

A Review of Funding Measures for Urban Infrastructure with Special Reference to Developer Charges, Betterment (Value Uplift) Taxes and Turnover Taxes

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1 Introduction

Most residential or commercial land development of any scale needs to be supported by a substantial investment in urban infrastructure. This infrastructure may include water and sewerage, power, drainage, roads, rail or other public transport infrastructure, passive and active open space, and local community facilities.

This infrastructure may be funded from consolidated revenue or from the surpluses of government-owned corporations. These funding methods represent, in effect, taxes on the general public or levies on other users of the relevant funding corporation. Neither of these funding methods is very equitable in that third parties are paying for the services supplied to, or on account of, the new residential or commercial development.

Not surprisingly, governments have therefore looked towards other methods of funding urban infrastructure. In this paper, I review three methods of funding urban infrastructure.¹

- developer charges (direct levy arrangements),
- betterment (value uplift) taxes and
- turnover taxes.

In considering the economic implications of these funding instruments, the paper focuses on the efficiency and equity implications. However, as will be seen, both efficiency and equity are complex concepts with a number of dimensions. Also practical issues are an important consideration.

The layout of this paper is as follows. Section 2 discusses the objectives and meanings of efficiency and equity. Section 3 discusses the fundamental differences between user charges (prices) and taxes as funding instruments. Sections 4, 5 and 6 discuss developer charges, betterment and turnover taxes respectively. There is a brief final concluding section.

¹ Government or public corporations could also borrow to finance urban infrastructure and repay the loans and interest by charging the beneficiaries for services received. This could work for some utilities but not for services that are non-excludable (known as “public goods” in the economics literature).

2 Objectives and Meanings of Efficiency and Equity

A revenue raising instrument is efficient when (i) it promotes efficient use of resources and (ii) when it raises revenue at least administrative cost.

With regard to (i), resources are used efficiently when firms or households obtain the goods or services that they most want at least cost. Thus, efficient resource use requires that the benefits of goods produced exceed the costs (the value of goods foregone), that goods be allocated to users who place the highest value on them, and that goods are produced at least cost.

Resources are used inefficiently when costs of production exceed the value of the goods produced, when firms or households cannot obtain goods for whose cost they are willing to pay, or when goods are not produced at least cost. As will be seen, some forms of funding instrument encourage efficient use of resources more than others.

Turning to (ii), funding instruments may have various administrative costs. However, these costs are generally minor compared with the costs of inefficient resource use.

Equity is generally interpreted according to the ability to pay principle or more popularly as "affordability". Similarly, goods are provided equitably when payments for them are based on a household's ability to pay for them. In other words, goods are provided equitably when they are affordable or provided at prices that household can pay for them.

On the other hand, another equity principle is the beneficiary principle. This states that goods are distributed equitably when users pay for the benefits of the goods that they receive. Providing that after-tax incomes are distributed equitably, the beneficiary principle is a fair one. According to this line of thinking, taxes should be used to achieve a fair distribution of income and households should then be charged for the benefits of goods received.

The other point to be made about equity is the distinction between initial (statutory) incidence and final (real) incidence. The statutory incidence determines who is legally liable to pay the tax. However, many taxes are shifted from producers to consumers. The economic (or real) incidence is the final incidence of the tax *after* any shifting of taxes has occurred.

3 User Charges versus Taxes: Some Basic Observations

There is a fundamental difference between a developer levy and betterment or turnover taxes. A developer levy is a user charge. Betterment or turnover taxes are, as the names imply, taxes.

A user charge is a payment for a service. It is essentially a price rather than a tax. In the case of a developer levy, the charge is made for supply of a capital good or a set of capital goods. A tax is a compulsory (unrequited) payment for which no specific service or good is provided. Thus, a developer charge has at least some of the general advantages and disadvantages of a pricing system. Betterment and turnover taxes have some of the advantages and disadvantages of a tax.

Resources are used efficiently when purchasers of a good (who may be producers or final consumers) are charged the real cost of supplying the good. This ensures that resources are used only when the value of a good to a purchaser exceeds the cost of the resources used (the value of goods foregone). Resources are likely to be used inefficiently when prices do not reflect the costs of the goods supplied or when there are no prices. When prices are set higher than the relevant costs, goods are under-supplied. When prices are below the relevant costs, goods are over-supplied. Thus prices that reflect costs, preferably the marginal costs of supply, are a major driver of economic efficiency.

This is demonstrated in Figure 1. Here the marginal cost of supply of a good is assumed to be constant. The demand for the good increases as the price falls. If someone is charged the marginal cost (price P_0) he or she will tend to purchase Q_0 units, which is the efficient level of supply. At a higher price of P_1 , there will be under-consumption of the good (at Q_1 units) and the economic cost (the net economic loss) is given by area A. This is the difference between consumer valuations of the good and the marginal cost of supply. At a lower price of P_2 there will be over-consumption of the good (at Q_2 units) and the net economic loss is given by area B (the excess of costs of supply over consumer valuations of the good).

It follows that, providing developer charges reflect the real cost of public urban infrastructure, developer charges will encourage developers to make efficient development decisions and provide an efficient amount and distribution of housing and commercial development. Of course, this presumes that developer charges do reflect the real marginal costs of each development. Crude average metropolitan-wide developer charges will be less efficient. There will be excess development in some areas and too little in others.

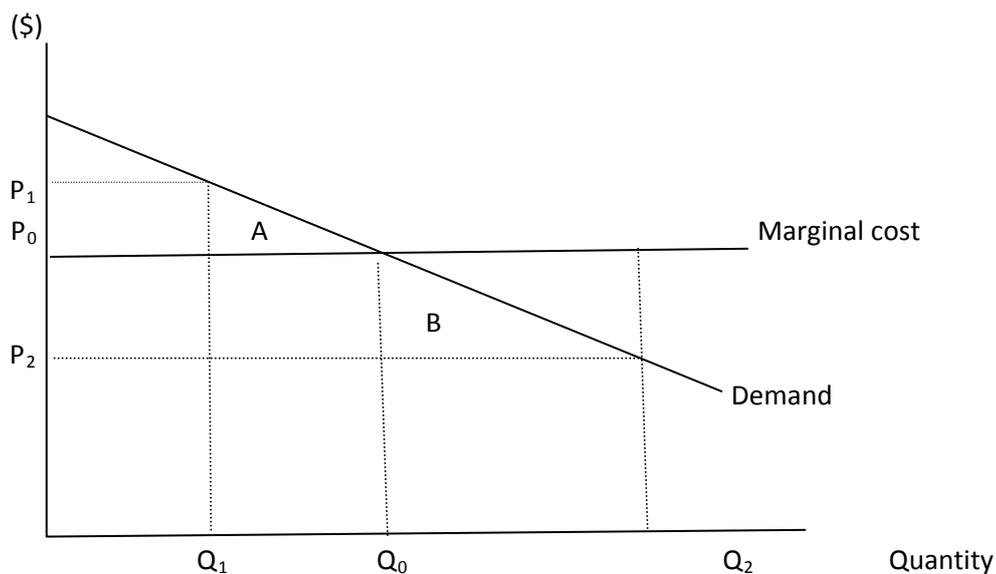


Figure 1 The cost (deadweight loss) of inefficient pricing

The equity implications of developer charges for public urban infrastructure are less clear cut because of the way that the charges are passed on by developers. As shown below, in most cases developer charges affect the price of unserved urban land rather than new house prices and there is good reason to think that developer charges are equitable.

However, because developer charges are essentially prices for services, they do not provide any excess tax revenues for government and they are not taxes on land for revenue purposes.

On the other hand, taxes have one definite efficiency disadvantage and one potential one. The definite disadvantage is that taxes do not reflect marginal costs of supply because there is no supply associated with them. Thus, the efficiency of a good price system is lost. Secondly, taxes may actively encourage inefficient behavior (for example withdrawal of labour supply). As will be seen, a turnover tax encourages inefficient management of assets.

In some cases this inefficiency of the tax system is offset by the superior revenue raising capacity and equity of a tax system over a pricing system. This is because, in principle, taxes can be levied on agents with the ability to pay and on unearned income (as with the betterment tax). This may provide a justification for a tax in preference to a user charge. However, for the reasons given below, this is not considered to be the case for betterment or turnover taxes.

4 Developer Charges

We have seen above that developer charges are likely to encourage efficient land development. They will not inhibit development where developers can pass on the costs to another party, either to the landowner or the final home purchaser. On the other hand, they will discourage inefficient development where households are not willing to pay for the full costs of housing.

However, the supply of housing in most of Australia is highly regulated. This regulation affects the amount of new housing, the price of housing, and the incidence (and hence equity) of developer charges. These effects are illustrated in Figures 2 and 3, which show high and low-priced sub-markets for new houses in Sydney respectively.

Consider first the high priced sub-market, say in part of North-West Sydney, in Figure 2. The dollar figures in the figure are illustrative but not unrealistic. The supply of new houses is assumed to be fixed at Q_0 . Thus the supply curve is vertical. However, the supply in the sub-market is small relative to the Sydney market. Thus, the price of new houses in this sub-market is more or less fixed at about \$750,000, given the services provided by these houses. In this example, the market clearing selling price for Q_0 new houses is assumed to be \$750,000. Note that this is the *highest price* that the developer can obtain for a new house in this sub-market. The developer *cannot* simply raise this price because the cost of some input (or tax) has risen.

As shown in the figure, this house price is the sum of seven main components:

- The opportunity cost of the land (its value in its highest alternative use, probably rural residential),
- The surplus value of land accruing to the land owner (in excess of the opportunity cost),
- Land development costs borne by the developer,
- Public infrastructure costs passed on to the developer,
- Building costs,
- Finance costs,
- Selling costs.

When housing supply is fixed, variations in developer charges change the value for unserviced housing land. Equivalently, they change the surplus land value for the landowner, who may the developer in some cases. Developer charges do not affect any other input prices, which are determined independently by market conditions. **Moreover, developer charges do not affect the price of new houses unless they actually change the supply of new housing or the quality of infrastructure provided.**

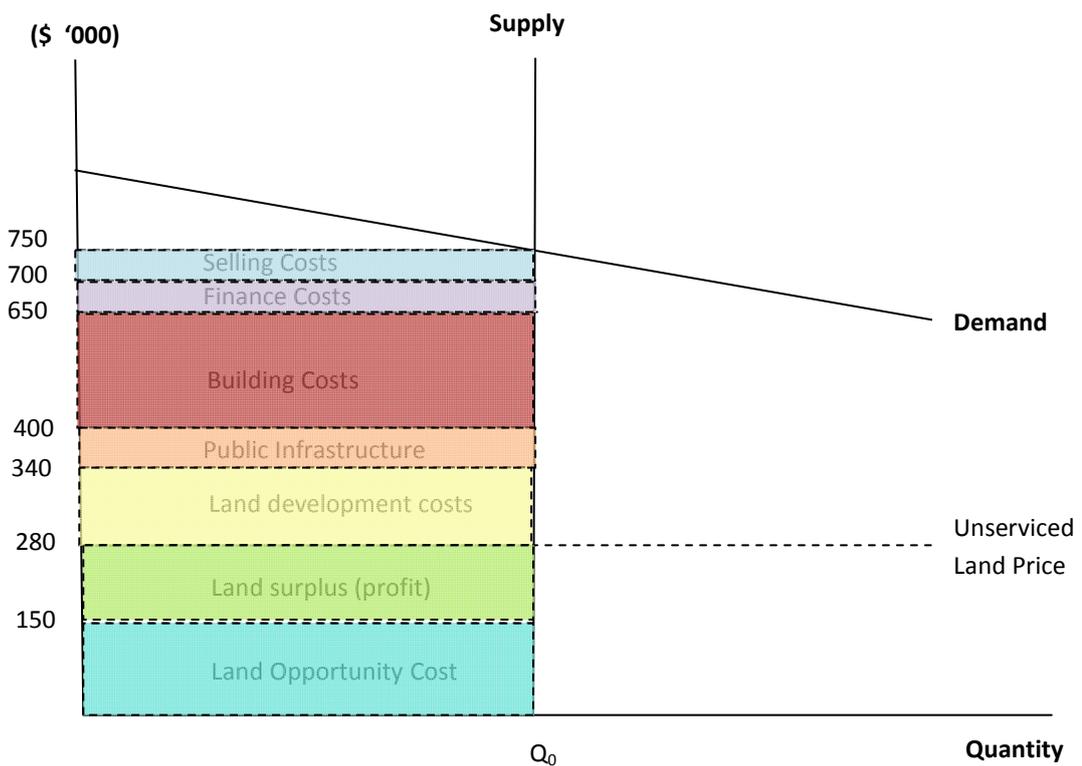


Figure 2 New houses: demand supply and price in a high priced sub-market

Of course, a similar model applies to a lower-price housing sector, in say South-West Sydney, as shown in Figure 3. Again, the figures given are illustrative. Again, the new house prices are fixed in relation to house prices in the greater Sydney housing market. Thus, **even if developer charges are so high as to eliminate any landowner surplus, the charges cannot be simply passed forward in higher house prices.** Rather, there would be first a reduction in the supply of housing and this would in turn result in higher house prices. However, this would be an efficient outcome because housing would not be supplied in locations where households do not want to pay for the full cost of housing.

This analysis implies that developer charges are both equitable and efficient. In general, developer charges are effectively a levy on land values and landowners, who are generally able to bear these costs. Developer charges do not increase house prices or reduce housing affordability except in some parts of Sydney where the demand for housing is relatively low and they lead to a smaller increase in the supply of housing.

Of course, these conclusions assume that developer charges will reflect reasonably accurately the costs of urban public infrastructure in different locations. Development charges that do not accurately reflect such costs may not be efficient or fair. Further, the funds collected should be used for the purposes for which they are collected.

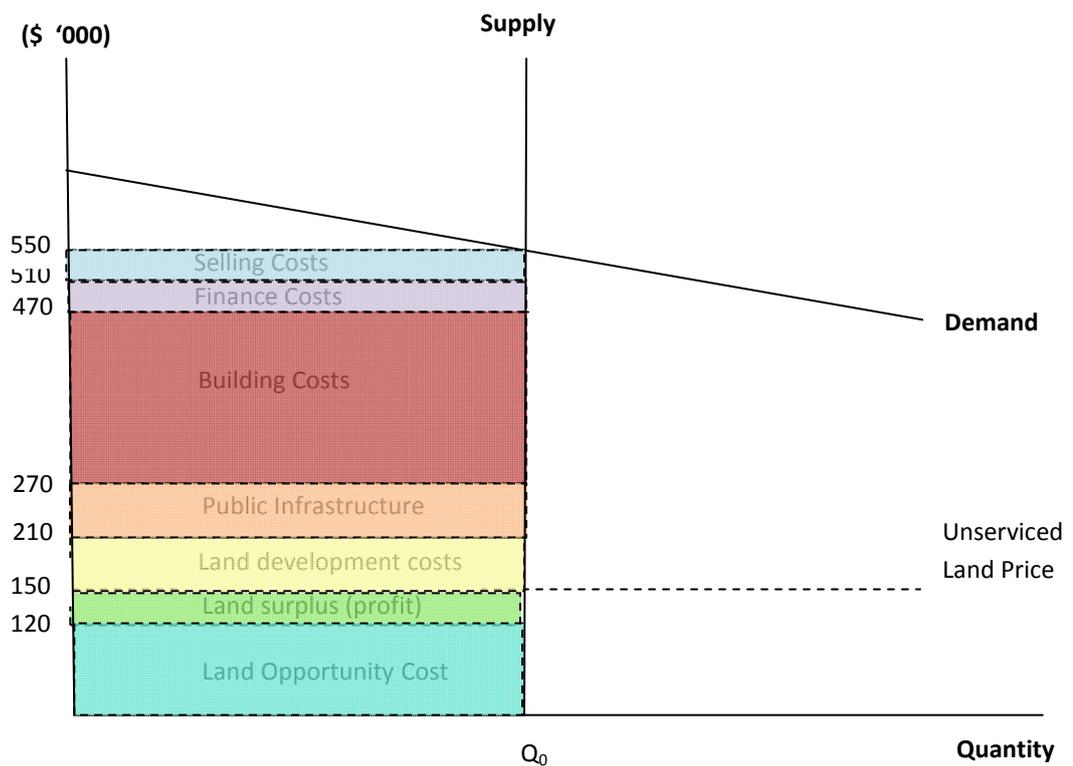


Figure 3 New houses: demand supply and price in a low priced sub-market

In practice, there can be problems in the application of developer charges. There needs to be a nexus between the charges and the development and it can be hard to determine in advance exactly what costs will be involved. Special problems arise when development incurs lumpy infrastructure. Also, it can be hard to identify marginal incremental costs when development occurs in established areas. Councils and other government agencies often simplify administration of developer contributions by estimating an average cost for new development instead of marginal area, or project, specific costs.

Accordingly, work is often required to ensure that developer charges are appropriate and efficient. However, this is true of many pricing systems and the practical problems can be resolved. The estimation issues are not particularly complex. Thus, these are practical problems to be resolved rather than reasons for not adopting an efficient and equitable pricing system.

5 Betterment (Value Uplift) Taxes

A betterment tax, sometimes described as a value uplift tax or as tax increment funding, is a tax on the increase in value of land. It is generally intended to be a tax on any increase in value for which the government or community at large is responsible rather than the owner of the land. It is intended therefore to be a tax on the “unearned increment”.

This unearned increment arises especially when land is rezoned for a more intensive or more profitable use. This rezoning does not itself involve the use of any resources by the landowner (other than lobbying resources) but may lift the value of land considerably.

The value of land may also rise because of public urban investment in the vicinity of the land, especially but not only the provision of transport infrastructure. Again this reflects public rather than private expenditure and resources.

In principle, a betterment tax has no direct efficiency cost and is entirely equitable. There is no direct efficiency cost because it is not a tax on landowner effort or use of resources and is expected therefore to have little of any effect on landowner behaviour (but see below for exceptions). Also, the tax is equitable because the value increment is created by the public sector and unearned by the landowner.

However a betterment tax is not a user charge and so it does not provide a guide to investment in urban public infrastructure. Also, there are major practical problems with such a tax.

A basic issue is that there is no clear, single description of how a betterment tax would be implemented. In a lengthy paper on the subject produced for the Property Council of Australia, there was no statement as to how the proposed tax would actually work.² Owners of land could be taxed on estimated increases in land value each time that land is rezoned to a higher value use. In this case, the betterment tax applies to the rezoning decision but not to betterment resulting from infrastructure investment. Alternatively, the tax may be levied when land or property is sold.

The following are some key issues.

1. Would landowners be taxed once on the increase in value of their land on rezoning (or at some related time) or would they get taxed each year on the change in value?

² PricewaterhouseCoopers, 2008, *Tax Increment Financing to fund infrastructure in Australia*, prepared for the Property Council of Australia.

2. Would landowners be taxed on changes in nominal values or on changes in real values after allowing for inflation? Taxes on nominal increases in values (values that rise with general prices) are inequitable in that there has been no real increase in the value of the land. Therefore the nominal component of the value increase should be excluded.
3. There needs to be a policy dealing with falls in the real value of land. Do landowners get a tax rebate when the real value of their land falls?
4. The tax would be based on land valuations. How would these valuations be made? Most land values include expectations of future values. The valuations would presumably have to attempt to strip out expectations from the estimated land values before rezoning occurs.
5. Taxes on increases in land values that are created by the landowners would be inequitable and inefficient (because they discourage land development). Therefore, private costs of land development or enhancement should be excluded from the tax.
6. More generally, a betterment tax would have to be integrated with other taxes, such as capital gains taxes.

As has been noted, in principle a betterment tax has no efficiency implications because it is not a tax on private economic activity. Providing that the tax is not a high percentage of the uplift in value, the tax should not affect rezoning applications and activity.

However, post-war experience in the United Kingdom showed that, if the tax is imposed as a high percentage of uplift value, developers may substantially delay development while speculating on, and waiting for, a fall in the tax rate. Moreover, because the betterment tax is a tax rather than a price, the tax is unrelated to the costs of infrastructure provision and it does not promote an efficient supply of infrastructure or an efficient amount or distribution of housing.

The equity of a betterment tax also depends on how the tax works. While a betterment tax has strong equity attractions, this depends on accurate valuations that strip out expectations, nominal changes in values, and improvements made by landowners.

6 Turnover Taxes

A turnover tax is a tax on the gross sale value of a good. There is usually no allowance for purchase of inputs. A tax that allows deductions for purchased inputs is a value added tax.

Again, a more specific definition of the turnover tax is required. Would this be a tax on all land sales inclusive of unserved and serviced land?

If the turnover tax is designed to pay for urban infrastructure, it would presumably be levied on serviced land. But this raises several questions.

- How would serviced land be defined?
- Would there be just one tax on a land sale or a tax each time that the land is sold?
- What happens if the land is not sold but developed into housing by the landowner?

Turnover taxation on land sales is generally inefficient because it discourages land transactions and efficient capital owning structures. Land would be retained in an ongoing ownership rather than sold to the firm or household who could use it most effectively.

Turnover taxation is also inefficient in that the tax would be unrelated to the costs of development and give no price signals for urban development.

In terms of equity, a turnover tax provides an indirect means of reimbursing the community for costs incurred. New house prices are again fixed by reference to existing house prices. Thus the turnover tax will be borne by the landowner in lower unserviced land prices. This may be regarded as equitable in terms of the ability to pay principle.

However, multiple applications of the tax with multiple land transactions could discourage housing supply and increase house prices.

7 Conclusions

Any infrastructure funding policy should be based on clear objectives, sound economic principles and realistic practice. Government objectives generally include efficient use of resources (since this maximizes the potential welfare of the community), adequate funding, and equity of outcomes.

User charges (prices) are the best method for promoting an efficient use of resources. They can also fund services that are financed initially by borrowing. However, user charges cannot be used for infrastructure with public good characteristics, namely that users are non-excludable. Also, prices should not be used for general revenue raising purposes. For these purposes, taxes are generally preferred.

Developer charges are based on sound pricing principles. They encourage efficient use of resources and are consistent with equity principles. Developer charges that reflect the real costs of development ensure that development occurs where and when the benefits exceed the costs. They also provide a mechanism for financing development. Developer charges generally reduce the price of unserviced land rather than increase new house prices. Thus, the costs are generally borne by landowners who obtain unearned income from urban development.

However, developer charges need to reflect real infrastructure costs. Thus, they need to be evidence-based and transparent. If developer charges exceed real infrastructure costs, they may produce inefficient outcomes, unduly discourage housing supply and increase house prices

A betterment tax also has some attractive features. As a tax on unearned income it should be equitable and it should not distort the land or housing market. However, there is no one version of how a betterment tax would work or when it would apply. Also, it is very hard to design a practical and effective betterment tax. The main reason is that the tax is based on valuations rather than on market transactions. Moreover, the valuations have to deal with real versus nominal land value increases and with the impacts of both expectations and owner improvements on land values. Further, there is no direct link between a betterment tax and the cost of providing urban infrastructure.

Like a betterment tax, there is no simple definition of a turnover tax. However, in any case a turnover tax on gross sale value does not satisfy the principles of a good tax. The tax discourages land transactions and hence encourages potentially inefficient ownership and capital structures. Turnover taxation is also inefficient in that the tax is unrelated to the costs of development. Although a turnover tax is likely to be borne mainly by landowners, multiple taxes on turnover could discourage housing supply and increase house prices.