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The Relationship Among Regional Economic Impact Models: Contingent Valuation Versus Economic Impact in the Case of Cultural Assets

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THE RELATIONSHIP AMONG REGIONAL ECONOMIC IMPACT MODELS: CONTINGENT VALUATION VERSUS ECONOMIC IMPACT IN THE CASE OF CULTURAL ASSETS[1]

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Abstract

Despite concerns as to its reliability and expense, the contingent valuation method (CVM) of measuring regional economic impacts is rapidly spreading from its traditional base in environmental economics to cultural economics, nearly supplanting the still popular but also flawed economic impact methodology (EIM). While applying multiple approaches to the valuation of quasi-public cultural assets would seem wise, as is common in business valuations, the prohibitive expense of competently conducting either study has made that rare. Furthermore, since the conceptual relationship between these two (or more) approaches has not been systematically explored, it is unclear whether one should sum the valuations of the two approaches to obtain the "full valuation" (the complementary case), or treat those two approaches as alternatives for estimating the same value (the substitution case). Six options for the weighting of the results of CVM and EIM studies are explored, including the possibility that poorly done naïve economic impact studies (NEIM) could actually serve as low cost proxies for more conceptually sophisticated CVM studies in the valuation of cultural and other "mixed" goods. Extensions to other regional impact models such as travel cost and hedonics would also be important in fully understanding the relationships among differing approaches to measuring the regional economic impact of institutions and events.

JEL: L83; R11; R15; Z11

I. Introduction

There are three basic methods used in business or real estate appraisals: the income approach, the market approach, and the asset based approach. Valuation experts commonly apply all three approaches to provide stronger support for their opinion, since "the three broad approaches … so often are not discrete from each other, but are

[1] This research was originally motivated by an invitation from The Cultural Policy Center of the University of Chicago to participate in a "Contingent Valuation of Culture" conference in Chicago, leading

interrelated" (Pratt, 1999, p. 42). Since it appears reassuring when each approach yields a similar result, this interrelationship apparently renders each an alternative or substitute method for discovering the correct value.

There are three common approaches to valuing cultural assets: economic impact spending studies, non-survey indirect willingness to pay methods (including the hedonic market approach and the travel cost approach; in the arts case see Boter et al. 2005), and the contingent valuation survey approach (Frey, 1997; Seaman, 2003a). These alternative approaches are nearly always used in isolation, without any effort to apply more than one approach to confirm the credibility of the findings. In fact, there has been no investigation of the conceptual relationship among these alternatives, so that their analytical interrelationship remains vague and unexplored.[2]

We attempt to partially correct this deficiency by addressing the relationship between the traditional economic impact method and the contingent valuation approach. The case of cultural assets is the focus, but the analysis would apply more broadly. For example, if one were to conduct both an economic impact study and a contingent valuation survey of the Philadelphia Symphony Orchestra, should those results be treated as alternative approaches to reaching its true economic value (the pure substitute case), or should those results be treated as focusing on such different aspects of its value that they should be summed to obtain the correct value (the pure complement case)? Obviously, intermediate conclusions are possible, and likely.

II. A Brief Overview of the Two Approaches

The contingent valuation method (CVM) requires the conducting of a survey of a sample of the population of area A so as to determine the value that individuals attribute to non-tradable goods "or to some characteristics of tradable goods not revealed by the

to the paper "CVM vs. Economic Impact: Substitutes or Complements?" Bruno Frey, Jeffrey Bennett and Ronald Cummings have made helpful comments on earlier versions.

[2] In environmental economics, there have been limited efforts to examine the relationship between hedonic and contingent valuation approaches (Brookshire et al., 1982), but no efforts to explore the connection between economic impact and contingent valuation methods.

market mechanism" (Cuccia, 2003, p. 119).[3] The main goal of CVM is to estimate the demand curve of these "mixed goods," including the consumer surplus realized by both direct and indirect consumers (e.g. those who value the "option" of attending cultural events in the future, even if they do not now attend). Before CVM dramatically rose in popularity, [4] the economic impact method (EIM) had generated (and continues to generate) large numbers of studies devoted to the determination of the contribution of the good (here a cultural asset) to the economy of region A as measured in personal income, tax revenue, jobs or total output, allegedly indicating how much poorer region A would be were it not for that cultural asset. Properly done, this approach identifies the incremental economic activity generated by the net infusions of new spending, as well as the complex induced and indirect longer term economic impacts of that spending injection.

Increasing familiarity with either of these approaches may well render one more sympathetic to the alternative. For example, while CVM has the potential to capture important aspects of value not observed in market transactions, the approach is commonly criticized for exhibiting various biases. Among the most important biases are those linked to: (1) sample selection and questionnaire design; (2) anchoring (e.g. the tendency in "full information" cases for surveyed individuals to treat any level of current government per capita subsidy as indicative of their own per personal willingness to pay); (3) inadequately perceived budget constraints making responses entirely hypothetical; and (4) "embedding" effects of various kinds that can create results that are inconsistent with economic theory (e.g. violating the "more is preferred to less" presumption, or exhibiting excess sensitivity to the existence of irrelevant alternatives).

At the same time, the deficiencies of economic impact spending studies have become legend, and are in part responsible for the rise of contingent valuation as an alternative. Seaman (2003) identifies six key errors related to: (1) the failure to subtract

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[3] Here, no distinction is made between a maximum "willingness to pay" approach and a minimum "willingness to accept" approach despite the practical (if not necessarily theoretical) importance of that distinction. Also, rather than consider incremental changes in the size of the cultural asset, we initially consider the more "dramatic" binary case of either having the asset at its existing size or not having it at all (i.e., "what is the value of 'saving' the symphony orchestra?").

[4] The *Journal of Cultural Economics* created a special joint issue to cover the large number of papers recently devoted to this approach in the arts, November 2003, Volume 27 (issue: 3-4).

local *sources* of funds and non-local *uses* of funds from the budgets of the subject entities; (2) the erroneous attribution of all hotel, restaurant and retail spending by non-local consumers to the existence of the subject entity; (3) the failure to adapt the multiplier (used to measure the longer term indirect effects) to the specific region; (4) failure to account for potential supply constraints in an essentially demand driven model; (5) the failure to attempt to verify any of the EIM results *ex post*, when e.g. a labor dispute forces the temporary closing of a subject institution, or adverse economic effects lead to its elimination; and (6) the incorrect presumption that a positive economic impact is a sufficient condition for justifying tax-financed support.

This sixth "public policy" error is regularly committed also by CVM proponents, who rarely adequately compare 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").

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").[5] CVM studies, at least as applied to

[5] But to be fair, a kind of fallacy of composition holds in such criticism whereby the excessive use of this particular argument itself becomes an analytical error. For example, if one makes the trite but correct argument that no single industry, organization, or individual is irreplaceable, an equation for GDP that sums the individual "economic impacts" of each individual firm or industry can absurdly suggest that GDP is $0. That is, since in some sense all spending on one sector can be diverted from others sectors and resources can be shifted all over the economy, the same argument that has been used to suggest that the EIM "economic impact" on the economy of Chicago of the Lyric Opera may well be $0 could be extended to almost any other organization and industry with the result that the summation of all such economic impacts are $0 and the Chicago economy disappears! Of course, the context in which the argument is made that the effect on the Chicago economy of the Lyric may be $0, is to correctly prevent Lyric enthusiasts from making a claim on the public purse based solely on the incremental argument that Chicago will lose x number of jobs, y personal income and z total output if it were to fold. The intention is to force Lyric proponents to focus more honestly on purely distributional arguments, or find more unique benefits to the Lyric (perhaps measured by CVM studies) that would more plausibly be lost were the Lyric to close.

environmental and wildlife issues, have at times generated even more dramatic inconsistencies.[6]

If one thus assumes that both approaches have fundamental weaknesses, how might one use both together so as to generate potentially offsetting adjustments that could better approach a "true valuation?" Could one approach be used to check how realistic are the findings of the 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?

III. Alternative Typologies: A Summary

Imagine that there is a fully accurate magnitude of the "real" economic value (RV) of a cultural resource (e.g. a symphony orchestra in a particular metropolitan area, A).

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 (α, β) are:[7]

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

(1b) (1,1)

(1c) (1,0)

(1d) (0,1)

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

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[6] As dramatically exhibited by the famous implication that a single whooping crane's life could be worth $3.7 billion (using the average willingness to pay summed over the entire U.S. population), which if extended to all whooping cranes, much less all birds and other "desirable" wildlife could exceed the entire size of the U.S. economy (see Mead, 1993, p. 317).

[7] We ignore the obvious 6th possibility of $(\alpha, \beta) = (0,0)$, which would imply that both approaches are so fatally flawed that we should systematically ignore EIM and CVM and try something else, or just give up trying to measure the value of cultural assets entirely.

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.[8]

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).[9] 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."

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[8] Furthermore, unless I wanted to repudiate my own past calls for more application of CVM to the arts, I could not plausibly place much weight on case (1d), other than to cite it for completeness.

[9] Note that while Noonan's (2003) outstanding annotated bibliography of contingent valuations studies identifies 18 studies published prior to 1997, almost all of these were "willingness to pay" studies less formally and technically linked to the CVM approach as it had been applied and refined from its "roots" in environmental economics. Thus, while making reference to the most important of those past path-breaking

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 pragmatic Bille-Hansen perspective is, in fact, fully consistent with critiques of the excessive use of EIM in the arts that have at times been erroneously interpreted as a total condemnation of such studies (e.g., Seaman, 1987; van Puffelen, 1996). Specifically, the Seaman (1987) criticism of the EIM application to the arts was 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 due to the likelihood that the arts would simply fail in most cases to "score well" when compared to other firms and economic sectors. Thus, arts proponents were advised to 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 itself was being poorly served by EIM, since such studies were contributing to the confusion regarding

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efforts in the arts, she muses "the limited use of CVM in the literature of cultural economics is quite surprising…" (p. 1).

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."[10]

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 <u>not</u> 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."[11]

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 "private pecuniary benefits" while CVM tries to measure the "public and externality benefits", automatically making CVM more relevant to a defensible case for government subsidy since it directly speaks to the issue of free-riding and non-appropriable benefits. Otherwise stated, <u>as applied specifically to rational public subsidization</u> (in contrast to 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

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[10] See especially, pp. 61-71 in the original Seaman (1987), or pp. 741-751 in the reprinted version in Towse (1997). Some of that argument is abbreviated in the somewhat shorter version appearing in Seaman (2000).

[11] My own childhood hometown of Hamburg Pennsylvania (stable population 4,000) almost suspended its justly famous Halloween "King Frost Parade," which was regularly attended by as many as 40,000 people coming from as far away as Philadelphia (60 miles) due to total local resident indifference, verging on exhaustion. This is, in fact, a potential case of the short run EIM being clearly substantial, but possibly the CVM being negative (a possibility that CVM commentators are increasingly recognizing should be incorporated into such studies; see e.g. Portney (1994)).

weight on any EIM valuation ($\beta = 0$), since even if an accurate EIM study identified large economic benefits stemming from some X, those benefits should still be ignored in a rational debate about subsidizing X.

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.[12] 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.[13]

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 of the organizers)? The literature on rent dissipation as applied by Richard Posner and others (especially in the antitrust context of the social costs of monopoly)[14] 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

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[12] This example is more thoroughly developed in Seaman (2003b). It is argued that the real economic impact upon Atlanta was very imperfectly captured by the short run spending impacts based upon the export model but were instead related to the longer run reallocation of economic resources within the Atlanta metro area. See the LGR component of equations (2) and (2)' below. Of course, a CVM study might have identified other benefits as well, although as discussed below, there would probably have been some definite overlap in the benefits identified by those separate approaches.

[13] This was the actual estimate of the economic impact from a study commissioned by the Atlanta Olympic Committee after Atlanta was awarded the Games, but before the Games were actually held (Humphreys and Plummer, 1992). While such economic benefits are sizeable, they would still represent less than 1% of the state of Georgia's GDP for any one year – a sobering reminder of the broader context of any EIM or CVM valuation.

[14] For example, see Posner (2000), Ch. 2, "The Costs of Monopoly."

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 <u>is</u> 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?[15] 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 (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

[15] This possibility has, of course, not gone unrecognized, but the practical magnitude of this complication has been questioned. For example, according to Frey (2000, p.184), "It might be argued that at least part of that willingness –to-pay would be expressed by local respondents who include the prospects of attracting tourists in their evaluation. But, option values are not taken into account, as they do not lead to actual visits, and under ideal conditions, only a minor part of the option value can be appropriated by the local residents in the form of royalties for the pictures taken and films made." Note however, that the argument above that such effects could be important does not depend on the option demand of tourists, but on other non-user valuations linked to actual tourism via a form of local resident existence and bequest motives, and to local resident "producer option" values that are likely to be much more easily appropriable by local residents (even if the identity of local beneficiaries is known only imperfectly). Frey's even more central

jobs would be lost as a result of the regulation" (p. 13). This argument should apply symmetrically to 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. Thus, 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

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point is that only public referenda can provide *ex ante* public policy guidance since the various valuation methods are normally applied *ex post*.

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.

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

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:

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

In the case of the two methodologies being perfect substitutes: $(\alpha,\beta) = (0,1)$ 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 ($\beta = 1$), but instead would be .833 ($\beta = .833$). The partial substitutes case then becomes, in terms of (α, β) in equation (1): (1,0) or (0, .833).

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

In the case of the two methodologies being pure 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.

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 $\beta = 1$ in equation (1).

The perfect 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.[16]

Thompson (1998) makes the pure complements assumption when 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."[17] 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. 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.[18] Thus, while

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[16] This framework is further discussed less formally with more examples in Seaman (2003b), and is adapted from the similar form used by Noll and Zimbalist (1997, pp. 55-91, especially p. 74).

[17] A co-authored extension of the contingent valuation study of the arts in Kentucky (but not the conventional economic impact analysis) can be found in Thompson et al. (2002).

[18] A similar adjustment to the CVM value, to make it consistent with the $22 million EIM result, might be thought to require that the CVM value of $21.8 million be multiplied by four to refer to what respondents would pay to avoid, not a 25% reduction in the size of the arts sector, but a 100% reduction (i.e. total elimination). But as is well known, this would require a specific assumption about the total absence of an

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 <u>total</u> 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

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"embedding effect," which refers to a frequently found insensitivity in CVM studies to the amount of the good being valued. If there is "full" insensitivity to such changes in the magnitude of the lost good, the $21.8 million CVM value would require no upward adjustment to account for full vs. only partial arts elimination. On the other hand, the expected presence of diminishing marginal utility would allow for a greater than 4 fold adjustment, inasmuch as people would seemingly be willing to pay even more to avoid a loss of the last 25% in the "number of arts performances and exhibits" in Kentucky. This scaling issue, of course, has been frequently addressed in the vast literature on CVM.

NEIM (naïve economic impact) studies for more costly CVM (or for sophisticated EIM studies).

V. The Complication of CVM and EIM Interdependency

Even if the pure complements case were 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.

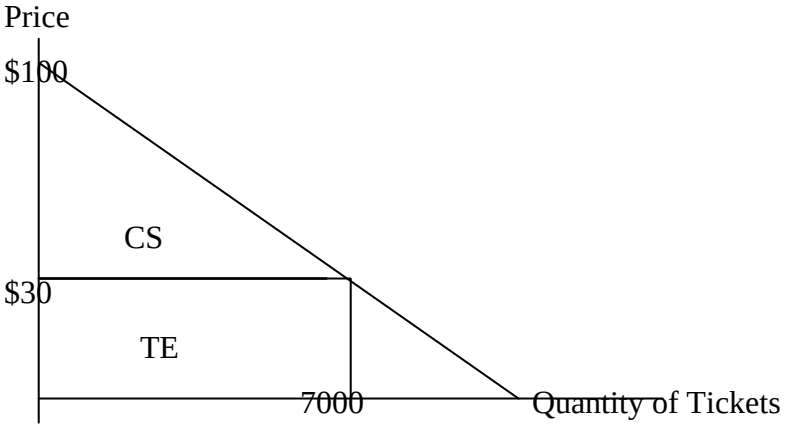
V. Stylized Example #1: No Tourist Demand

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).[19] 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).[20]

Diagram I



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

[19] Forrest et al. (2000) explicitly recognize that if arts organizations were able to capture much of this consumer surplus (including any consumer surplus accruing to non-users who value the product), the normative case for public arts subsidies is significantly weakened. In fact, they specifically shift the focus of the case for such subsidies away from the traditional argument regarding externalities and public goods and argue "that subsidies to theatres may be appropriate because of their inability to engage in spatial price discrimination to capture consumer surplus."

[20] Inelastic own price elasticity of demand values have been generally common findings in empirical arts demand studies.

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 (1971) 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 et al. (2002) study of the arts in Kentucky supports the use of a lower ratio in this Diagram I hypothetical example. Their ratios of all household to patrons "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 claiming to identify how much the local economy would shrink in the absence of the theater, and CVM 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.

<u>In Praise of Naïve Economic Impact Models (NEIM)</u>

The cold reality of point (3) above raises an intriguing possibility. Might it be possible to put such erroneous economic impact studies to good use? 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 who nevertheless would be willing to pay to support the asset). 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.[21] 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

[21] As noted above, such easily measured "accounting" benefits would not require any formal study, and might be better thought of as being "netted out" of both CVM and EIM studies to focus upon the unobservable external benefits. But total user expenditures as revealed in budgets do serve as the starting point for all economic impact studies (especially naïve ones, which fail to even attempt to distinguish between the part of the budget that stems from net injections of new spending and mere diversions of local

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.[22] 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 (1987).

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, even

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spending). This very simplicity of measurement can, however, be an advantage if the relationship of the resulting benefits to "real value" can be clarified.

[22] See Gapinski (1987) for a comparative listing of many economic impact studies done in the 1970's and the 1980's. His more comprehensive listing, however, of education, sports, general recreation as well as the arts EIM (or perhaps NEIM) studies found an overall average of 1.6 for the multiplier. Theoretically, the value of the multiplier is dependent on the size of the region being examined, with larger more self-contained regions having larger multipliers, and smaller less independent regions having smaller multipliers.

though a review of that study suggests that it was done with admirable professionalism, it seems 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.[23]

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, $\beta = 1$), 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

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[23] A provocative study of the "Economic Consequences of Professional Sports Strikes and Lockouts" by Coates and Humphrey (2001), claims to find evidence that temporary total stoppages of professional sports activity and even the complete departure of a team from a local community "had no impact on [city} economies in the following years." Even more dramatically, similar findings have been claimed for American mega-events. See the study of the Super Bowl by Porter (1999), and the study of the Major League Baseball All Star Game by Baade and Matheson (2001).

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 potentially exploitable via price discrimination and related tying contract strategies). This comparison of NEIM pecuniary externalities vs. CVM real externalities establishes that, even where the total NEIM valuation equals the total CVM valuation, CVM externalities will exceed NEIM externalities.[24]

The Sensitivity of the Diagram I (No Tourists) Results to Alternative Formulations

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.[25]

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[24] This is a desirable relationship to the extent that one might then conclude that there is a stronger claim for public subsidies stemming from the CVM result than from the lower NEIM. This would be the correct public policy inference even if one were erroneously treating both types of externalities as purely comparable. Note also that treating the Diagram I case as a pure substitutes example will also avoid the public policy error of simply adding both forms of externalities and hence erroneously strengthening the case for public theater subsidy compared to alternative subsidy targets.

[25] Of course, one could specify a demand function that yields $0 consumer surplus in which the ticket price = the reservation price for all users (changing demand in Diagram I to a kinked curve horizontal at $30 out to a quantity of 7,000 units and then downward sloping for Q>7,000). But, while suggestive of how changes in the demand function can change the ratio of CS to TE, this is obviously an extreme and highly

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."[26] 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.

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unlikely case. Were it to be true, however, the use value related to CS would also be $0 and combined with an assumed $0 non-use value, the CVM valuation would also be $0 = the EIM valuation.

[26] The use of mechanical economic impact estimates has been encouraged by the publication by the American Symphony League of "Show Them the Money!: Calculating the Economic Impact of America's Orchestras," which provides an "easy-to-use" table that would allow any cultural organization to just plug in its own data (such as a symphony orchestra that "spends $1 million in a community with a population of 250,000") and "instantly" find that it would have an economic impact of 40.5 full time equivalent jobs, $889,720 in personal income, and $75,730 in state and local government tax revenue. Anyone also knowledgeable about RIMS II multipliers and the specific relationship between the "earnings multiplier" vs. the "output multiplier," could also derive the total regional output impact as $2.812 million. While this publication, in fact, does a very admirable job of describing a sophisticated approach to the estimation of regional economic impact, and the "table parameters" are linked to the very ambitious 1992 effort by the National Association of Local Arts Agencies (NALAA) to carefully derive the economic impact of arts organizations in 33 different communities in 22 states, its actual use will almost inevitably yield naïve economic impact estimates (NEIM) by encouraging organizations to simply plug in their budgets (i.e. "spends $1 million in the local community") without adjusting for resident vs. tourist derived revenues, non-local vendors and other "instant " leakages of spending from the local community prior to applying the "average" multipliers that are contained in the table. The publication is easily available from the American Orchestra League's web-site.

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).[27] 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 (2003) "WTP for Selected Studies," yields an average "mean WTP" of $56.56 (omitting median values, sports studies, and non-dollar denominated results).[28]

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

[27] See Carson, et al., (2001, p. 178).

[28] Those nine studies are only a small subset of all of the studies that he annotates, so that this particular average WTP is only suggestive of the "true" average WTP across the entire range of studies. That larger population would also include those studies denominated in other currencies, which require translation into dollars using the proper currency exchange rate for the appropriate time period.

	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)

* 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.

** Past CVM studies can be used to identify plausible ranges for this variable.

+ 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 (1987) 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). Forrest et al. (2000) provide an excellent example of the actual estimation of consumer surplus in an arts related case (regional repertory theater in the United Kingdom).

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 when a greater number of local residents avoid attending the theater, 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 <u>and</u> 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 becomes <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 <u>over-statement.</u>

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, it is possible that the Kentucky economic impact study 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, <u>if</u> 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.[29]

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 original 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 or 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 understated the real CVM valuation, while with both lower population variations, the NEIM would overstate 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) or (0,1.5), a case in which the NEIM inspired value of β becomes >1. Where the NEIM overstates the real CVM value (the lower population cases), the true weighting options would be (1,0) or (0, $0<\beta<1$).

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.

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[29] At the same time, it must be admitted that the sensitivity analysis in Table I might have been used to predict that the NEIM would under-estimate rather than slightly over-estimate the CVM value. That is, since we are told that only 400,000 tickets are sold every year in an adult population of 4.2 million, the % of direct users (L) in the total population is relatively low (only 9.5% on an annual basis and lower than 33% even if viewed over a longer time period since over 67% of the Danes have "never" visited the Royal). In the above sensitivity analysis, as the % of local users (L) dropped from 14% to 9.33% (as population grew without any increase in demand), the ratio of NEIM/CVM fell to <1, even after making a plausible, but arbitrary, downward adjustment to the non-use value ratio. This is a reflection of the complexity of the

Furthermore, in terms of equation (1), those two methodologies are actually perfect complements with α and β both =1, but with the actual EIM value = $0, so that total real value TRV = the CVM value.

VI. Stylized Example #2: Positive Tourist Demand (A Brief Treatment)

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) are 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, a 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 the simpler multiplier from

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NEIM and CVM relationship, and the inadequacy of using only one variable from Table I, like "L," to make the *a priori* prediction about the likely NEIM/CVM ratio in any particular case.

Diagram I of 2.6, the full economic impact (based upon EIM, not 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). Therefore, 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 does have a real (not just pecuniary) 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 serves as a proxy for the primary direct impact. Thus, 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 that users do not also have non-use value, so that the average user option price of $35 = average user CS). Standard non-use value among the 43,000 residents not attending the theater remains .2 x $35 = $7, for an aggregate non-use value of $301,000 (as before), and at least a CVM of $546,000 (as previously derived). 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? A population that is told that a correctly done economic impact study has shown that their region will be $1.170 million richer per year with the theater than without the theater would be expected to increase their willingness to pay for that cultural asset. With "full rent dissipation" the required 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 $0<\alpha, \beta<1$.

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%. This error will be 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." If we again assume full rent dissipation (such that this NEIM result is fully incorporated into the non-use value), we get a simple variation in which the relative rankings of the 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 nor 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, we would 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. Some Empirical Evidence

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 economic valuation.

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 $\beta = 1$, 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 was indeed based on an analysis of tourist visits vs. Kentuckian visits to arts performances in the state, it is quite difficult to know exactly how many of those tourist visits were really primarily motivated by the arts. Alternatively, tourist dollars spent at arts facilities might just have been one way to spend tourist or visiting business dollars among those visitors temporarily in Kentucky for reasons unrelated to the arts. In this sense, economic impact studies of conferences (and sometimes Broadway plays) can more plausibly assume that such events are the primary motive for tourist or business visits.[30] 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 <u>are</u> 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 <u>must</u> 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 <u>is</u> 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

[30] An example in which researchers directly attacked this "visit motivation" issue is Stanley et al. (2000). They found that of the total of $67 million (Cdn) spent within Ontario and Quebec by "all visitors" to the Renoir Exhibit, only $8 million (or 11.9%) represented "new money brought into the province which would not otherwise have been spent there."

studies (similar in spirit to the statewide Kentucky CVM vs. EIM (NEIM) results), we can only construct suggestive 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 (2003) 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 (1987) comparative listing of earlier U.S. based (as opposed to more recent, or also non-U.S.) economic impact studies. His results are 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 potential error. However, these findings are convenient and at least provide tentative results.

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).

VIII. Summary and Conclusions

Both economic impact and contingent valuation studies are flawed methods for valuing the artistic assets of a community. On welfare economics theoretical grounds, the contingent valuation method has the important advantage of being conceptually linked to at least one type of economic surplus (i.e. consumer surplus). By contrast, economic impact studies that focus on potential net changes in local output and income can be related to economic surplus only if a defensible link could be made between such changes in spending flows and changes in producer surplus (a connection that is rarely claimed and almost never analyzed).

Thus, even if the case could be made that the results of a correct CVM study should indeed be added to the results of a correct EIM study (the pure complements case where both approaches measure totally different aspects of the true economic value), one might question such an additive result on the grounds that the two dollar values are in "different dimensions" (i.e. not uniformly economic surpluses).[31]

The lengthy analysis here has not focused on this aspect of the problem, but has implicitly assumed that "dimensional compatibility" was not a problem. Instead, the focus has been on the legitimacy of the pure complements assumption. Our conclusions are that:

1. Since both the CVM and the EIM approach are <u>not</u> conceptually independent of each other, their <u>proper</u> application will naturally involve some double-counting. Therefore, the correct values of the (α, β) parameters in the real value equation RV = α (CVM) + β (EIM) will generally be fractional when correct versions of the methods are used, although various combinations of the parameters will yield the correct RV result (including one being = 1, and the other fractional).
2. Thus, the pure complements case (1,1) cannot be viewed as the general case, and can only occur to the extent that significant error is present in the individual valuation approaches, or in the special case in which the customary interdependency conditions are truly absent.
3. Furthermore, the pure substitutes case (0,1) or (1,0) can only occur with significant measurement error in one of the approaches, as in the special case where a naïve economic impact model (i.e. one erroneously overstating the correct net change in local economic output) accidentally yields the true value as measured by a correctly applied CVM model.
4. Given measurement errors in both approaches, it is possible that a naïve economic impact model (NEIM) can better approximate the real economic value compared to a sophisticated economic impact model (EIM) or a correctly applied CVM model. Various rankings of the EIM, NEIM and CVM valuations relative to the real value RV can be derived demonstrating that, in addition to being

[31] Jeffrey Bennett (Australian National University) suggests in personal discussions that this is the primary challenge in deriving a coherent relationship between the two different approaches.

considerably less expensive to apply, a naïve economic impact study can potentially provide better results than can more defensible methodological approaches. Of course, getting close to the "right" answer for the "wrong" reason violates the desire for identifying the "best approach," and could be defensible only to the extent that the conditions under which such a result will occur can be reasonably identified. Attempts are made to suggest how such factors could be identified.

5. Some tentative empirical results from past studies reveal the real world possibility of the pure substitute case, where potential NEIM studies may serve as good proxies for CVM studies. There is no presumption that either result, however, is an accurate reflection of the true valuation.

This effort to systematically examine the relationship between willingness- to- pay (CVM) and economic impact studies has demonstrated the complexity in interpreting the results of these two different valuation methods. While there have been few studies applying both approaches to the same subject, the increasing attention being paid to the weaknesses and the expense of applying the "conceptually superior" CVM approach justifies further efforts to clarify the relationship between these two flawed valuation methodologies.

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