Does Land Development Pay for Itself?

A Critique of Cost-of-Community-Service Studies

John Estill and Tom Means

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Abstract

Our paper addresses the fundamental belief of community planners that multifamily housing development does not pay for itself. This belief is based on flawed cost-of-community-service studies, produced and used mainly by urban planners. These studies fail to understand market responses to land use decisions, they violate basic assumptions necessary to compare projects using benefit-cost analysis, they fail to understand the distinction between private and public goods in allocating costs, and they rely on average instead of marginal costs to allocate costs of additional service levels. Multifamily housing projects will offer better returns when correct methods are employed to determine their relative merits. More importantly, better studies will help address the growing housing imbalance that is rewarding current homeowners at the expense of renters and new home buyers.

Author Affiliation and Contact Information

John Estill
Department of Economics
San Jose State University
john.estill@sjsu.edu

Tom Means
Department of Economics
San Jose State University
tom.means@sjsu.edu

Authors' Note

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Introduction

"Every study shows that housing loses money for the city's treasury: Once they move in, residents need libraries, police, parks and firefighters. Offices and shops, meanwhile, pay for themselves. They require fewer city services and produce more taxes" (Herhold 2010).

Cost-of-community-service (COCS) studies represent an important mechanism that planners use to discourage housing in urban areas, both reducing the supply and increasing residential costs.[1] Supply is reduced as other uses are increased at the expense of multifamily housing, and the various "impact" fees justified by COCS studies also drive up the cost. This, of course, is popular with current residents because it increases the value of their property. This increase in value, however, comes at the expense of renters and new, particularly young, potential home buyers who are priced out of the residential market. One need only look at California to see the result of such policies.

There are several shortcomings in typical COCS studies. They fail to properly account for the following four essential components of proper benefit-cost analysis. First, COCS studies fail to incorporate market responses to land use decisions. Second, these studies violate the basic assumptions necessary to compare projects using benefit-cost analysis. They also do not distinguish between the costs of allocating private goods and those of allocating public goods. Finally, COCS studies rely on average rather than marginal costs to value additional service

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[1] O'Toole (2009) provides a nice summary of how urban planners artificially restrict the supply of housing.

levels. These shortcomings, as detailed below, make COCS studies inaccurate as

currently implemented.

Background

The term "fiscalization of land use" was coined by Misczynski (1986) to describe the

motivations of local government officials in making their land use decisions. Specifically, are

land use decisions motivated by which type of use yields the highest amount of revenues net of

providing community services? Land development can lead to increased government revenues

primarily through increased sales tax and property tax revenues. New development may also

generate other impact fees (for schooling, parking, traffic congestion, etc.). These additional

fees, which are not imposed on the existing stock of development, are often justified because

local bureaucrats claim they are necessary due to the increase in demand for public services

from new development.[2]

The effects of new development are often calculated by conducting a COCS study, which

allocates public service costs by land use and type of service.[3] COCS studies generally provide a

comparison of four development categories: single-family housing (SFH), multifamily housing

(MFH), retail, and industrial. For each category, planners create a hypothetical model to

calculate the additional tax revenues generated by the project along with the additional costs of

providing public services.

In most cases, COCS studies reveal that retail development provides the highest net

return. Industrial and SFH projects tend to yield a slightly positive return, while MFH projects

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[2] Cities that have experienced significant employment growth from tech companies (Amazon in Seattle, Washington; Apple in Cupertino, California; and Google in Mountain View, California) are now considering employment fees. Proponents argue that these large employers are not paying their fair share due to the increased cost of traffic and housing for employees.

[3] Another approach, a fiscal impact analysis, attempts to identify the increased tax revenue and public expenditures necessary to provide the current level of public services.

provide a significant negative return. Opponents of land development typically refer to these

hypothetical studies to justify their opposition to MFH projects. They argue that city fees are

inadequate to cover the costs of providing public services to the proposed project. These studies,

however, fail to provide useful information regarding which type of land use offers the

best return.

We look at a hypothetical COCS comparison posted on the League of California Cities

website and show how it fails to capture the true impact of a project.[4] Next we briefly discuss

fiscal impact analysis, explain COCS studies, describe the four shortcomings of these studies,

and finally offer our conclusions.

Fiscal Impact Analysis

As noted earlier, there are several common approaches to developing a model to estimate the

impact of land development. Most of these are based on economic modeling, which compares

revenues with costs. They are for the most part produced by planners who do not have

adequate training in economics or who do not appreciate the difficulty of estimating and

forecasting revenues or expenses. The basic guide for planners is *The Fiscal Impact Handbook*

(Burchell and Listokin 1978), which describes the method for performing a fiscal impact

analysis (FIA). The handbook offers a guide to estimating an impact using a detailed case

study method or a less costly practical or simpler multiplier model. The authors suggest that

either method will yield similar results, and they also point out several limitations of these

approaches (Burchell and Listokin 1980, 1992; Edwards and Huddleston 2010). Nevertheless,

most planners seem confident that these approaches provide useful information since the

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[4] An online search of COCS studies yields many examples, most of which are hypothetical comparisons of different project categories. None use data from actual projects. We did find a few that compared uses between cities, but the conclusions remained the same regarding types of uses.

results always support the same general conclusions. That is, retail use will generally pay for itself, and MFH will not generate sufficient tax revenues to pay for the increase in demand for public expenditures (Edwards and Huddleston 2010; Morgan 2010; Mucha 2007).

COCS Studies

The COCS studies are similar to FIA studies but attempt to provide a benefit-cost measure by allocating revenue by land use and allocating costs by use of public services. Use of public services may vary by land use. Retail owners and some residents may demand police services, but other residents may demand more park or library services.

The first COCS studies originated from the American Farmland Trust (American Farmland Trust 2016) in the 1980s as an attempt to preserve open space and farmland. These studies provided benefit-cost ratios that showed residential development would not pay for itself. Not surprisingly, farmland and retail and industrial land uses produced very low benefit-cost ratios.[5] These crude findings were for aggregate categories and not for hypothetical projects. That is, they provided an ex post breakdown of a city budget to show how residents are subsidized by retail and commercial landowners and farmland owners. As we will demonstrate later, the allocation of public services (such as parks, police protection, and fire protection, which contain nonrivalrous consumption characteristics) is not well thought out when determining who benefits from, and who pays for, public services.

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[5] It is interesting to note that farmland was not allocated any costs of using public services even though owners of farms seem to be similar to residents of housing.

Several websites now offer a detailed instruction guide for how to produce a COCS study comparing the different uses of land.[6] While there are a vast number of studies, their impact on decision-making is unclear. Many of these studies are posted on websites that provide information for local elected officials and planners.

None of these instruction guides appreciate the inherent problems noted above and discussed in the next section. However, the *Community Economic Newsletter* (Deller 1999) provides a very thorough critique of COCS studies.

Table 1 (page 18) provides a hypothetical example comparing four types of development.[7] The property size is set to 5 acres as various assumptions are made to determine city revenue and expenditures generated from each hypothetical project. As noted earlier, the biggest net return to land use is retail, since it generates significantly more sales tax revenue to the city while apparently imposing little demand for additional public services. On the other hand, multifamily residential housing generates more property tax revenue than SFH, but it also generates significantly more service costs, making it appear to be the worst category of land use for net benefits to a city. These results put pressure on politicians to promote retail development over housing. Similarly, opponents of high-density housing claim that these projects will not generate enough revenues to pay for themselves, forcing current residents to subsidize new residents.

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[6] Pennsylvania State University (Kelsey 1998), Ohio State University (Prindle and Blane 1998), and the University of Wisconsin–Madison (Edwards 2000) all offer online detailed step-by-step instructions for completing a COCS analysis. These sites acknowledge some criticisms of the approach but still maintain that COCS studies are reliable since they usually yield similar results in comparing land uses.

[7] The actual table is located at California Local Government Finance Almanac (2007). It is provided by the League of California Cities to show elected officials how to evaluate the impact of different types of development. As noted earlier, this table and its conclusions are very similar to others published across the country.

Deficiencies of COCS Studies

COCS studies fail to understand the following four essential components in their analyses.

COCS Studies Fail to Incorporate Market Responses to Land Use Decisions

Suppose that the results of these studies are true and that retail development generates the highest return. An obvious question is whether any cities have actually pursued a policy of building only retail to produce additional revenue growth for local government. Similarly, are there any cities that have eliminated housing, especially MFH units, and expanded their retail base? We are not aware of any cities that have pursued building only retail. The obvious reason is because retail development can generate sales tax revenue only if there are customers who live nearby. There may be some cities in dense urban areas that have focused more on industrial and retail uses (e.g., City of Industry, California, is surrounded by the Los Angeles metropolitan area), but it would appear that they are the exception rather than the rule for pursuing economic growth. In other words, for retail development to generate sales tax revenue, there must be enough residents close by to shop at these stores.

A second important observation concerning market responses is that if the COCS results are true, what prevents land values from adjusting to reflect the fact that some uses do not pay for themselves? For example, a common objection to MFH is that it will generate more children and an increased demand for local K–12 schools. Opponents claim that this increase in demand *will not* generate sufficient property tax revenues or fees to cover the additional costs imposed on

the local school district.[8] In other words, potential new homeowners (or tenants) are allegedly

provided an opportunity to obtain educational services without paying for the full cost.[9] If true,

what is stopping potential landowners (or tenants) from increasing (or bidding up) home prices to

reflect this subsidy or free lunch? The presence of a potential subsidy should lead potential new

residents to bid up home values to reflect the value of the "free" or underpriced public services.[10]

Home prices will increase to capitalize on the potential subsidy and bid away the "free" lunch.

Higher home prices will result in new residents paying higher property taxes than

existing residents.

Finally, when local officials try to promote retail projects such as grocery stores in less

dense areas, private developers will perform their own analysis and conclude that there are not

enough customers to make a grocery store feasible, unless, of course, the city is willing to offer

substantial subsidies. The point here is that something must be missing from these COCS studies

that suggests retail will always pay for itself.[11]

Even if one accepts the general conclusions of COCS studies, at best they reflect static

results that would eventually lead to market adjustments in land values to equalize the return

between project categories.

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[8] Our focus is on the city provision of community services. In California, school districts are separate from municipalities but receive funding from property taxes, and school officials do make claims about the lack of funding from new development. Districts receive the maximum from the state budget of either the average daily attendance (ADA) rate for each student or the basic aid amount (the amount of property tax revenue generated by the district). Most schools choose the ADA rate, which means more students will add more revenue. For basic aid, new housing generates additional property tax revenues.

[9] We use education as an example since it is a generally accepted proposition that better schools attract families and increase housing prices to reflect access to higher-quality schools.

[10] A similar argument could also be applied to parks, fire services, and police services, though it is less clear that residents value these services as much as education in terms of paying higher prices.

[11] Author Means served as a council member for the city of Mountain View, California. During his term, the council reviewed three large housing projects in different parts of the town. Other council members questioned the developer's decision to produce only housing and not include any retail in the project. The council paid consulting firms to perform studies to look at the possibility of including retail, and each time the reports concluded that retail in this area would not be feasible. In each case, the reports claimed an insufficient customer base. Nevertheless, some council members were not convinced and continued to pursue retail as an option.

COCS Studies Violate Basic Assumptions Necessary to Compare Projects Using Benefit-Cost Analysis

One of the basic assumptions in comparing projects is that the projects are independent and mutually exclusive. Independence requires the cash flows to be independent of other projects. For retail projects to generate local sales tax revenue, there must be customers nearby. But having some residents nearby is not sufficient; there must be enough product demand to make the retail uses profitable. It is hard to imagine a city promoting retail without a sufficient customer base. Similarly, a housing project can provide more customers to increase retail sales only if retail is located in the town. It should be clear that tax revenues generated by housing and retail projects are not independent. A private developer will want to incorporate the existing customer base and any future customers from new housing units in determining the feasibility of a retail project. Similarly, a developer may be interested in building a mixed-use project that incorporates both retail and housing (which would imply a new category for the COCS study).

A second point concerns mutually exclusive projects. Standard benefit-cost analysis assumes all or nothing for each project under consideration. Table 1 implies that all four proposals would be allowed on the same 5 acres. This might be the case if city officials were willing to allow any land use on the site under consideration for development. However, most cities already have zoning in place, and if politicians are unwilling to change the zoning, only permitted uses will be allowed. In other words, if zoning restrictions are in place, comparisons with other types of land uses are not relevant. It might be possible to compare an SFH and MFH project on a site zoned residential, but one could not include a retail project comparison on the same site.

COCS Studies Fail to Distinguish between the Costs of Allocating Private Goods and Those of

Allocating Public Goods

Table 1 shows a clear revenue advantage of MFH over SFH in terms of property tax revenue.[12]

The total revenues from MFH are 2.14 times greater than those arising from SFH. Most of this

is owing to the higher property value of the MFH proposal ($17.1 million) compared with the

SFH proposal ($8 million). With such a large advantage, why does the SFH proposal break

even and the MFH proposal fail to break even? The answer lies in how the COCS process

allocates costs in providing public services. Ignoring for the moment how the base per-unit city

expenditures are determined for SFH, the MFH expenditures are allocated on the basis of units

per acre. Planners calculate that MFH has 4.75 times the density of SFH, so the expenditures

for MFH are 4.75 times higher for all categories of public services than the expenditures for

SFH (95 MFH units versus 20 SFH units).[13] Even if we alter the allocation to depend on people

and not units, the approach suggests that all city services be allocated as if they were private

goods. An increase in population leads to a proportionate increase in demand and spending on

public services. For the MFH project, this means the increase in each expenditure category is

always 4.75 times larger than the corresponding increase for the SFH project.

   Allocating expenditures on a per unit basis suggests that the underlying services are

treated as a pure private good and ignores the possibility that the underlying service is a public

good or that average or marginal costs may be decreasing. Public (or community) goods by

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[12] In California, new development is assessed at its market value, and future property assessments are limited to the lower of 2 percent or the annual California Consumer Price Index (CPI) rate. For homeowners, properties are reassessed at market value if there is a change in ownership. For rental property, a change in ownership does not always lead to a reassessment. This different treatment suggests that cash flows from homeowners will be higher over time when compared with cash flows from rental properties.

[13] A better approach would be to allocate the service cost on income and the number of people rather than the number of units (Gonzalez and Means 1991). However, using people per unit rather than units would result in only minor changes. When comparing MFH and SFH projects, we will assume the MFH project contains 4.75 times more units or people.

definition allow for joint (or nonrivalrous) consumption. The consumption of one individual does not limit the consumption by another individual. In terms of city services, some services, such as a park or fire and police protection, would exhibit some degree of publicness (or nonrivalrous consumption). For example, consider the Parks and Community Services category in table 1. Presume the city recreation department offers two services: recreation classes and public parks. How would the two housing categories, SFH and MFH, affect the cost of providing recreation classes and park maintenance? For recreation classes, an increase in demand would lead to more participants, and the net cost to the city would depend on the amount of subsidy, if any, per person provided by the city. New residents could increase the subsidy necessary to maintain the new level of recreation classes so that the MFH category would cost 4.75 times more than the SFH category. In this case, it might make sense to allocate costs in proportion to the number of people since recreation classes would be considered a private good. For park maintenance, the answer will depend on the change in output level provided by the city based on new residents. Suppose existing parks are maintained once a week (mowing lawns, picking up trash, etc.). How much would costs increase by adding 95 units in the city when compared with adding 20 units? It is hard to believe park maintenance costs would increase 4.75 times from adding 95 units instead of 20. In this case the additional cost should be allocated as if the good were a public good. A similar argument could be made for police and fire services. If the police department guarantees that a patrol car will drive down a street once every 24 hours, how much more does it cost to drive down a street with higher density? Similarly, will the fire department expand in size by 4.75 times more than the SFH cost estimate? If a provision of public goods is already in place for a large town, adding more homes will have a very small impact on total costs.[14]

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[14] A former city manager of Mountain View, California, was asked how he dealt with increasing costs from economic growth when COCS studies produced by city staff suggested MFH would not pay for itself. His reply was

The above examples suggest that there might be some economies of scale from consuming certain public services. It is clearly possible that the additional costs of the MFH proposal in table 1 are overstated. At the extreme, if one assumed no additional city service costs for the MFH over the SFH proposal, MFH would have a clear advantage over SFH.

To further illustrate the treatment of park services, one should take a look at how park fees for new housing are determined. Many cities in California impose park impact fees on new development. Developers may have the option of paying the fee or providing the actual parkland on site. The fee is based on a service level (S) of so many acres per 1,000 people. For California, the minimum set by the Quimby Act (*California State Government Code* § 66477) is 3 acres per 1,000 people.[15] The park fee (F) is then determined as follows: $F = S \times N \times P$, where N is the expected population increase from the proposed development and P is the price for an acre of land. Adding 100 people would require the developer to purchase 0.3 acres of parkland, whereas adding 475 people would require a purchase of 1.425 acres (or 4.75 times the amount).[16] If parkland is a public good with nonrivalrous consumption, it is unlikely that 475 new residents would demand 4.75 times as much parkland as 100 new residents. The use of a fee based on people per acre leads to charging developers more than the true cost of providing park services and results in park spending appearing to be a private good rather than a public good.

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that he ignored the studies and focused on whether he could meet the increase in service costs. This was a great answer recognizing that marginal costs are the relevant guide to decision-making.

[15] Various numbers have been recommended, including those by the National Recreation and Parks Association, which run as high as 6.25 to 10.5 acres per 1,000 people. California appears to have chosen a lower limit to minimize misuse of the fees. See also Municipal Research and Services Center of Washington (1991), which suggests that "the NRPA standards reflected 'what seemed to be right' based on the recommendations of a group of professionals rather than on systematic research."

[16] It is easy to show that the park fee expenditure elasticity with respect to population equals 1:

$$\eta_{F,N} = (dF/dN)(N/F) = (S \times P)(N/S \times P \times N) = 1.$$

COCS Studies Rely on Average instead of Marginal Costs to Allocate Costs of Additional

Service Levels

The preceding discussion dealt with the relative assignment of costs between MFH and SFH,

but it did not deal with the initial assignment of spending to the SFH or MFH category. The

initial assignment appears to be based on average rather than marginal values by taking total

expenditures for each service category and dividing by the number of units (or people) in the

city.[17] Generally speaking, average values are easier to obtain since they require collecting past

values of a total and a unit count. Marginal values are more difficult to obtain and are usually

not observed since they require some sort of forward-looking calculation of the production

process. It is common practice to use the average value as a substitute for marginal value when

one knows something about the process generating output and believes the two are close in

value. However, as we have suggested above, there are obvious examples of where the actual

total costs of providing additional services owing to housing growth are not proportional to

population growth. The marginal cost will be less than the average cost if there is some degree

of publicness in the services provided or if there are significant startup or fixed costs of

providing the service.

Conclusion

To be fair, the COCS approach asks a basic and useful question. If a plot of land is developed,

will the city be able to provide the additional public services demanded by new residents?

Unfortunately, these studies fail to provide useful information in answering the question.

COCS studies fail to understand market responses to land use decisions, they violate basic

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[17] Several studies suggest average cost approaches based on usage, such as service calls by police and fire. This approach fails to take into account the deterrent effect of police patrols and may not represent the actual benefit received by the users.

assumptions necessary to compare projects using benefit-cost analysis, they do not distinguish between private goods and public goods when allocating costs, and they erroneously use average instead of marginal costs to allocate costs of additional service levels. There are other minor problems with the COCS approach, but they are not likely to affect which project yields the highest return. Our hope is that proponents of the COCS will take a more critical look at these studies and come up with a better process. It would seem to be important for elected officials and residents to know what the costs and benefits of development are in terms of tax revenues and city expenditures. As we have pointed out, the current conclusions are flawed. We suspect that MFH projects will offer better returns when better methods are employed to determine their relative merits. More importantly, better studies will help address the growing housing imbalance that is rewarding current homeowners at the expense of renters and new home buyers.

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Table 1. Theoretical Comparison of Annual Costs and Revenues from Different Development Proposals

	Hypothetical City		Full Service - with 6% UUT	
	Single-family Residential	Multi-family Residential	Industrial	Retail
Property Value[2]	8,000,000	17,100,000	3,000,000	9,000,000
Residential Cost per DU	400,000	180,000		
Property Size (acres)	5	5	5	5
Retail Square footage per acre	-	-	-	10,000
Residential Units	20	95	n/a	n/a
Property Tax AB8 share of 1%[3]	16.3%	16.3%	16.3%	16.3%
Utility User Tax Rate	6%	6%	6%	6%
Transient Occupancy Tax Rate	n/a	n/a	n/a	n/a
CITY TAX REVENUE				
Property Tax Revenue	13,040	27,873	4,890	14,670
Property Tax Rev (InLieu of VLF)	3,600	7,695	1,350	4,050
Sales Tax Revenue[4]	7,560	7,560	-	82,500
Business License Tax[6]	-	5,500	5,500	5,500
Franchise Fees[7]	340	1,615	1,275	1,063
State Subventions & other revs[8]	2,380	9,247	296	887
TOTAL REVENUES	$ 35,200	$ 75,222	$ 24,903	$ 116,121
CITY EXPENDITURES				
Police Department	9,000	42,750	4,950	14,063
Fire Department	6,040	28,690	3,322	9,438
Public Works	1,200	5,700	1,320	3,750
Planning & Community Devlpmt	800	3,800	880	2,500
Parks & Community Services	2,600	12,350	429	1,219
Library	1,500	7,125	n/a	n/a
General Government	2,540	12,065	1,298	3,688
TOTAL EXPENDITURES	$ 23,680	$ 112,480	$ 12,199	$ 34,656
NET	$ 11,520	$ (37,258)	$ 12,704	$ 81,465
per unit	$ 576	$ (392)		

NOTES

1. All revenue and expenditure estimates are based on a consensus of recent fiscal impact analyses, city budgets and reports to the state Controller.

2. Property values assume $400,000 per single family home, $180,000 per multi-family unit, $180/sf for retail, $600,000 per acre for industrial.

3. City property tax share is the average share of 1% property tax revenues paid in *non-redevelopment* areas. This rate differs from city to city depending on (among other things) the service responsibility of the city and the pre-Prop13 property tax rate.

4. Sales and use tax: retail project assumes 10,000 square feet of retail per acre with taxable sales of $220 per square foot, 75% of which is "new sales" (not moved intra-city). Tax rate to city is 1% of taxable sales. Residential project assumes $126 per capita retail sales captured in city.

5. Some cities do not impose Utility User Taxes. Rates and applicability (e.g. electricity, gas, water and telephone, etc.) vary.

6. Business License Tax estimated at $0.10 per sf for commercial uses. Multifamily residential is assumed to be rental property. Assumes comparable rates similar to statewide average among these cities. (Actual rates were not determined)

7. Franchise tax revenue at $17 per dwelling unit equivalent (DUE) and 1DUE/800sf commercial.

8. State subventions include per-capita based allocations such as MVLF and gas tax (residential only) and HOPTR (residential). These are assumed at $27 per residential DUE. Fines&forfeitures at $1.20/DUE, PropTransferTax at $0.55/$1000AV with 15yr turnover, Prop172 at 33% of PropTax(ERAF) times 11.5% (ratio of Prop172 to ERAF).

9. City is a "full service city" including police, fire and library services.

10. Enterprise services such as water, sewer, and garbage are not included. These services are funded by user fees, such that costs equate to revenues.

11. Expenditure estimates are based on current statewide median values for full service urban cities corellated with a consensus of recent project fiscal impact analyses.

Source: California Local Government Finance Almanac, "Comparison of City Budget Impacts of New Development," *California City Finance*, November 29, 2007, http://www.californiacityfinance.com /FiscalComparison.pdf.