserted that the *Cienega IX* analysis "reflects a profound misunderstanding of the economics of income-producing real estate, and is inconsistent with settled law on measuring the economic impact of an alleged regulatory taking. . . . Under binding precedent, the trial court was required to apply the change-in-value test and reject the return-on-equity approach." *Id.* Valuation textbooks cited below at note 59 disabuses the first claim and precedent-setting *Cienega VIII* disputes the binding precedent claim.

49. Defendant's Response to Plaintiffs' Post-Trial Brief at 13, Chancellor Manor v. United States, No. 97-39 (Fed. Cl. Mar. 16, 2005).

50. Brief for Defendant-Applicant at 41-42, Chancellor Manor v. United States, No. 2006-5052 (Fed. Cir. June 2, 2006).

51. *Id.* at 46.

52. John Maynard Keynes, General Theory of Employment, Interest, and Money 135, 225 (Harcourt, Brace & World 1936). If the economic literature is unknown to the reader, the Appraisal Institute's Chapter 20, "The Income Capitalization Approach," begins with the following sentence. "Income-producing real estate is typically purchased as an investment and from an investor's point of view earning power is the critical element affecting property value." Appraisal Institute, The Appraisal of Real Estate 471 (12th ed. 2001).

53. Charles Dickens, A Christmas Carol (N.Y. DK Pub. 1997).

54. 373 F.3d 1177 (Fed. Cir. 2004).

55. *Cienega X*, 503 F.3d at 1282 (citing *Rose Acre Farms*, 373 F.3d at 1185).

56. *Id.*

57. Prof. John Echeverria pushes this error to its limit in his 2005 article, *Making Sense of* Penn Central, 23 UCLA J. Envtl. L. & Pol'y 71, 182 (2005) ("Regulation might undermine the profitability of a particular business enterprise, but not necessarily have any adverse effect on the market value of the land on which the business is located. . . . [I]t is difficult to understand how to analyze the significance of impacts on profitability."). Taking the income stream from the use of property by an unforeseen change in regulation is functionally equivalent to expropriation of real property and not dissimilar from a tort that might have the same effect. Measuring and benchmarking the change in returns against standard textbook performance hurdles is not difficult for trained practitioners. If these financial measurement approaches enjoyed wider understanding in takings jurisprudence, the *Penn Central* test might begin to make a lot more sense.

ate frustration of investment-backed expectations. The trial court found a taking of plaintiff's eggs and awarded damages. The Federal Circuit reviewed the case on appeal by the government, citing to both the plaintiff's and government's testimony on losses, and determined succinctly: "This analysis was insufficient . . . . [N]either the testimony nor the economic data cited by the trial court appropriately gauge the severity of the economic impact of the regulations on Rose Acre."[58]

Appraisal approaches may accurately measure a change in market value for real property, but they do not accurately measure economic losses to the owner of income-producing properties. The change in market value approach will produce incorrect estimates of economic damage because the before and after appraisal of market value is aimed at the wrong stick in the bundle of property rights—the tangible asset in lieu of the income stream from the use of the property. Tangible assets represent the value of the real estate and improvements; intangible assets represent the value of the use of the property. The use of the real property enables the owner to earn economic benefits or profits. By virtue of focusing on the value of the land and improvements rather than the use of the property, appraisals cannot measure accurately economic damages arising from interruptions to the use of the property.

The theoretically preferred way to value income losses during a temporary taking of income-producing property is to calculate the change in profits using a cash flow model taught in first year graduate finance courses.[59] Common sense and a number of case decisions point out that tangible asset (real property) values can increase or decrease in value during the temporary taking for a number of reasons unrelated to the lost income at stake. What is lost are the cash flows from the use of the real property during the time period of the taking.

The Supreme Court decided three cases a long time ago that confirm that lost earnings are what matter when an income-producing business operation is interrupted. Justice Reed contrasted returns with the change in market value in the 1951 *United States v. Pewee Coal*[60] case: "Market value, despite its difficulties, provides a fairly acceptable test for just compensation *when the property is taken absolutely.* But in the temporary taking of operating properties, market value is too uncertain a measure to have any practical significance."[61] In 1950, the Court ruled: "[T]he better measure [for temporary possession of a business enterprise] is the operating losses suffered during the temporary period of government control."[62] *Kimball Laundry* reached the same conclusion the year before *United States v. Commodities Trading Corp*[63]:

> [I]f the difference between the market value of the fee on the date of taking and that on the date of return were taken to be the measure, there might frequently be situations in which the owner would receive no compensation whatever because the market value of the property had not decreased during the period of the taker's occupancy.[64]

In spite of the clear legal precedent, abundant expert testimony in the various HUD trials, and ample textbook support, the government persisted in introducing before and after property appraisals to measure income losses when FMV by definition fails to measure the true economic impact of income losses to the plaintiff. The latest upbraiding of the government on this point is found in the 2007 *CCA* decision: "measuring the economic impact by assessing the change in fair market value runs the risk of substantially understating the effect on the owner's property interest."[65] Citing to *Cienega VIII*, the decision noted: "The Federal Circuit concluded that the trial court's findings of fact, which relied on the lost-profits analysis of the plaintiffs' expert, were an appropriate foundation for the analysis of 'economic impact,' and it rejected the government's diminution-in-value approach."[66]

Where income losses are at issue, textbook economics and Supreme Court rulings agree that the methods of valuation must examine the effect of lost earnings on the plaintiff's profitability after the tort or take. Evidence of before and after real property value is irrelevant.

IV. Whether the Taking Is Physical or Regulatory Does Not Govern Valuation Method

Strangely, *Cienega X* misconstrues that whether the taking is physical or regulatory governs the expert's choice of valuation method. The decision concluded that the use of the return on equity approach in *Kimball Laundry* did not endorse its use of a regulatory takings case: "[T]he Supreme Court in *Kimball Laundry* applied the return on equity approach when determining just compensation and not when determining whether a taking had occurred in the first place. Second, *Kimball Laundry* is a physical takings case and thus does not govern the regulatory takings context."[67]

Besides the fact that its use in the path-breaking *Florida Rock V* decision undermines this argument,[68] whether *Kimball Laundry* was a physical takings case in no way governs the choice of the correct financial and economic measurement approach in *Cienega X*. Expert opinion in a tort or taking case is guided by the correct theories from the expert's discipline. Where income losses are the issue, permanently or temporarily, due to a tort or take, cash flows must be measured with and without the lost-causing disruption. *Daubert* standards expect no less than that the expert demonstrates that her analytic technique has been tested in actual situations and peer reviewed.[69]

58. *Rose Acre Farms*, 373 F.3d at 1185.
59. *See* Van Horne, Financial Management and Policy ch. 20 (12th ed. 2004); Appraisal Institute, *supra* note 52; Shannon Pratt et al., Valuing a Business ch. 9 (4th ed. 2000).
60. 341 U.S. 114 (1951).
61. *Id.* at 119-20 (Reed, J., concurring) (emphasis added). The brief discussion of the three Supreme Court cases is an abridgement of and no substitute for the extensive explication in *CCA*, 75 Fed. Cl. at 200-04.
62. United States v. Commodities Trading Corp, 339 U.S. 121, 123 (1950).
63. 339 U.S. 121 (1950).
64. Kimball Laundry v. United States, 338 U. S. 1, 7 (1949).
65. *CCA Assocs.*, 75 Fed. Cl. at 196.
66. *Id.* at 196 n. 35 (explaining *Cienega VIII*, 331 F.3d at 1344).
67. *Cienega X*, 503 F.3d at 1281-82.
68. At least it undermines it logically, if not legally from a precedent-setting perspective.
69. Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579, 23 ELR 20979 (1993).

Whether *Kimball Laundry* dealt with a physical taking or used the return on equity approach only in calculating damages is irrelevant to the expert's choice of appropriate valuation method. The analytic approaches used in Supreme Court cases cited above apply to temporary takings of income by regulation just as they did to physical interruption of businesses fifty-plus years ago.

Equally wrong is the *Cienega X* court's conclusion that

> the Court of Federal Claims awarded Chancellor Manor $10.5 million in damages—significantly more than the property's appraised value of $7 million. See *Cienega IX*, 67 Fed. Cl. at 477 n.54. Logically speaking, the government cannot take more than what the plaintiffs actually possess. A determination that damages exceed the value of the property should be indicative that the [cash flow] method of computing damages is flawed.[70]

The $7 million appraisal value was a 1993 value; the $10.5 million dollar damage estimate was a 2004 value because 2004 was adopted as the benchmark date for trial. The equivalent inflation-adjusted 1993 damage value is approximately $3.7 million to match the 1993 $7 million appraised value in the case. As damages must be converted to nominal dollars at the time of payment, the *Cienega X* panel was misled simply by the adjustment of values to time of trial dollars. The court reached a faulty judgment that the cash flow approach is flawed when the only issue is the classic "apples and oranges" problem[71] applied to money values at different time periods.

To paraphrase language in the decision, a determination that *Cienega X* confounded time values of money with valuation method should be sufficiently indicative that its views on change in value versus return on equity are flawed.

V. Return on Equity Is the Best Measurement of Frustration of Investment-Backed Expectations

The relevant question raised by *Cienega X* is whether the return on equity method ignores the *Penn Central*'s bedrock parcel as a whole principle as the benchmark for frustration of distinct investment backed expectations (DIBE). This section shows that return on equity satisfies *Penn Central*'s two requirements while the change in value approach does not even evaluate the effect of income losses on frustration of DIBE.

Cienega X states:

> The [Court of Federal Claims] did not consider the impact of the regulation on the value of the property as a whole . . . . The Court of Federal Claims found that this restriction of income during a discrete annual period was a significant financial detriment to the owners. Thus the return on equity approach treated the income from the property for each individual year as a separate property interest from the value of the property as a whole.[72]

The Court of Federal Claims followed the Federal Circuit's *Cienega VIII* decision, which applied an annual return on equity approach to a temporary taking similar in all respects to the properties of *Cienega IX*. The decision relied on the annual rate of return during the years of the temporary taking and showed that for each of those years and therefore for the entire period of the taking, returns were sharply lower than the alternative yields of even a very safe U.S. Treasury bond. In *Cienega VIII*, the court of appeals compared the annual rate of return on the owners' real equity in their properties to 8.5%.[73]

Why now does the Federal Circuit ignore its precedential decision and believe that impact on parcel as a whole has not been demonstrated? What has changed?

A. Change in Value Is Not an Appropriate Measurement of Income Losses

The only change is that the panel in *Cienega X* accepted the government's change in value approach over the return on equity method. The government still asserts in its recent *CCA* appeal brief that the Court of Federal Claims again erroneously rejected the change in value approach. Their brief carefully explains that their expert based his change in value upon the property's appraised market value at the date of the taking assuming conversion to market and assuming a delay to the end of the taking period. The brief describes their expert's result as the present value of the difference in the two income streams, which represents the change in market value due to the lost income. The government concludes that the resulting delay in converting to market rents devalued the property no more than 18.1%.[74]

A fatal problem undermines their conclusion that this is the correct and only way to measure the economic impact of the delay on the plaintiff. By the brief's description, the denominator of the taking fraction against which the loss is measured is the market value of the property but for the delay. The capitalized value of the income stream is, indeed, one way to estimate the market value of real property.[75] The critical point missed by the government, however, is that the market value of the property may be comprised of two parts: the owners' equity plus debt owed to the lender. The govern-

70. *Cienega X*, 503 F.3d at 1282 n.13 (internal citation omitted).

71. This Federal Circuit example is not the first time that "apples and oranges" have misled a decision in a takings case against the United States. In Walcek v. United States, 49 Fed. Cl. 248, 33 ELR 20045 (Fed. Cl. 2001), the court ruled that "plaintiffs' use of inflation adjustments in their computations suffer from what Justice Oliver Wendell Holmes, in another context, called '[t]he dangers of a delusive exactness.'" *Id.* at 267. The changing epochs of high and low inflation that encompassed Mrs. Walcek's investments in property between 1957-1976, when money was worth something, and returns received later, after the Vietnam War ran up inflation, required adjustment of all dollars to a common metric that fairly measures the real returns foreclosed by the regulation against investments. The decision concluded that the regulated current value of the property was worth 300% of the original cost and found no taking. The decision cited but excluded government inflation indices used in all sorts of applications to adjust dollars of different years to a common metric. Professor Echeverria in his 2005 article, *see* Echeverria, *supra* note 57, considered this approach to measuring economic impact one of two "most accurate and fair approaches," labeling it the "cost-basis approach." The other being the "with and without" regulation approach, which is a technically more correct designation to "before and after" appraisals. Nowhere does the article mention the return on equity approach, which casts doubt on whether the article, in fact, makes sense of *Penn Central*.

72. *Cienega X*, 503 F.3d at 1277.

73. *Cienega VIII*, 331 F.3d at 1342.

74. Brief for Defendant-Applicant at 41-43, CCA Assocs. v. United States, No. 2007-5094 (Fed. Cl. Aug. 17, 2007).

75. Actually this method estimates the investment value of the property, which may or may not coincide with market values at the time of the appraisal. Momentary market supply-and-demand forces can influence market comps, or credit market conditions such as those rampant in 2008 unrelated to the earning ability of the asset at issue.

ment overlooked the effect of leverage to reduce owners' return on equity substantially more than 18.1%.

Leverage works up and down. Debt on commercial property may be as much as 75%. The amount of CCA Associates debt is unknown to me. Nonetheless, the correct financial measure of the denominator value is owners' equity against which to benchmark the owners' income losses, which are captured in the numerator of the takings fraction. A decline of 18% of market value likely will extinguish an economically viable rate of return to equity when debt is excluded from the denominator. Comparing the present value of the net income but for the taking and the present value of the delayed net income to owner's equity is the correct measure of the takings fraction.

The fatal flaw with the government's approach is the same problem identified with *Keystone*'s takings fraction. The value after compared to the value before, or the percent decline of value after, yields no financial decision benchmark. For example, following the government's approach, the values for one of the properties in the *Chancellor Manor v. United States*[76] case show that the complex had a present value of $4.0 million due to the lost of income compared to $8.35 million but for the temporary taking: a 52% decline.[77] The government might argue that a 52% decline does not support a taking because 52% is not large enough.[78] However, the 52% decline allows no financial decision rule, or in the language of Florida Rock V, is not dispositive.[79]

Present Value Returns v. Equity		
Owners' Equity	Market Rents	Restricted Rents
$6,268,004	$8,354,147	$4,006,068

Notice that when the present value of the net income with market rents ($8.35 million) is benchmarked against the owners' equity value ($6.3 million), the returns are larger than equity (taking fraction >1), which proves that the apartment complex would be a good investment but for the delay; with the regulatory delay, returns do not recoup the equity (taking fraction <1).[80] Failure to recoup investment supported the *Florida Rock V* decision for the petitioner. The values shown on the table are calculated with the owners' opportunity cost of capital, 14%. So, strictly speaking, the loss of income causes earnings discounted at 14% to be insufficient to recoup equity and earn 14% return on investment.[81]

Where income losses are at stake, owners' income and owners' equity are the relevant concepts to measure and compare. The return on equity approach does that. The change in value approach does not. It obscures the measurement of returns to investment and allows no financial evaluation of how much is too much—just as the Court of Federal Claims has said in the *Cienega IX* and *CCA* cases. The value of the property before and after is not at issue; the value of the lost use of the property is the relevant and essential stick to consider in a temporary takings case.

B. Cienega VIII*'s Approach to Calculating Return on Equity Over the Period of the Taking Yields a Measure of Economic Impact to the Parcel as a Whole*

The relevant question raised by *Cienega X* is whether the return on equity method ignores the *Penn Central*'s bedrock principle of parcel as a whole. Accepting for the moment *Tahoe-Sierra*'s segmentation of time as an attribute of parcelization akin to some physical partitioning of land, did *Cienega VIII*'s original measurement of the reduction of returns during the period of the taking provide an incorrect benchmark for diminution of the parcel as a whole?

An answer to this question was contained in the author's expert report admitted at the *Chancellor Manor* trial (which was consolidated with *Cienega IX*).[82] The report provided both the annual rate of return for the years during the period of the taking based on *Cienega VIII* and the internal rate of return. The following excerpt from the report explains the *Cienega VIII* approach:

> Table 3B shows the results keyed to "a returns-based analysis" found to be "more suitable [for a going concern] than one based on diminution in value" in *Independence Park* (at p.19). *Cienega VIII* compared the original allowable annual dividends for the period during the taking to the equity to conclude that restricted rents yielded a trivial return on equity. Return on equity during the taking period measured as shown on Table 3B governed the Courts' decisions in *Cienega Gardens* and *Independence Park*. Clearly, the results show that plaintiffs' returns are significantly reduced during the period of the taking.[83]

76. No. 02-5052, 33 ELR 20222 (Fed. Cir. June 12, 2003).

77. Values discussed come from the author's files in the *Chancellor Manor* case. Values cover the life of the project including losses until units were rented up to market values.

78. *See* Walcek v. United States, 49 Fed. Cl. 248, 271-72, 33 ELR 20045 (2001). The decision reviewed existing precedents and determined that as a factual matter, courts were highly unlikely to fund a regulatory taking under *Penn Central* unless there was at least an 85% diminution in value.

79. Permanent takings cases tend to examine whether petitioner can still earn a reasonable return from the remaining parcel of his land. If, for example, a goldmine is on the remaining 50% of the land, earnings would be little impaired. In contrast, directly taking one-half of the earnings from an income-producing property is different from denying use of one-half of the land where substantial value remains with the owner.

80. Present value calculations are undertaken with owners' hurdle rate of return. This means the ratio of returns to invested equity must be greater than one, proving that the returns hurdles distinct or RIBEs held by the owner. See Wade, *supra* note 5 (note 100), for more about hurdle rates, or one of the cited textbooks, *supra* note 59.

81. This Article is not intended to discuss the nuances of discount rates. The actual internal rate of return discussed below in IV.B. shows that the restricted scenario only earned 3.4%. So, government rebuttal that, say, 8.5% would yield a different outcome would be a moot point.

82. Chancellor Manor v. United States, No. 97-39 (Fed. Cl. Mar. 16, 2005), exh. PCM 469.

83. *Id.*

Table 3B: Reduction in Book Return on Equity due to LIHPRHA

Property	HUD-Restricted Returns	Owner's Equity	Book Return on Equity	Investors' Cost of Equity	Diminution in Value
Oak Grove	$29,123	$4,158,140	0.70%	14.00%	95.0%
Rivergate	$28,415	$6,268,004	0.45%	14.00%	96.8%
Chancellor Manor	$29,879	$3,693,073	0.81%	14.00%	94.2%

The table above represents the return on equity for each year during the period of the taking because the restricted returns did not change. The period of the taking for the Chancellor Manor properties was determined at trial to be 45 months for Oak Grove, 29 months for Rivergate, and through 2044 for Chancellor Manor, which committed to a 50-year contract before the regulation changed to allow the HUD properties to leave the low-income housing program. The law established in *Cienega VIII* is that economic impact and damages are measured only over the period of the taking. For two Chancellor Manor properties, this eliminated continuing losses after leaving the program that had accrued for several years. While these losses were excluded from the calculations used in the trial court's analysis, which affected the reported values of the numerator of the takings fraction, the government argued that the denominator should be benchmarked to the appraised value of the property taking into account its entire useful life. This is a fundamental mismatch.

The change in value method has no relevance to the *Penn Central* test where lost earnings are at issue. Another standard tool of finance addresses the government's concern that a few years of reduced income may not erode value sufficiently to amount to a taking when the entire temporal period is considered. The question becomes: Does the economic impact of the temporal segment (the period of the taking) with virtually nil returns to owners' equity accurately measure the economic impact on the property as a whole, considering time beyond the taking period?

The financial benchmark called internal rate of return (IRR) used in standard cash flow models, which is a variant of the annual rate of return calculation, definitively answers the question of economic impact to the property as a whole. The evidence introduced in *Chancellor Manor* provided the following explanation of this approach:

> The financial measure called the internal rate of return (IRR), a decision tool that calculates the yield on the investment over time, provides added useful information. (*See* Van Horne, Financial Management and Policy, 12th ed., p. 22.) Table 5 shows the calculated IRRs for the three properties. Market rates and restricted rates are shown. IRRs are shown to be near or above cost of equity [assumed to be 14% in Wade's analysis] under market conversion and sharply reduced due to LIHPRHA. Under HUD-restricted returns, Chancellor Manor shows negative returns, which means it will never recoup its investment. The other two properties earn substantially less than their opportunity cost of equity.[84]

Table 5: Effect of LIHPRHA on Internal Rate of Returns

	Market Returns	Restricted Returns
Oak Grove	13.6%	2.3%
Rivergate	14.9%	3.4%
Chancellor Manor	14.4%	-3.0%

The IRR captures the cash flows of an investment over the entire life of the project, or in the language of takings cases, "parcel as a whole" if temporal segmentation is a valid economic construct. The two properties whose conversions were delayed for 45 and 29 months evidence internal rates of return of 2.3% and 3.4%, less than safe bank interest and less than the benchmark used in the cases of 8.5% to represent the alternative of investment in a Treasury bond. These returns reveal that, indeed, financial viability is eroded. The sharp reductions under the restricted scenario shown on the first table for each property reveal that the near-in losses due to the temporary actions by Congress to keep the properties in the low-income housing program are not offset by outyear market earnings. DIBE is frustrated and a taking is proved. The Chancellor Manor property was stuck in the housing program; its long-term returns will never recoup owners' equity at the time of taking.[85]

Ultimately, whether the annual rates of return established by the Federal Circuit in *Cienega VIII* accurately reflect the economic impact to the properties measured without segmentation of time (parcel as a whole) is an empirical determination. The length of the taking, the difference between market rents and restricted rents during the period of the taking, the length of the period of transition to market rents after the taking ends, and the number of rental units determine the outcome. IRR measures annual earnings over the life of the project with and without the delay in conversion to market rents. Effectively, this tool does exactly what the government claims it wants to accomplish: measure the effect of the delay on financial viability of the owners' investments in the properties. The government's empirical approach, to appraise the value of the real property with and without the regulation, is the wrong tool aimed at the physical buildings rather than the lost income.

84. *Id.*

85. Additional information in 2007 about the Chancellor Manor property revealed a positive 2.6% return on equity taking account of a government incentive omitted from the analysis in 2004. The numbers change, but the conclusion does not: 2.6% return on owners' equity over a 50-year contract is not a viable return on investment.

IRR is the correct approach and complementary to the *Cienega VIII* return on equity approach. IRR addresses the government's concerns. Both are focused on investment and cash flow—and not before and after appraisals.

C. The Relevant Parcel Is the Investment in the Regulated Property

The IRR method accurately reflects the fact that invested capital at risk has a time value, which, of course, is why banks charge interest on loans and pay interest on deposits—to equilibrate the value of the repaid money in the future to the value of the current money. Time values of the money during the period of the taking are accurately measured not with property values, but with the change in cash flows through time. For the properties described above, losses near term are never made up by market rents in the out years.

The time value of money differentiates temporal segmentation of the parcel as a whole per *Tahoe-Sierra* from physical segmentation. Land parcels might be segmented horizontally into the left or right, north or south acreage; or vertically into the air rights above, or mining rights below.[86] Temporary taking of cash flows, however, removes the near term returns from the commercial activity and returns the cash flows at the end of the useful life of the project. These dollars are not fungible. *Tahoe-Sierra*'s temporal segmentation fails to account for time value of money during the temporal segment taken. Returning the use of the property after some taking period does not return the same property. The time segment of the lost use has gone to the end of the useful life of the commercial activity.

Time value of money causes the returns to be devalued annually by the amount of the owner's opportunity cost of capital, e.g., if 15% were the proven lost rate of return, a three year regulatory taking would devalue the delayed cash flows by 52% $[(1.15)^3 - 1)]$. Thus, taking a dollar now and returning it in three years is not just compensation. Computing the loss in real property value as argued by the government in *CCA* at 18.1% over the three years, everything else equal, would substantially understate the opportunity time value loss of the owner's expected returns.

Time values of investments at risk in temporary takings cases reveal that the relevant parcel is the amount of the investment, which is the same as the denominator in the takings fraction. Whether the taking is a partial taking or a temporary taking, the economic questions imposed by the *Penn Central* test entail measurement of economic impact and frustration of DIBE. For a temporary taking, these benchmarks only can be evaluated with reference to the effect of the delay of commercial returns with reference to owner's investment in the property.

VI. *Cienega X* Has Undone Competent Measurement and Evaluation of the *Penn Central* Test

The *Penn Central* test, properly measured and evaluated, serves the function of defining when government action goes "too far" and thereby constitutes a taking, as originally envisioned in *Pennsylvania Coal*.[87] Two of the prongs of the test entail economics and those calculations have to be undertaken and evaluated based on standard financial practice. Knowledge of the law is necessary but not sufficient to conduct the *Penn Central* test; knowledge of standard economic practice is equally important. Court of Federal Claims and Federal Circuit cases incrementally advanced standard applications of good economics in recent cases—until *Cienega X*.

The decisions of the Court of Federal Claims and the Federal Circuit discussed in this Article defined, measured, and evaluated the economic underpinnings of partial takings and temporary takings between 1994 and 2007, from *Florida Rock V* to *CCA*. Cases discussed in this Article infused good economics into the framework of the *Penn Central* test and clarified how to measure and evaluate economic variables, notably return on investment, to determine frustration of DIBE. In doing so, these courts conformed legal practice to standard economics and finance. *Cienega X* has undone 13 years of judicial wisdom based on faulty understanding of financial practice. In a manner akin to the decision in *Walcek* mentioned above, impaired understanding of economic theory misguided the decision.

Until *Cienega X*, the Court of Federal Claims and Federal Circuit, guided by economic practitioners, applied economic valuation methods and formulas to elucidate the language and format of the *Penn Central* test. To achieve good public policy, the line of cases prior to *Cienega X* needs to become the fabric of broader jurisprudence to inform legal practitioners and jurists. The implications of the decision are broader than the plaintiffs' losses in *Cienega IX*.

Cienega X's remand for "a new *Penn Central* analysis under the correct legal standard"[88] requires, first, recognition of the correct economic valuation standard. Where income losses and time values of those losses are concerned, change in fair market value of the real property is a moot point. The internal rate of return is a sufficient tool to evaluate both economic prongs of the *Penn Central* test explicitly taking account of both income losses and the investment in the property as a whole.

86. For more discussion on physical relevant parcels, see John E. Fee, *Unearthing the Denominator in Regulatory Takings Claims*, 61 U. Chi. L. Rev. 1535 (1994) and Steven J. Eagle, *Unresolved Issues in Regulatory Takings and the Protection of Private Property Rights*, §VII, CLE International Conference on "Regulatory Takings: New Thoughts on the State of the Law," Feb. 23, 2007 (Tampa, Fla.).

87. 260 U.S. at 393.

88. 503 F.3d at 1291.