CVM VS. ECONOMIC IMPACT: SUBSTITUTES OR COMPLEMENTS?

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I. Introduction

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Can a "ferocious" critic of arts economic impact (EIM) studies, who has labeled them a "fashionable excess," and called instead for more extensive use of alternatives such as contingent valuation (CVM) studies develop some belated sympathy for their continued use? Can something positive even be said about "naïve" economic impact (NEIM) studies that make the most basic error of failing to distinguish between plausible "net injections" of new economic activity into a region (e.g. via tourist spending) and mere "redistributions or diversions" of existing economic activity (e.g. via resident and other local sources of spending)? Is there some merit after all to identifying the "pecuniary externalities" common to all economic activity that are so clearly conceptually inferior to finding the "marginally relevant real externalities" that would provide clearer guidance to enlightened public policy? The surprising answer is a grudging "yes," but surprising only to someone unappreciative of the refrain: "familiarity breeds contempt."

The simple truth is that increasing analytical familiarity with any one of the possible approaches to measuring the "value" of cultural events, organizations or historical treasures will render one more sympathetic to the other alternative approaches.

Identifying the glaring weaknesses of short run spending impact analysis (especially as it might be applied to public policy-making) is important but deceptively incomplete. Much more challenging is determining whether those spending study inadequacies are more or less glaring than the survey based methods of contingent valuation studies (especially in light of the relative costs of conducting such alternative studies).

And as applied to public policy, it is clear that neither approach (even if deriving "accurate" measures), adequately compares the derived value of "X" to the comparative values of all other potential uses of tax dollars (e.g. if the median per person CVM of a theater is $15, no compelling claim on the public purse could be made without identifying the per person CVM of all other possible uses of tax funds – an effort that is at least imperfectly made in many CVM studies by inquiring in some form about budget constraints and about "sacrifices elsewhere"). The lack of such comparisons across competing possible claims for public support in EIM studies has been even more glaring and notorious.

In addition, both approaches are subject to serious aggregation anomalies where extending the results of one study to similar cases can imply absurd results (e.g. extrapolating the derived local economic impact of, say, five "important" local organizations to all organizations in the entire local economy can more than exhaust the entire local "gross domestic product"). CVM studies, at least as applied to environmental and wildlife issues, have at times generated even more dramatic inconsistencies.

If one thus assumes that both approaches have fundamental weaknesses (certainly as guides to public policy), how might one use both together so as to generate potentially offsetting adjustments that could better approach a "true valuation?" Could both approaches be used somewhat like business valuation methodologies whereby alternatives such as the "discounted earnings," the "asset-based," the "multiple of earnings before interest and taxes," and the "guideline company" approaches are used as "reality" checks on each other. Alternatively, assuming that each approach could measure what it claims to measure with total accuracy, what is the correct analytical relationship between the results obtained by those different approaches?

II. Alternative Typologies: A Summary

Imagine that there is a totally accurate magnitude of the "real" economic value (RV) of a cultural resource (e.g. a symphony orchestra in a particular metropolitan area, A). One approach to measuring that real value is to conduct a survey of a sample of the population of area A so as to determine their individual (and by extension aggregate) maximum willingness to pay (WTP) for the cultural resource rather than see it disappear from the region (i.e., using the contingent valuation methodology, CVM). Alternatively, one might attempt to determine the contribution of the cultural asset to the local economy (i.e., using an economic impact methodology, EIM) as measured in personal income, jobs or total output (with the most accurate answer focusing on at least the short run reduction in the "size" of the local economy, most often measured as the total dollar value of "output," if the cultural asset were to be eliminated).

As a matter of pure categorization, there are five general relationships between the real value, RV, and the CVM determined value and the EIM determined value. All can be specified by the values of the coefficients α and β in the equation:

1. $RV = \alpha\ (CVM) + \beta\ (EIM)$

   The five possible versions of this equation in terms of $(\alpha\ ,\ \beta\ )$ are:

   (1a) (1,0) or (0,1)

   (1b) (1,1)

   (1c) (1,0)

   (1d) (0,1)

   (1e) $(\alpha\ ,\ \beta\ )$; $\alpha = f$(specific variables), and $\beta = f$(specific variables)

While it might be most plausible to expect $0<\alpha, \beta<1$ (which will be the case if there is some interdependence in the correct measurement of CVM and EIM as discussed below), it could be the case that $\alpha, \beta>1$. That case would occur if it were known that either CVM or EIM systematically understated the "true" value of cultural assets, so that some upward adjustment would be necessary.

It is useful to first clarify how past criticisms of the use of EIM fit into this typology. The relevant question is "are such critiques consistent with case (1c), which applies a 'zero weight' to any EIM result?" Note that while there have certainly been similarly brutal critiques of the CVM approach that would be potentially consistent with case (1d), where the weaknesses of CVM are deemed so fundamental and incapable of correction that the weight on any resulting value should always be 0 (i.e. $\alpha = 0$, for any value of CVM), that possible case is deemed sufficiently weak so as to be ignored in this analysis.

Trine Bille-Hansen's CVM study of the Royal Theatre in Copenhagen is commonly cited as one of the early applications of the more formal and technical CVM to the arts (and will discussed in more detail below). It is thus of interest that her case against the "innumerable so-called economic impact analyses" is more pragmatic and limited than one might suspect. She notes that such "short-term economic effects of cultural activities are not a sound argument for public subsidy to the arts, **as the alleged benefits may be no larger than if other public supported activities had been initiated**" (p. 2, emphasis added). She then observes that "this would only be the case if, for example, the cultural activities attract a lot of tourists," which she then argues is not typically the primary purpose of cultural activities, so that "it seems much more relevant to use CVM to estimate the economic value of cultural activities" as providing "enriching experiences for the citizenry."

This is clearly not an argument for case 1c above, where the weighting coefficient on the EIM result, β, should be 0 while $\alpha = 1$, so that we only use CVM to value the arts. It is instead an argument that in most, but certainly not in all cases, the correctly derived EIM value may be close to \$0, so that β (EIM) = \$0 even when $\beta = 1$. Note that the further complaint (highlighted above for emphasis) that EIM cannot be a reliable guide for public resource allocation, because it inadequately considers all alternative claims upon tax revenues, begs the question of just how adequately CVM solves that same problem. As noted above, while CVM attempts to clarify the budget constraint and the opportunity cost issue, unless one can provide a fairly comprehensive "sliding scale contingent ranking" of other relevant claims for public support, this weakness is shared by both methodologies. Certainly, in the arts case, no such comparative ranking has been done, and given the cost of "correctly" applying the CVM (especially if compliant with NOAA guidelines), it is unlikely to be done using that approach as well.

This Bille-Hansen "pragmatic" perspective is, in fact, fully consistent with my own condemnations of the excessive use of EIM in the arts (and elsewhere). While sometimes interpreted as a total condemnation of EIM, my case against such studies has been more limited and based on three critical points: (1) many studies have, in fact, been prone to substantial measurement error (primarily, but not necessarily biased upward) since they failed to correctly apply "sophisticated" EIM techniques; (2) by stressing the "export-base model," utilizing EIM as a case for further public sector arts support was doomed to failure not only due to the conceptual weaknesses of export-based economic growth models, but more pragmatically since the arts will simply fail in most cases to "score well" when compared to other "firms" and economic sectors. Thus, arts proponents should stop emphasizing the ubiquitous "pecuniary" externalities common to all economic activity and attempt to measure (even very imperfectly) economic benefits more uniquely related to the arts sector. And (3), the field of economics was being poorly served by EIM since such

studies were contributing to the confusion regarding the proper use of important principles and analytical distinctions vital to both economics and coherent policy-making. Thus, EIM had become "a parody of economic analysis."

However, it should be clear that none of those arguments deny the possibility that more defensible EIM studies could be conducted, or that for some regions, cultural events and institutions do indeed generate significant incremental economic activity that cannot be ignored in a full analysis of the economic impact of the arts. In fact, it is obvious that, since any sane resident of New Orleans (not directly involved in the parades) has long ago learned to limit their direct exposure to Mardi Gras, that particular "cultural celebration" is not a good example of Bille-Hansen's observation that "the primary purpose of cultural activities is not to attract tourists, but to provide enriching experiences for the citizenry."

Thus, these EIM critiques refer in large part to the likely magnitude of the properly derived EIM in specific cases (or to their misuse as applied to public policy-making, which is **not** a problem limited solely to EIM). Only if EIM results were always totally unreliable, or were incapable of enlightening us in any way as to the "true value" of cultural assets would case (1c) clearly apply such that $\beta = 0$ in equation (1).

A final clarification is also helpful prior to a more extended analysis of the relationship between EIM and CVM. It is often argued that EIM tries to measure the "private pecuniary benefits" while CVM tries to measure the "public and externality benefits", so that CVM is automatically more relevant to a defensible case in favor of some magnitude of collective financing, since it directly speaks to the issue of free-riding and non-appropriable benefits. Otherwise stated, as applied specifically to rational public subsidization (in contrast to "merely" the accurate measurement of the total benefits of cultural and other assets outside of a political context), one could use this distinction to argue in favor of case (1c) and a zero weight on any EIM valuation ($\beta = 0$), since even if an accurate EIM study yielded large economic benefits, those benefits should still be ignored in a rational debate about subsidization.

However, this "public good" vs. "private good" distinction is only partially correct and potentially misleading. An example like the Olympics might appear too unique to offer general lessons. However, some essential points can be easily made focusing on, for example, the 1996 Atlanta Summer Olympics. The Olympic Games as with all other "mega-events" such as Super Bowls (and on a smaller scale most other cultural festivals and the "founding" of new cultural institutions) require an enormous effort by a relatively small group of individuals, who make quite substantial tangible economic sacrifices to have a small probability of success in winning the right to host the games (in the Atlanta case, Billy Payne engaged in an utterly lonely initial crusade with nearly unanimous local disbelief in his "Olympic dream"). Assume that in 1988 it could have been determined with reasonable accuracy that over the seven year period 1991-1997 there would be an expected $5.062 billion increase in "regional" economic activity (an average of $723 million per year), if Atlanta were to get the Games.

How can the economic resources be found to engage in the quest for this "pot of gold" (including compensating for the substantial opportunity cost of time)? The literature on "rent dissipation" as applied by Gordon Tullock and Richard Posner (especially in the antitrust context of the social costs of monopoly) would argue that those capable of eventually appropriating such "rents" are likely to expend productive resources up to the full value of such prospective rents (in their view creating a form of economic inefficiency, at least in the context of monopoly strategies and government regulation).

In the case at hand, there is no need to characterize such expenses as socially inefficient. It is only necessary to recognize that there will be massive free riding that will limit the degree of "rent dissipation" (i.e. expenditure of resources to obtain the "prize"), because while it is known that $5.062 billion in tangible economic benefits will indeed be received somewhere in the local economy (as represented by more jobs, additional personal income, and larger measured local output), the actual recipients are known only quite imperfectly (in contrast to typical Posner examples where the benefits from market manipulation are arguably much more concentrated and the potential beneficiaries easier to identify).

If we ignore for the moment any "non-user" benefits linked to regional pride and prestige, such tangible economic benefits might seem to be a poor candidate for quasi-public-good status. That is, such benefits are not the classic case of a quasi-public good in which simultaneous consumption is possible due to limited "crowding," or the inability to exclude "non-payers" (e.g. a type of exclusion exists in the sense that to be eligible for these "producer" as opposed to "consumer" benefits, one would have to at least qualify for jobs that are closely linked to the hospitality sector or the construction sectors, or were willing to take the risk of starting a new business, e.g. a real estate business linked to the rental of homes to Olympics visitors, or a retail operation with a prime location close to major sports venues).

But there is clearly a significant "real" externalities problem that could potentially lead to non-provision of the good (hence "marginally relevant") if a way is not found to limit the free-riding of non-payers regarding the substantial initial investment expense necessary to have a chance to host the Games and make the community eligible for the potentially sizeable economic rewards. A likely reflection of this problem is the almost universal public sector financing of such efforts in all countries other than the United States, where often bizarre commercialization is an inevitable result of the "American model" (compare the Barcelona and the Sydney Games to the Atlanta Games, all of which provided great sport, but quite different ambiance).

What would a CVM study have captured if it had attempted to determine the willingness of Atlanta (and Georgia) residents to pay for this investment in obtaining the Games? Surely, the WTP results would partly capture the expected direct use value of those planning to attend the sporting and related events, as well as those who would pay something for the "option" of doing so. There might be measurable "existence" value in anticipating a reduction in world-wide confusion between Atlanta and Atlantic City, or even a kind of "bequest" value in leaving one's children the "legacy" of the "Atlanta Games" (or as much of the press coverage indicated, the "infamy" of Atlanta commercialism; it is similar fears of the adverse consequences of hosting the Games that often leads to sporadic but vehement local opposition around the world in potential host cities).

But who could deny that any such "valuation" would have some direct link to the anticipated more tangible economic rewards of the event? Would not a very real component of the "bequest" motive of a parent of a 13 old year old child be the possibility that that child could possibly "maneuver" into a position to be a direct beneficiary of the higher income and expanded job opportunities (and related training) that the Games would provide? And why limit "option" value to pure consumption options rather than "production" options (which by generating higher anticipated income will in fact expand consumption options more generally conceived)?

Interestingly, this direct relationship between CVM value and EIM value is hardly hypothetical – it is directly incorporated into (or argued to be a desirable component of) many CVM studies. Portney

(*Journal of Economic Perspectives*, 1994), in calling for a more symmetric consideration of the costs and not just the benefits of regulations designed to save engendered species (as one example), specifically argues that "an unusually thorough analysis might occasionally include the (generally temporary) loss of, or reduction in income of the workers whose jobs would be lost as a result of the regulation" (p. 13). Simply multiply this argument by –1 for the case of short run (even temporary) increases in the income of workers whose jobs would be gained as a result of expanding a cultural (or other) event, and it is clear that "an unusually thorough" CVM study would have some interdependence between the CVM and the EIM valuations. And this is not just a "desirable" component of CVM studies – it is an actual component of some (perhaps most) studies. For example, in exploring the "non-use" value of the Royal Theatre, Bille-Hansen specifically included the following question (p. 23):

"Do you think that the Royal Theatre has value for people other than those who go there, because it has a significance for the country's cultural level, **attracts tourists** or for other reasons" (emphasis added).

Clearly, any answer to this question, including any potential specific willingness- to- pay responses in expanded questions of this type, will not be independent of the respondent's own evaluation of the expected EIM benefits. And if a "full information" approach were to be taken to the description of the cultural asset (such as the Olympics), informing the respondent that a study had estimated that there would be $X of "tangible" additional local economic activity would seemingly be required. Such information would hence have a potentially significant effect on the willingness-to-pay answers, especially if that economic impact figure were presented in approximate per capita terms and there were a significant anchoring bias (as we know has been the case in previous applications of CVM to cultural assets, and elsewhere).

In summary, any fair assessment of the weaknesses of the EIM approach to valuation must clearly go beyond a one-sided identification of the weaknesses and potential anomalies of that methodology. A more balanced assessment must consider the element of "truth" contained in such studies, as well as the likely interdependence between an alternative such as the CVM approach and the EIM approach, not to mention a more balanced appreciation of the significant weaknesses in the CVM approach itself. It is important to appreciate that even vehement criticisms of EIM were not typically consistent with the overly simple argument that β should always equal 0 in equation (1), implying that EIM should play no role in cultural good valuation.

III. The Relationship Between CVM and EIM: Important Polar Cases

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In further exploring the properties of equation (1) assume firstly that there is no error in accurately measuring either the CVM value or the EIM value. That is, for the CVM, all biases and errors linked to ordering, anchoring, embedding, information, strategic behavior, sample composition and survey design etc. have been eliminated. Similarly, for the EIM, all biases and errors related to identifying "net injections"

vs. "spending diversions" (including the role of the cultural asset in actually motivating non-local tourist visits), ancillary spending by non-local direct consumers, immediate "leakages" to non-local vendors (such as "profit repatriation"), the accurate "multiplier" capturing the interdependency among local sectors of the economy, etc., have been eliminated.

With totally accurate CVM and EIM measurement, the following possible cases apply:

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Perfect (or "Pure") Substitutes ("PS"): Case (1a) from Section II

In the case of the two methodologies being perfect substitutes: (α ,β) = (0,1) or (1,0), meaning that either the CVM or the EIM approach is fully capable of accurately measuring the RV, and that they are both independently "correct." Note that in its "ideal" form this would imply that both methodologies are capable of measuring the same "dimension" of RV, so that including both of them would clearly involve double-counting. That might be called the "strong" form of perfect substitution.

If we relax for the moment the assumption of total accuracy in EIM measurement, there may be a "weak" form of perfect substitution, in which the EIM approach (or more correctly a so-called "naïve" EIM approach, "NEIM," that itself is methodologically flawed but still potentially useful) can serve as a proxy for the "correct" CVM valuation. That proxy value can either serve as a "perfect" substitute for the "correct" CVM valuation, or only a "partial" substitute (if, e.g. the EIM or NEIM valuation only approximates the "true" CVM valuation). Note that in the "partial" substitution case, if it could be determined that, say, the NEIM value is generally 20% higher than the "correct" CVM valuation, the weight on that NEIM valuation in the equation for the real value RV would not be 1 (β = 1), but instead would be .833 (β = .833). The partial substitutes case then becomes, in terms of (α , β) in equation (1): (1,0) or (0, .833).

Perfect (or "Pure") Complements ("PC"): Case (1b) from Section II

In the case of the two methodologies being perfect complements: (α , B) = (1, 1), meaning that an accurate measure of the RV requires that both the CVM measured value and the EIM measured value be included and summed to obtain the RV. Note that this implies that CVM and EIM measure two important, but totally different "dimensions" of the RV, so that there is no double-counting as a result of summing both valuations.

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Note that, of course, in both of the "accurate" cases (but most likely in the perfect complements case 1b), the dollar valuation resulting from EIM or CVM studies could be $0 regardless of the coefficient weights that apply to those dollar valuations. This is most likely in the case of a totally local cultural event or organization with no "export" dimension so that the "correct" measure of EIM = $0, even if this measures a totally different dimension of cultural value than that measured by CVM, so that β = 1 in equation (1).

The pure complements case is consistent with viewing the total economic value of a cultural asset as made

up of separate component parts, such as:

2. Total Real Value (TRV) = (CVM = Consumption value including all use and non-use values) + (LRG = increases in local productivity and long run economic growth and development) + (EIM = increases in short run net local economic activity)

Or more simply:

(2') TRV = CVM + LRG + EIM

Of course, a true cost-benefit analysis would also require subtracting costs such as operating and capital costs, and any applicable environmental, congestion, public safety and other "ancillary" costs. Conceptually identifying and measuring such costs, especially if one becomes "creative" in identifying the implicit, not just the explicit opportunity costs, presents a real challenge. However, unless such costs vary systematically with the use of either CVM or EIM (which is unlikely), their inclusion would not affect the issue at hand, which is to analyze the relationship between CVM and EIM in determining at least "gross" if not "net" total value. If one further simplifies (2)' by assuming both (a) that the long run growth LRG value is $0, and (b) that there is no inherent overlap or interdependency in the concept of "consumption value" and "economic impact" value, then TRV = CVM + EIM, and we have the pure complements case.

The "pure complements" assumption is made by Eric C. Thompson in "Contingent Valuation in Arts Impact Studies," where he argues that the results of a CVM study of the arts in Kentucky should simply be added to the results of an EIM study of the arts in Kentucky to obtain the more accurate "economic impact of the arts." While this is one of the very few examples where there was a "comparable" CVM and EIM study performed of the same cultural assets, the simple summation of the two results is actually problematic in this case for two reasons. (1) Since the $21.8 million value derived from the CVM study was based on valuing a 25% reduction of the arts in Kentucky, while one presumes that the $22 million derived from the EIM study was based on the "total" size of the arts in Kentucky (not the adverse effects of a 25% reduction), there is a "mechanical" error in simply adding both total values together. If one makes the simplifying (and not implausible) assumption that a 25% reduction in the size of the arts sector in Kentucky would proportionally reduce its economic impact, the comparable EIM value would be .25 x $22 million or only $5.5 million. Thus, while the weights α and β would both remain 1 as in the perfect complements case, the EIM dollar value that is multiplied by 1 should only be about ¼ the total value derived in the study.

The second and more important reason (2) why the Kentucky results do not automatically imply that the "true" economic impact of the arts is about double what an EIM study alone would have determined, is related to the magnitudes of the derived impacts. It is a fascinating result that the EIM study generated an economic value of $22 million (i.e. nearly identical to the $21.8 million in the CVM study). This at least suggests the possibility of a more complex relationship between the two methodologies than is captured in the pure complements case

(assuming that any "correction" for the 25% factor discussed above were to leave the results unchanged). In fact, this striking result might even suggest that we have already found an empirical example of CVM and EIM as perfect substitutes for the "real" valuation of cultural assets. For example, if each valuation were equally accurate in measuring the total real economic value of the arts in Kentucky, the simple summation of the two values would clearly erroneously double-count that real value.

It might seem implausible that this "pure substitutes" case could occur, but stylized examples presented below will show circumstances in which at least the "weak" form of pure substitution need not be an odd case (although requiring the use of otherwise undesirable "naïve" economic impact models, "NEIM," as identified above). By exploring the sensitivity of those results to changes in such factors as community demographics, plausible ratios of non-user to user values, proxies for the relationships between observable total expenditures and consumer surplus, variations in the resident/tourist mix of users, and variations in the proportion of the total local population likely to be a "user," a better understanding might be obtained regarding how to properly weight the results of CVM and EIM studies, as well as when it might be possible to substitute lower cost NEIM ("naïve" economic impact) studies for more costly CVM (or for sophisticated EIM studies).

IV. The Complication of CVM and EIM Interdependency

Even if the pure complements case is the correct case to consider, assigning a value of 1 to both α and β in equation (1) will be incorrect (even assuming no measurement error as defined above) if there is non-independence in the derivation of the values using CVM and EIM. If CVM = f (EIM) and/or EIM = f (CVM), some double -counting will be present, and the correct values for α and β should be less than one.

The plausibility of this interdependency has already been introduced in Section II in the context of the discussion of the Olympics (and any smaller scale festival and cultural event), where it was argued that expected EIM values might have significant effects on CVM results (especially in the "full information" case). But there are other considerations that make this case intriguing, including potentially reverse effects of CVM on EIM results.

Ironically, Eric Thompson himself (when discussing his Kentucky results) suggests further interdependencies in his discussion of the merits of adding contingent valuation to conventional impact studies, even though such interdependency undercuts his case for using a simple summation of the CMV and EIM results (i.e., α and β values of 1). After praising the informational importance of being able to identify a "value of the arts amenity to households" (via CVM), he asks what he calls the "natural" question: "How does this abstract amenity benefit influence the real economy?" He then identifies familiar "hedonic" type, normally longer- term effects that might be thought to be better reflected in equation (2)'s LRG ("long term productivity and growth") component of full economic impact rather than being reflected in the short run EIM income/output effects. For example, arts proponents have certainly tried to substantiate that more desirable "amenity-rich" cities may create lower compensating equilibrium real wages and higher property values that can enhance the overall business climate and create higher tax revenues both through enhanced property tax revenues and other tax revenues linked to a stronger business sector.

The key point for the present discussion is that such "longer term" effects are also very likely to be reflected in any EIM study of the short-run income and output effects of cultural assets to the extent that higher "steady state" tax revenues allow city governments to also maintain a more desirable environment for both residents and tourists alike (better transportation systems, cleaner and safer streets – i.e. a higher quality overall urban infrastructure supporting the hospitality and entertainment sectors). Such higher quality public services, *ceteris paribus,* will

likely have a positive effect on expanding the very tourism sector that generates the primary net spending injections into the local economy that are so critical to well-designed economic impact studies. Historical experience indicates that merely placing a high quality arts (or sports) facility or organization in an otherwise undesirable environment will not ensure its success as a generator of additional economic activity in that local area. The role of publicly financed "complementary inputs" is important, creating a complex "simultaneity bias" in separating the "intangible value" of cultural amenities (as potentially captured in CVM studies) and the more measurable tangible economic impacts (as reflected in EIM studies). This interdependency is in addition to the potential reverse causal effect of the tangible EIM type economic benefits of cultural amenities on the CVM measurement of the intangible value of those amenities.

In summary, while it is appealing to think of equations (2) and (2') as supporting the "pure complements" hypothesis of the relationship between CVM and EIM studies (typology 1b) with α and β parameter values of 1, there is reason to suspect that a more accurate representation is reflected by typology (1e), with $0<\alpha, \beta<1$, so as to correct for the partial double-counting problem that results from the likely interdependency between the CVM and EIM valuations.

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V. Stylized Example #1: No Tourist Demand

To better understand the argument, imagine a community of 50,000 people with a local theater (or arts festival) with a known demand of Q = 10,000 – 100 P, where Q is the quantity of tickets sold and P is the average price of a ticket (for simplicity, and to avoid the issues raised by price discrimination strategies that would allow the cultural organization to capture more of the direct use value in ticket revenues, assume that this is a fixed single price charged for tickets). Assume also that only local residents attend the theater (and that there are also no non-tourist sources of "external" funds making up part of the theater budget). This simple case is shown in Diagram I. How might the real value of this cultural asset (RV) be measured?

Firstly, a quick overview of this situation is necessary. Clearly, at a price of $30, 7,000 tickets are sold to local residents (most easily thought of as 7,000 separate users), with total ticket expenditures (TE) of $210,000 and user consumer surplus (CS) of $245,000 (i.e. .5($70 x 7,000)). The proportion of users to non-users in the resident population is .14, and the price elasticity of demand at the price of $30 is - .4286 (i.e.

– 100 x 30/7,000).

If we could imagine a perfectly accurate CVM derivation of the value of the

Diagram I

Price

$100

-

CS

$30

TE

7000 Quantity of Tickets

theater (operating at its current size), what would it be? Total user value is TE + CS = $455,000. But of course, the primary potential strength of CVM is its potential to measure values beyond the easily observable market value (as most easily exhibited by TE). Thus, the survey questions are directed at determining how much users are willing-to-pay (beyond the observable amount that they are already paying) so as to prevent the elimination of this theater. In this case, CVM would ideally elicit an aggregate willingness-to-pay equal to the "true" consumer surplus of $245,000. This aggregate $245,000 would be the equivalent of $35 per person (i.e. an average reported WTP among users of $35).

Note importantly that this "accurate" user $35 "option price" is fully consistent with the Cicchetti and Freeman interpretation of the observable "option price (OP)" as the summation of "option value (OV)" and "expected consumer surplus (ECS)" (assuming in this hypothetical case that users, in contrast to non-users, have no separate "option value"). In this case, consumer surplus is known with certainty (so that ECS = CS), and a fully accurate CVM derivation of the "real" use and non-use values would be expected to yield a $35 reported average option price among users. That option price when aggregated across all users would yield the fully accurate direct use value of the theater in this case (i.e. $245,000).

What about the non-user valuation? CVM studies, of course, regularly find that non-users value the amenity less than users (e.g. in the Bille-Hansen study, the non-user to user average WTP ratio was 137DKK/368 DKK or .372; the Napoli Musei Aperti study found a non-user to user average WTP of .33). If this is suggestive of results likely to occur in CVM studies of arts amenities, a .35 ratio might be adopted here such that the average non-user WTP would be .35 x $35 = $12.25. When aggregated over the entire non-user population of 43,000, this would yield an aggregate non-user value of $526,750. If, as is common in CVM studies, the relevant non-user population is limited to only those above some target age, this aggregate figure will be lower. For example, in the Copenhagen Royal Theatre study, the relevant Danish population was claimed to be the 4.2 million old enough to vote, not the total 5.3 million population (i.e. about 80% of the total population). If we also make this adjustment here, the aggregate non-user value becomes .8 x $526,750 = $421,400. Hence the total value defined as user + non-user value = $245,000 + $421,400 = $666,400, or the equivalent of an overall average WTP of $16.10 (using the over 18 population of 41,400 as the relevant population, which also assumes that all users attending the theater were also over 18).

One might plausibly suspect that a WTP non-user to user ratio of .35 is somewhat high, and in fact the updated Thompson, Berger et al. CVM study of the arts in Kentucky (forthcoming in the *Journal of Cultural Economics,* as summarized in the Noonan annotated bibliography, and presented at this conference by Mark Berger) provides support for the use of a lower ratio in this Diagram I hypothetical example. Ratios of "all household" to "patrons" (users) "mean WTP" vary from 7% to 18%, which would be somewhat lower if those ratios were adjusted to be "non-user" to "user" mean WTP. If one were to use an approximate average of this very limited sample of European and North American results, a "non-user to user WTP ratio" of .2 could be justified, and has a certain simple plausibility.

If the Diagram I results were adjusted to incorporate this lower ratio (and using for simplicity the total community population rather than any age-adjusted subset), the total non-user value becomes $301,000 (instead of the $421,400 derived above). That is, the per-person non-use value would be .2 x $35 = $7, which when aggregated over the 43,000 non-user population yields aggregate non-use value of $301,000 (of course, this $7 average per person non-use value reflects the summation of option, existence, and bequest motives for having positive non-use value). The total CVM value of the theater then becomes $546,000 ($245,000 use value + $301,000 non-use value). Note finally that this result assumes that users have no non-use value for the theater, since their average WTP (of $35) was related solely to the consumer surplus resulting from directly consuming theater services.

Therefore, in this case, the "true value" as measured by CVM would vary from $546,000 to $666,400, depending on the non-user/user WTP. By contrast, what would be the value of the theater as valued by a "sophisticated" EIM? In this case, we get a simple answer of $0. This is the Bille-Hansen "normal case" of a cultural activity that is designed "not to attract tourists, but to provide enriching experiences for the citizenry."

Note also that it might be argued that an EIM study, as is also true of a CVM study, would at the very least identify the $210,000 of observable total expenditures as the minimum "market value" of the theater. As noted above, this $210,000 of TE is not, however, conceptually included in a CVM study (OP = OV + ESC), and TE was essentially subtracted from the total user value of TE + CS to yield only the CS in deriving the $245,000 of use value in Diagram I. The reality is that if the goal were merely to identify the minimum market value of the theater, this easily observed TE (assuming any reasonable accuracy in financial accounting) would only require an accountant rather than either a CVM or an EIM study.

But both approaches claim much more, with EIM "ideally" claiming to identify how much the local economy would shrink in the absence of the theater, and CVM "ideally" claiming to identify all sources of economic value not revealed merely by observed out-of-pocket spending (which, of course, is already being captured by cultural asset "producers"). Thus, while not the common interpretation of EIM studies, one might think of the observed TE as being "common" to both methodologies, but subtracted from the final valuation to yield only the "external" benefits of the theater or other cultural asset. In Diagram I, since the TE is entirely a "redistribution" of local economic activity from one sector to another, there are no such "external" benefits, and a correctly done EIM study would yield a $0 valuation.

Three summary observations can be made regarding this Diagram I example:

(1) This situation could be viewed as consistent with the "pure complements" case where the RV (real value) is the simple summation of the CVM and the EIM values, but where the EIM value happens to be $0 (but the weights α and β are both 1).

(2) Alternatively, one could argue that if this were the general case, where EIM as <u>properly</u> measured should approach $0 (even if "naïve" economic impact studies falsely find large economic impacts by incorrectly treating "diversions" of local spending as net injections of new spending), there is support for typology case 1c, where the coefficient β on the EIM result should be 0 to prevent the incorrect inclusion of an "inevitably" overstated EIM valuation, and the true value can be limited to the CVM value with the weight $\alpha = 1$.

(3) In reality, a CVM study would only imperfectly uncover this "true value," and efforts to systematically apply the NOAA rules to this and <u>all other potential uses of public funds</u> in this community so as to "correctly" allocate limited tax monies to their highest valued uses would be prohibitively expensive – hence limiting the practical use

of CVM to improve public policy-making.

In "Praise" of "Naïve" Economic Impact Models (NEIM)

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The "cold" reality of point (3) above raises an intriguing possibility. Might it be possible to actually put such "erroneous" economic impact studies to good use after all (it seems to be impossible to stop them, so why not use them)? It is already a common observation that "correctly" done EIM studies (as with the stylized case above yielding a $0 economic valuation) have a significant "reverse" bias of seriously understating the real value of the cultural asset by focusing only on the consumption behavior of non-local tourists (and the resulting possible economic benefits to non-consuming local residents). Therefore, by simply ignoring the consumption behavior of local residents, "sophisticated" EIM studies (if considered alone rather than as a "companion" to CVM studies) will always understate the true economic value of a cultural asset. In this sense, the problem with EIM studies is their less well-known tendency to understate the economic benefits of cultural assets, in contrast to the more commonly expressed concern about the EIM overstatement of economic benefits (a concern that is more appropriately focused, of course, upon naïve economic impact studies, NEIM).

Thus, there is already some reason to want to improve economic impact studies by possibly capturing some of these local user benefits. Obviously, the simplest and most "naïve" way to do this is to focus on the most measurable user consumption benefit – the amount spent by resident users in attending cultural events. In the Diagram I problem, this spending flow is TE = $210,000. Such expenditures become, of course, part of the budgets of cultural organizations (assumed in this simple problem to be the only source of funds, but it should be noted that "earned income" is in fact becoming an increasingly important component of real world cultural organizations). It is common to at least start an economic impact study by focusing on the budget of the organization in question. If that budget is simply used as the "primary direct impact" base and then a "multiplier" is applied as usual to generate the "full" economic impact as the summation of the direct and the "induced" (sometimes called "indirect") impacts, it is perfectly possible to "incorrectly" derive a total economic valuation that is nearly identical to the "real economic value."

For example, in the Diagram I problem, a multiplier of 3.17 applied to the total budget of the theater (the total expenditures of $210,000) generates a total economic "impact" of $665,700. This measured value of the theater is 99.89% of the CVM related "real value" of $666,400. Alternatively, if the "real value" had been measured as the lower $546,000 (using a .2 ratio of non-use/use value), a lower multiplier of 2.6 would have exactly replicated that CVM related result. Remember that while the "true values" are called "CVM related" results, an actual as opposed to a hypothetical CVM study would have had to be "perfect" to actually yield this "true" value without error.

Since the naïve economic impact (NEIM) results (using specific multipliers) in this hypothetical case essentially replicate the CVM related real value of the cultural asset, it is fair to ask whether those specific multipliers of 3.17 or 2.6 are within the range of values that have been commonly used in EIM studies? The answer is "yes," although those doing such studies have become much more circumspect about avoiding excessively high multiplier values in their analysis. A value of 3.17 happens to be nearly identical to the average of the 3.0 value commonly used in the past in National Endowment for the Arts EIM studies of the impact of the arts in various cities and the 3.3 value used by the Southern Arts Federation in its EIM study of the Alvin Ailey company in Atlanta. And a multiplier value of approximately 2.6 is the most frequently used multiplier across 22 city and state arts economic impact studies as documented in the Gapinski survey.

The point here, of course, is that such erroneous studies can come surprisingly close to the "real value" of a cultural asset – although it is obvious that the degree of closeness of that "accidental" result will vary with specific features of the case at hand.

There is an interesting implication of this analysis for the interpretation of the Kentucky results discussed above. As noted previously, Thompson argues that his $21.8 million CVM valuation should be simply added to the nearly identical $22 million EIM valuation (from an independently done study) to get the "total real" valuation. But, it is unclear just how carefully that economic impact study was done. It seems perfectly plausible that even that modest figure overstates the actual economic impact in terms of increased total output in Kentucky uniquely stemming from its arts sector. For example, if in reality a more sophisticated study would find that almost all of the limited number of out-of-state tourists who annually attend "arts performances and exhibits" in Kentucky did so as a purely secondary (or tertiary) activity unrelated to their primary motivation for visiting and spending money in the state, it might be perfectly plausible to argue that even the total elimination of those cultural activities in Kentucky would have no measurable effect on jobs, income, or output in Kentucky.

If so, we get a result potentially similar to that in Diagram I, where the "sophisticated" EIM result is $0, the "naïve" NEIM result is $22 million, and the "true value" of the arts in Kentucky is thus RV = CVM + EIM = $21.8 million + $0 = $21.8 million. In this case, using "correct" EIM techniques would allow CVM and EIM to be pure complements (α , β = 1), although with EIM = $0. But since we cannot be sure whether we have a "sophisticated" EIM or a "naïve" NEIM, the RV equation in terms of NEIM is RV = CVM, **or** RV = NEIM, which is actually the "perfect substitutes" case (1a) in which (α , β) = (0,1) **or** (1,0). That is, both approaches are equally capable of independently generating the "correct" economic valuation (even though the NEIM does so "accidentally"). Summing the two results would overstate the real value. Since in this case either approach will be "correct, it may be possible to view the otherwise "damnable," but less expensive NEIM as a substitute methodology for the much more complex and costly CVM analysis.

Finally, if one were to focus attention on only those economic benefits that are "external" to the theater (whether pecuniary or real), i.e., are not captured by the theater despite being generated by theater operations, the NEIM measure of these "organizational pecuniary externalities" will be lower than the CVM measure of "use and non-use real externalities." For example, in terms of the NEIM analysis, the theater directly captures the TE or $210,000 spent on tickets, but is not capable of capturing the multiplier related $336,000 in "indirect" benefits which accrue to others in the local economy in complex ways linked to the particulars of the "input-output" relationships in the local region (note of course that without "export injections," these particular "external benefits" are entirely re-distributional). By contrast, the CVM valuation of $546,000 is entirely external benefits, not currently being captured by the theater (although at least the use value linked to consumer surplus is <u>potentially</u> exploitable via price discrimination and related tying contract strategies). This comparison of NEIM pecuniary externalities vs. CVM real externalities establishes that, even where the <u>total</u> NEIM valuation equals the <u>total</u> CVM valuation, CVM "externalities" will exceed NEIM "externalities."

<u>The Sensitivity of the Diagram I (No Tourists) Results to Alternative Formulations</u>

Obviously, changes in various "parameter" values in this hypothetical example would generate changes in the relationship between the NEIM and the CVM result. Remember that in this initial no tourists (or no "exports")

case, the "sophisticated" EIM result is an economic impact (value of the theater) of $0. By contrast the "accurate" CVM valuation is >$0, since even if there were a complete absence of any non-use value linked to option, existence or bequest motives, the positive consumer surplus received by users would lead them (assuming totally truthful responses in a "perfect" CVM world) to declare a >$0 incremental use value Therefore, this case will always yield an EIM/CVM ratio of 0.

While it was relatively easy to identify a plausible case in which the NEIM/CVM ratio is 1, such a result is hardly a "rule." One can easily be skeptical about the practical usefulness of the conclusion that "it is possible that a "back-of- the-envelope," simple 'economic impact study' can accidentally replicate the results of a "perfectly" done CVM study." But any practical use of NEIM results as a proxy for a more complete CVM analysis requires the identification, at a minimum, of those factors that would suggest, *a priori,* that the NEIM/CVM ratio is likely to be >1, = 1 or <1, so that we know whether we are obtaining a good proxy estimate, an over-estimate, or an under-estimate of the "real value."

Table I identifies the key variables and their values from the Diagram I case. The sensitivity of the comparative CVM and NEIM results to changes in such variables can potentially clarify the conditions under which a NEIM study will approximate, over-state or understate what a "correct" CVM study might identify. Of course, CVM factors such as the ratio of non-user to user values potentially vary in each individual case, as could EIM factors such as regional output multipliers. However, given the large number of CVM studies that have been done (and the increasing number being applied to cultural assets), there is considerable evidence regarding measures of central tendency and dispersion for this variable. Averages and ranges for EIM multipliers from past studies have already been discussed and are readily available.

Of course, we also know more directly that the value derived from most CVM studies is between $5 and $250 per household (not limited, of course, to cultural assets, which constitute a very small proportion of all CVM studies). In fact, the Bille-Hansen findings for the Royal Theatre fall within this range. That is, her aggregate WTP is $120.5 million (682 DKKm), which is approximately an average household value of $57 (i.e. if the Danish population of 5.3 million yields approximately 2.12 million households). Interestingly, Noonan's Table 4 "WTP for Selected Studies" yields an average "mean WTP" of $56.56 (omitting median values, sports studies, and non-dollar denominated results).

Therefore, one might argue that instead of looking for ways to use NEIM results as proxies for CVM valuations (in cases where the EIM is known to be $0), one could more easily use previous CVM studies as proxies for new applications where it would be too expensive or impractical to conduct another full CVM study. Obviously, both proxy approaches would have clear weaknesses, but it is the goal of this analysis to clarify the relationship between the two major methodologies (EIM and CVM) that have been used for cultural asset valuation. Therefore, it is important to examine the sensitivity of that relationship to changes in major characteristics in the relevant "case" being studied.

Table I summarizes the key aspects of the "no-tourist" case exhibited in Diagram I. While there were two slightly varying CVM valuations analyzed above, Table I focuses on the somewhat simpler case where the "non-user/user" valuation ratio was .2 and the total valuation was $546,000.

TABLE I

KEY VARIABLES FROM THE "NO TOURISTS CASE"

Community Population: "P"	50,000 Observable
Number of Resident Direct Users: "U"	7,000 Observable (in the no tourists case total users = local users; in Case #2 below with positive tourist demand, this could be estimated from surveys using a proxy from other studies)
Percentage of Local Users: "L"	.14 Observable
Total Direct Expenditures: "TE"	$210,000 Observable
Price Elasticity at Ticket Price: "E"	- .4286 Proxy or Estimate *
Non-Use/Use Valuation: "NU"	.20 Proxy **
Regional Impact Multiplier: "M"	2.60 Proxy or RIMS II +
Ratio of Maximum Reservation Price to Ticket Price: "R"	3.33 ($100/$30) Proxy or Estimate from Price Elasticity #
Consumer Surplus: "CS"	$245,000 Estimate from Price Elasticity ##
NEIM/CVM ratio: "EC"	1 (both approaches yielded a "valuation" of $546,000)

* As noted previously, most empirical arts demand studies have found that at existing prices, the absolute value of price elasticity of demand is <1; Bille-Hansen cites a previous demand study of the Royal Theatre to derive a price elasticity of -.33, which she compares (fn. 4) to price elasticity estimates from two other theater studies which averaged -.5335. The average of the three theater demand elasticity estimates is -.467, close to the -.4286 in this hypothetical case.

** As discussed in the text, past CVM studies can be used to identify plausible ranges for this variable.

+ As discussed in the text, the average value of the multiplier that has been used in economic impact studies of similar sized communities can be used, or specific RIMS II multiplier values (applicable to an industry subcategory such as "hotels, amusements, recreation services and motion pictures," can be obtained for the relevant state, and reduced in magnitude as the relevant region becomes smaller and less economically self-sufficient. My own studies have typically used 1.5 at most metro levels and 2.23 at the state level in Georgia (1.6 is cited by Gapinski as an overall average in many past studies).

While complex to proxy in differing real world settings, an example of the relationship in this case is that for a price elasticity increase from -.4286 to -.7143 (holding constant the price, quantity combination of $30 and 7,000), the R ratio drops from 3.33 to 2.4. This occurs if demand were to change from Q = 10,000 – 100P to Q = 12,000 – 166.67 (a flattening of the slope of the demand curve in Diagram I while still intersecting the (P,Q) combination of ($30, 7,000). This is the equivalent of a 50% elasticity increase (using the mean value as the base) yielding about a 33% reduction (using the mean value as the base) in the "reservation/ticket" price ratio, R.

While only capable of being estimated with considerable uncertainty, Bille-Hansen derives a total consumer surplus estimate of $7.37 million (assuming that her derived price elasticity is applicable to the total number of tickets sold).

A Suggestive Example of the Sensitivity of EC (NEIM/CVM)

Table I has three general types of variables:

(1) Those unique to a particular community and a particular cultural asset for which reasonably reliable information should be available ("observable"): Population (P), # Users (U), % of Local Users (L) and Total Expenditures (TE)

(2) Those not observable but for which reasonable proxy values are available from our knowledge of previous studies or from technical sources: Price Elasticity of Demand (E); the Non-Use/Use Valuation Ratio (NU), and the Regional Impact Multiplier (M).

(3) Those functionally related to other variables that could only be estimated with a high degree of uncertainty: The Ratio of Maximum Reservation Price to Ticket Price (R); and Consumer Surplus (CS). Note that Consumer Surplus, of course, is a key variable that a well-designed CVM study should be implicitly revealing, since revealed option prices are theoretically the sum of option value and estimated consumer surplus.

Suggestive results are obtained by holding constant the proxy parameter variables such as E, NU, and M, and seeing how the NEIM/CVM ratio (EC) varies as the observable characteristics of the community and the cultural asset vary.

Start with a *ceteris paribus* change in the size of the community from 50,000 to 75,000 without changing the demand for the theater. This will change the L ratio from .14 to .093 since now a smaller % of the population actually attends the theater. In fact, this case is best viewed as not merely an increase in the population, but as a decline in the L ratio, since population could have increased to 75,000, holding constant L at .14, if the number of local "users" increases proportionately to 10,500 (i.e. if the local demand for the theater increases to Q = 13,500 – 100 P, a case that is discussed below). Assuming that non-use values among non-users (continuing to assume that users have no separate non-use value for the theater) continue to be .2 of the use value (i.e. NU remains .2), per person non-use value remains .2 x $35 = $7, but is now applied to a larger non-user population (68,000 rather than 43,000). Aggregate non-use value hence increases to $476,000 (from $301,000), while aggregate use value remains $245,000 for a total CVM based valuation of $721,000. The NEIM calculation remains TE of $210,000 x M (2.6) = $546,000, for an EC ratio of .757 <1, compared to the previous case of EC = 1.

It might well be the case that the "revealed preference" of a greater number of local residents to avoid attending the theater would logically suggest that the NU ratio should no longer be .2, but should fall somewhat to reflect the lower perceived non-use value among this more "culturally indifferent" population. If, for example, the NU ratio falls to .15, the average non-use value among non-users now becomes .15 x $35 = $5.25, which yields an aggregate non-use value of $5.25 x 68,000 = $357,000. Total CVM based valuation then becomes $602,000 instead of $721,000, but continues to exceed the NEIM based "impact" of $546,000. Thus, the ratio of NEIM to CVM valuation remains <1 for this larger population size, and the NEIM would <u>understate</u> the "true" value of

the theater to the community.

Now consider the case suggested above, where both the population and the number of local residents attending the theater (the users) increase proportionally. As noted, this would require a demand shift from Q = 10,000 – 100 P to Q = 13,500 – 100 P, so that if the non-profit theater continues to charge $30, 10,500 residents attend the theater (remaining 14% of the population). This actually will change a number of other variables in Table 1 (price elasticity of demand falls from - .4286 to - .2857) and the "reservation/ticket price" ratio, R, increases from 3.33 to 4.5 ($135 / $30). Most importantly, consumer surplus increases from $245,000 to $551,250 (i.e. .5($105 x 10,500)), so that the "correct" CVM use value increases from $35 to $52.50. Also, assuming that the non-use/use ratio remains .2, the mean "correct" non-use value among non-users increases to $10.5 and the aggregate non-use value becomes $677,250 ($10.5 x 64,500 non-users). Total CVM based valuation consequently becomes Total Value = Use Value + Non-Use Value = $1,228,500 = $551,250 + $677,250 (compared to the original $546,000).

What happens to the NEIM calculation in the "higher population, higher demand" case? Since the budget of the theater increases to $30 x 10,500 = $315,000 (instead of $210,000), the naïve "total economic impact" becomes $819,000. Again, the result is that the NEIM understates the "true valuation" of $1,228,500, and the EC ratio <1 in contrast to the original EC = 1. Thus, in both of these higher population cases (both for L falling to .093 and for L remaining .14), NEIM no longer approximates the "correct" CVM based valuation, but provides an under-estimate of the "true" valuation.

Similar analyses of both cases with the population declining (i.e. for both the case of theater demand constant and the % of users (L) thus increasing, and the proportional demand reduction case that allows the L ratio to remain unchanged), will show that in those cases the NEIM will be higher than the "true" CVM based valuation (an EC ratio > 1), and the NEIM economic impact will be an over-statement.

Such sensitivity results are only suggestive of the complex relationship between "naïve economic impact studies" and CVM studies for different characteristics of the community and the local cultural sector, for assumed "plausible" values of other important parameters. However, this relationship has not been previously systematically evaluated. The results can at least provide some initial insight and warnings about excessively casual interpretations of that relationship, such as the unexamined presumption in the Kentucky case that the economic impact result should just be added to the CVM result, as would indeed be true if we were sure that we had the pure complements case. However, the Kentucky economic impact study may well have estimated the economic impact with significant error, as would be true with an NEIM (despite the best intentions of those conducting the study). For example, if in fact the "true" economic impact (as derivable with an EIM) actually approaches $0 (there is no presumption that this is necessarily the case), the Kentucky impact study that found a $22 million economic impact would have a significant positive bias that may better be interpreted as the result of a NEIM. The "true" impact in that case would be limited to the CVM value, but the NEIM result (which was nearly identical to the CVM result if one ignores the 25% scaling issue or assumes an "embedding" effect that makes the result insensitive to scale) may actually be a good proxy for the CVM result, as in the Diagram I case. In that situation, we would actually have an example of the perfect substitutes case, not the perfect complements case and we definitely should not sum the two results to get the "full" economic benefits of the arts in Kentucky.

It is also interesting to revisit the Bille-Hansen findings in this context. In contrast to the Kentucky case, no economic impact study of the Royal Theatre was reported to allow a comparison of the CVM and those economic impact results. However, it has already been noted that Bille-Hansen would be sympathetic to the

view that a correctly done economic impact study of the Royal Theatre would probably find a very low "export-base" element and a primary role of the Theatre in providing enriching experiences for the "local" Danish population. Thus, the "correct" EIM value would approach $0. It has already been reported that using her average (in contrast to her median) WTP results, the aggregate CVM based value of the Royal Theatre is about $120.5 million.

The median-based aggregate value (based on a median WTP of $11) yields only a $46.2 million aggregate value that approximates the actual $47 million of public sector Danish subsidies. However, as noted above, any implication that this suggests that this current level of public support is "optimal" is extremely dubious given the admittedly dramatic anchoring bias found in the study. If the $120.5 million valuation is indeed more reliable (despite the legitimate preference of many to use the median values to avoid an "over-statement" bias – but where anchoring effects are so blatant, such a "conservative" bias is less defensible), it is intriguing to note that *if* a naïve economic impact study of the Royal Theatre *had* been conducted, the estimated impact might well have been within 10% of the CVM valuation. That is, the total budget of the Royal Theatre was $58.75 million in 1993 (the time of the study), and would as usual be the starting point for naively deriving the "primary direct" impact. If one were to use the RIMS II "output" multiplier (for the "amusements and recreation services" sector) reported for a similar sized region like the state of Georgia (about 6 million population in 1993 vs. the 5.3 million in Denmark), that multiplier would be 2.2435. The simple NEIM economic impact would then be $58.75 x 2.2435 = $131.81 million. This is only 9.38% larger than the CVM $120.5 million valuation.

While this may be viewed as an entirely accidental anomaly, it is nevertheless intriguingly close to the Diagram I hypothetical. And since a major lesson from that case is to avoid confusing the perfect complements case with a perfect or partial substitutes case, one would certainly be well advised to be cautious not to simply sum the $131.81 million NEIM result and the $120.5 million CVM valuation to yield a total economic valuation of $252.3 million for the Royal Theatre in Denmark.

Returning to a summary of the sensitivity results linked to Table I, in terms of equation (1) in the original typology, the "correct" α , β weights for the CVM and the NEIM values will vary as a function of community characteristics and other variables in Table 1. For example, in the <u>original</u> Diagram I case, NEIM and CVM are "perfect substitutes" so that the correct "real value" of the theater can be estimated either using the NEIM economic impact estimate <u>or</u> the "correct" CVM valuation, so that (α ,β) should be (1,0) or (0,1). However, in the larger and smaller population variations, it was found that in both larger population cases, the NEIM <u>understated</u> the real CVM valuation, while with both lower population variations, the NEIM would <u>overstate</u> the real CVM valuation. In terms of the equation (1) typology using NEIM and CVM, the two approaches are only "partial substitutes, so that in the specific case where NEIM underestimated at $819,000 the true $1,228,500 value, the "true" options for (α ,β) would be (1,0) <u>or</u> (0,1.5), a case in which the weigh on the NEIM β >1. Where the NEIM overstates the real CVM value (the lower population cases), the "true" weighting options would be (1,0) <u>or</u> (0, 0<β <1).

Finally, it must be remembered that in this particular case, the relationship between "sophisticated economic impact studies" (EIM) and CVM is entirely predictable. Since the EIM is $0 in this "non-export" case, the ratio of EIM/CVM will always be 0. Furthermore, in terms of equation (1), those two methodologies <u>are</u> actually perfect <u>complements</u> with α and β both =1, but with the actual EIM value = $0, so that total real value TRV = the CVM value.

<u>VI. Stylized Example #2: Positive Tourist Demand (A Brief Treatment)</u>

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How does the relationship among EIM, NEIM and CVM change when we modify the Diagram I case to incorporate a verifiable tourist demand for the theater's services?

Only a brief version of this case will be presented here, but can also be subject to the kind of sensitivity analysis done above regarding Diagram I in a fuller treatment.

Assume that the demand for the theater above increases due to positive tourist demand (local demand remains the same). The new demand function is:

Q = 20,000 – 100 P

At the price of $30, total theater consumption Q= 17,000, 7,000 of which is by local residents and 10,000 by tourists (again most easily viewed as 10,000 tourists and 7,000 local residents). Total expenditures (and total theater revenue) is now $510,000 ($300,000 of which is "injected" into the local economy by tourists), the % of local resident "users" remains .14, point price elasticity of demand at P = $30 declines from an absolute value of .4286 to .1765. Since the resident demand has not changed, resident consumer surplus does not change and remains $245,000. The non-use/use WTP linked solely to the "traditional" versions of bequest, option, and existence demands should not change and remains .2.

One critical aspect of this case is that there is now a legitimate export component to the theater's operations, which will be enhanced by the "ancillary" spending of tourists. In this case (in contrast to examples such as 3 day conferences, 2 week Olympics, and 1 week build-ups to Super Bowls), such ancillary spending is likely to be relatively modest, assumed here to be 50% of ticket expenditures. Hence the "correctly" conceived EIM "primary direct impact" is $300,000, the "induced ancillary direct impact" is $150,000, and the resulting "total direct impact" is $450,000. Keeping our simpler multiplier from Diagram I of 2.6, the full economic impact (based upon EIM, <u>not</u> NEIM) is then $450,000 x 2.6 = $1,170,000 of which $720,000 is the longer run indirect economic impact as this net injection of new spending circulates in the local economy before "leaking" out entirely. Note finally, that in terms of some earlier language, the theater is only capturing $300,000 of this full economic impact (ignoring for simplicity any "ancillary" sales that it itself makes at its own coffee shop, bar and gift shop, if available), so that the ancillary "induced" ancillary direct impact of $150,000 as well as the full multiplier indirect impact of $720,000 can be viewed as a "pecuniary externality" stemming from its operations, but this has a "real" effect on the local economy at least in the short run.

What would be the economic impact as measured naively with NEIM? The entire budget of the theater would be used as a proxy for the primary direct impact, so that instead of the "correct" $300,000 net injection serving as the "base," the larger $510,000 total expenditures of all theater attendees (including $210,000 of "diverted" local resident spending) serves as the "inflated" base. Applying the 2.6 multiplier value then yields a total local economic impact (NEIM) of $1,326,000, or in this case an overstatement of only 13.33% compared to the "correct" EIM result.

What would be the "true" CVM valuation in this new case as derived from WTP interviews of local residents? Since the local user consumer surplus has not changed, the per capita use value remains $35 ($245,000/7,000), yielding as before an aggregate direct use value of simply $245,000 (continuing to assume no user "non-use" value, so that the average user option price of $35 = average user CS). "Traditional" non-use value among the 43,000 residents not attending the theater remains .2 x $35 = $7, for an aggregate "traditional" non-use value of

$301,000 (as before), and at least a CVM as before of $546,000. If there were no other factors entering the WTP of local residents, we would have the following summary results yielding both EIM/CVM and NEIM/CVM ratios >1:

Ranking A:

NEIM valuation: $1.326 million

EIM valuation: $1.170 million

CVM valuation: $ .546 million

However, is it plausible to believe that well-informed local residents would not make a distinction between their local theater as a potential generator of additional net economic activity vs. the prior case in which no plausible claim could be made for a "real" economic impact EIM > $0? Remaining true to the spirit of the analysis in which we are exploring "perfect" results of these studies, in the limit, a fully informed local population who is told that a correctly done economic impact has shown that their region will be $1.170 million "richer" per year with the theater than without the theater, "full rent dissipation" would require that maximum WTP would fully incorporate that real economic impact, and per capita non-use value would rise by $23.4 per person for the full 50,000 population, i.e. $1.17 million/50,000 (meaning that in this case, the users now have a definite reason to have a "non-use" value as well as their CS base "use" value, since in this "full information" CVM world, they also recognize the value of an expanding local economy). Under this scenario, the correct CVM would fully incorporate the EIM result and yield a total theater valuation of $.546 million + $1.17 million = $1.716 million.

What are the implications for the equation (1) typology regarding the correct α and β weights in the equation RV = α (CVM) + β (EIM)? Clearly, if both parameter values are 1, we get significant double-counting as previously predicted when we have interdependence between the CVM and the EIM results. In this case, CVM = f(EIM), and in fact CVM fully incorporates EIM, so that adding the $1.716 million CVM to the $1.17 million EIM (to yield $2.886 million) overstates the "true" valuation by the $1.17 million or by 68%. In order to correct this result, we could "ideally" set the parameter weights as follows: α = .318 and β = 1, so that .318($1.716) + 1 ($1.170) = $1.716 million. Of course, we also get the "correct" result using other combinations such as α = .50 and β = .733, so that .5($1.716) + .733 ($1.170) = $1.716 million. This is the expected case where interdependency between the two approaches will yield optimal parameter values of $0<\alpha$, β <1.

Variations:

Of course, if we now introduce "error" into both measurements of EIM and CVM, other weighting schemes result. The simplest case is where the incorrect NEIM result is reported, such that the local economic impact (in terms of output, linked to jobs and personal income changes) is overstated by 13.33%. If this error is compounded in a full information CVM study by reporting to interviewees that a "a study has shown that there will be a $1.326 million impact of the theater on the local economy, we might just get a "simple" variation in which (with full "rent dissipation" such that this NEIM result is fully incorporated into the non-use value), and the ranking of valuations becomes:

Ranking B:

CVM = $1.872 million

NEIM =$1.326 million

EIM = $1.170 million

In this case, both the EIM/CVM ratio and the NEIM/CVM ratio are <1, in contrast to the >1 case linked to Ranking A above.

To the extent that only "partial rent dissipation" occurs, other variations result. If, for example, local residents only increase their non-use valuations by, say, 50% of the "erroneous" NEIM value, CVM becomes $.546 million (linked to use value and "traditional" non-use value) + $.663 million = $1.209 million. Of course, valuing the prospective growth of the local economy at only 50% (or even 0%) of its reported value is neither "right" or "wrong" in the CVM context – it simply represents what the local population would be willing-to-pay to ensure that such benefits are realized (which might be "strategically" understated or represent a "true" unbiased valuation).

However, regardless how this 50% or other "partial rent dissipation" case is characterized, it would have the following results in terms of valuation rankings:

Ranking C:

EIM: $1.170 million

CVM: $1.209 million

NEIM: $1.326 million

In this case, the EIM/CVM ratio is <1, and the NEIM/CVM ratio is >1. Also, one can still view the "real" valuation RV as $1.716 million as the result of the CVM and the EIM being correctly estimated pure complements. That is, if they are truly measuring "different" dimensions of the true "economic impact" with no interdependency in the individual valuations, we get optimal α and β values of 1 for both as applied to the independent CVM valuation of $.546 million (use and non-use value without any adjustment for "economic impact" effects) and the independent EIM valuation of $1.170 so that we just sum those two valuations to get $1.716 million. Therefore, in the context of Ranking C, we can write:

Ranking C':

EIM: $1.170 million

CVM: $1.209 million

NEIM: $1.326 million

RV: $1.716 million

Viewed this way, we get the surprising result that the single best proxy for the "real value" of the theater to the local community is the naïve economic impact model (NEIM). Hence, one can develop another variation of the argument "in praise of naïve economic impact models," not just as a less costly and "easier-to-use" proxy for the "correct" CVM result, but as a "less-biased" proxy for what can be viewed as the real value, when a real-world

(as opposed to a "perfectly correct") CVM would understate that value.

Finally, it is clear that we can get a result similar to the Diagram I case in which the use of an NEIM can yield an identical result (even if in this case, that is a potentially "wrong" result) to that derived from the CVM. This will be the case if local residents valued the true EIM benefit at 2/3 rather than ½ (another case of "partial rent dissipation), such that the CVM result (if correctly identifying this no-use value in its surveys) would be $.546 million (CS use value + "traditional" non-use value) + $.780 million ("economic impact related" non-use value = .667 x $1.17 million) = $1.326 million. This, of course, is identical to the NEIM result when the total theater budget is applied to a 2.6 multiplier. Therefore, while both the NEIM and the CVM would understate the "true" value, they would yield the same result. Furthermore, in order to obtain the "true" value in terms of equation (1), the α and β parameters would be <1 (as long as neither is allowed to be 0), with the simplest case being equal values of .647, such that

RV = $1.716 = .647 ($1.326) + .647($1.326).

Of course, other combinations of α and β yield the same result, including the "extreme" case in which we do allow one of them to be 0. The other parameter must then be 1.294 (a case predicted in the original typology discussion when we suspect that one or both of CVM and EIM (or NEIM) are systematically "understating" the real value).

VII. Preliminary Empirical Evidence and Conclusions

There are very few cases in which really comparable CVM and EIM studies have been conducted of the same cultural asset(s) in the same region. Therefore, the Kentucky results have been discussed at some length, given their novelty in terms of being an exception to that rule. Also, a hypothetical comparison of the CVM and potential NEIM results for the Royal Theatre in Copenhagen was made. Suggestively (but very tentatively), both of those cases yielded economic impact results that were consistent with the hypothesis that a naïve economic impact study can serve as a good proxy for a CVM study, with the results thus being best viewed as close substitutes that should not be summed to get the "real" result.

Actually, this "substitute" result is stronger in the Copenhagen case inasmuch as Bille-Hansen herself characterizes the Royal Theatre as a national treasure, but not necessarily a major motivator for tourist visits to Denmark. Thus, our *a priori* expectation is that a "sophisticated" EIM would yield a true economic impact of $0, even though the "naïve" NEIM (as postulated) would yield an "over-estimate of about $131 million. In contrast, using the average WTP results of her CVM study, the aggregate value of the Theatre to Denmark is $120.5 million. Thus, in this perhaps quite typical case, the EIM and the CVM can be viewed indeed as pure complements whose results can be simply summed to yield $120.5 = $120.5 + $0, where both α and β = 1, but the EIM value is $0. However, in what is also suspected by the critics of economic impact studies to be "quite typical," a NEIM result may be quoted such as the $131 million hypothetical projection in this case, but where that result is best viewed as a close (if not perfect) substitute for the CVM result (which can itself be viewed either as "reasonably correct" or "fatally flawed" depending on your view of CVM)!

The dilemma one faces in interpreting the proper relationship between CVM and EIM results is indeed exhibited

nicely by those Kentucky results, which were not hypothetical but the actual reported findings as reported by Thompson of economic impact and contingent valuation studies of the arts in Kentucky. The problem is that we cannot be certain (and even those conducting the EIM study are apt to be uncertain, even if they have tried to use sophisticated EIM techniques), whether they are *de facto* reporting EIM or NEIM results.

That is, even though the modest $22 million per year economic impact result probably was based on an attempt at identifying tourist visits vs. Kentuckian visits to arts performances in the state, it is quite difficult to know exactly how many of those visits to the state (and resulting injections of new spending) were really primarily motivated by the arts in the state, as opposed to simply one "diversionary" way to spend tourist or visiting business dollars among those in Kentucky for a quite different reason (in this sense, conferences have the advantage as quite plausibly being the primary motivator for a tourist/business visit, as does a Broadway play – although there has always been a strong suspicion that New York really *is* a unique case in the arts). Therefore, if most of this "visitor" spending would have taken place even without the arts in Kentucky, the real EIM would be closer to $0 (as in the Copenhagen case), and the $22 million is better viewed as an NEIM result.

If that were the case, we have another example in which in terms of EIM vs. CVM, they are pure complements, but with one component essentially $0 (EIM) so that summing them is accurate (perhaps "harmless" is an equally valid description). But in terms of NEIM vs. CVM, they are closer to being pure substitutes, where the $22 million NEIM is remarkably close to the $21.8 million CVM finding. To be clear, the fuller analysis above demonstrates that the case of NEIM = CVM cannot be viewed as a "rule" or a "general case," but it must be viewed as a plausible possibility, where the more general result is that NEIM/CVM can be =1, >1, or <1 depending on specific circumstances as explored above.

Finally, can anything be learned about the relationship between CVM findings and EIM (or NEIM) findings by comparing sample results of CVM and EIM studies in non-directly comparable cases? In fact, just what is the relative magnitude of "per person" economic benefits for studies of particular arts organizations in cities as measured by CVM vs. EIM? Since there are almost no cases of directly comparable studies (similar in spirit to the statewide Kentucky CVM vs. EIM (NEIM) results), we can only construct suggestive flawed comparisons.

Table II provides this suggestive comparison primarily as a way to motivate further analysis of what these results might mean in the context of the analysis presented above. A listing of CVM findings as reported by Doug Noonan (this conference) for CVM studies in which the findings have been reported in $ U.S. and as mean WTP (viewed as inherently more comparable than median values to the EIM findings when reported in per capita terms based on the relevant "local" population size) can serve as a more extensive listing of the CVM observations. However, while that listing has been considered, for the sake of simplifying the presentation (and for continuity given the frequent use of the Copenhagen and Napoli CVM studies thorough-out the discussion), the two CVM "benchmarks" are those two studies in which the mean WTP for the Royal Theatre is $27.21 and the mean WTP for the Napoli Musei Aperti is $11.063.

The EIM (NEIM) observations are adapted from the very useful Gapinski comparative listing of earlier U.S. based (as opposed to more recent, or also non-U.S.) economic impact studies (cited above), with his results adjusted in two ways (1) his already adjusted findings that were reported in 1983 dollars are further adjusted to dollars comparable to 1993 (for the Royal Theatre comparisons) or 1996 (for the Napoli Musei Aperti comparisons); and (2) the total economic impact results are divided by the population of the relevant metro area (only metro as opposed to state-wide results are used in this EIM listing, and especially problematic metro areas are omitted, such as San Francisco, where using the SF population or the SF/Oakland population for SF based

organizations has a significant effect on the results). Many of the U.S. metro areas have populations close to either the 5.3 million for Denmark (as used in the Bille-Hansen study) or the 1.2 million population of Naples. Since Gapinski also reports the annual attendance for his list of arts organizations, critical adjustments can be made to improve the comparisons with the CVM results for the Royal Theatre (annual attendance 400,000) and the Napoli Musei (annual attendance 814,000).

Obviously, in addition to the difficulty of comparing CVM and EIM results for different cases, the comparison of U.S. EIM results and European CVM results adds another "error" component. However, pending a more thorough and updated comparative analysis, these findings are convenient and at least provide initial data to consider.

TABLE II

PRELIMINARY COMPARISON OF EIM (NEIM) AND CVM RESULTS

CVM Benchmarks:

Royal Theatre: Mean WTP $27.210

Napoli Musei Aperti: Mean WTP $11.063

EIM results are reported as ($ impact/population)

Organization	EIM unadjusted	EIM adjusted for comparison with Royal Theatre attendance	EIM adjusted for comparison with Napoli Musei Aperti attendance
Boston Symphony	$ 12.57	$ 9.09	$ 20.09
Metropolitan Opera	$ 15.90	$ 8.03	$ 17.74
Guthrie Theater	$ 5.39	$ 9.21	$ 20.34
Arena Stage D.C.	$ 2.44	$ 5.20	$ 11.49
Lyric Opera	$ 3.59	$ 8.70	$ 19.23
Cleveland Orchestra	$ 12.94	$ 17.93	$ 39.62
Philadelphia Orchestra	$ 4.80	$ 6.12	$ 13.51
NYC Ballet	$ 4.09	$ 4.31	$ 9.52
PA Ballet Assoc.	$ .62	$ 5.47	$ 12.09

Only the most preliminary interpretation of these results is provided here. The simple average of the nine U.S. organizations per capita economic impacts yields $8.23 using the Royal Theatre adjustments, and $18.18 using the Napoli Musei Aperti adjustments. If the Cleveland Orchestra is dropped as an outlier, these averages decline to $7.02 and $15.50 respectively.

Since the mean WTP for the Royal Theatre is $27.21, these comparisons are consistent with an average EIM/CVM ratio <1, a ratio that is rather low at .30 (including Cleveland). It is interesting to note, however, that the median WTP for the Royal Theatre was $11, such that the EIM/CVM ratio is .75 (including Cleveland) and .64 without Cleveland. None of the U.S. organizations have adjusted EIM >CVM, using the Royal Theatre mean WTP, and only the Cleveland Orchestra has an EIM>CVM using the Royal Theatre median WTP. Thus, it is clear that for this sample, if the CVM results for the Royal Theatre could plausibly be used as proxy for these U.S. arts organizations, the CVM values would exceed the EIM values. Furthermore, to the extent that the EIM results can be interpreted as NEIM rather than EIM results (and this particular Gapinski listing of results, in contrast to some others included in a different Gapinski table, does seem to be based on a naïve definition of the primary direct impact linked to organization budgets), those NEIM studies would be poor proxies for the CVM studies.

Of course, to further cloud the interpretation, the EIM results, when compared to the Napoli CVM results generate the opposite result. Only the NYC Ballet has an EIM/CVM ratio <1, and the average EIM/CVM even without Cleveland is 1.4. However, four of the U.S. organizations have EIM (NEIM) results that are relatively close to the Napoli CVM result (NYC Ballet, PA Ballet, Arena Stage and Philadelphia Orchestra). Those four organizations have an average EIM of $11.65, and a resulting average EIM/CVM ratio of 1.053, arguably close enough to suggest a case in which the (probably) NEIM results are a reasonably proxy for the possible CVM results (if the Napoli finding was to be used as a proxy for CVM studies of those U.S. organizations).

Obviously, much remains to be done in exploring these relationships. But a reasonable case exists that we can no longer discuss CVM and EIM as merely independent (and flawed) valuation approaches. Their proper usage requires a more careful consideration of just what they are measuring and under what conditions their findings can be added together to yield a closer estimate of the "real" result (as in the pure complements case), or interpreted as partial (or even perfect) substitute approaches to reaching the same proxy for the real valuation.