



## SMART INFRASTRUCTURE FACILITY SUBMISSION

# Value Capture in the Australian Federation - Issues

---

House of Representatives  
Standing Committee on Infrastructure, Transport & Cities  
Inquiry into Transport Connectivity

Joe Branigan  
Senior Research Fellow  
SMART Infrastructure Facility  
University of Wollongong  
12/02/16

Joe Branigan, Senior Research Fellow at SMART Infrastructure Facility UOW has prepared this submission with assistance from Cadence Economics. Professor Andrew McCusker, Director – Rail Logistics Laboratory, SMART Infrastructure Facility UOW, has reviewed the paper. The opinions and recommendations expressed in this submission are those of the author and do not necessarily reflect any official position of the University of Wollongong.

*Submission title: Value Capture in the Australian Federation - Issues*

Disclaimer:

The policy advice provided in this submission is general in nature. When considering value capture mechanisms, jurisdictions should consider their own unique circumstances.

Copyright Notice:

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, the work may be reproduced in whole or in part for study or training purposes, subject to the inclusion of an acknowledgment of the source. Reproduction for any commercial use requires prior written permission from the University of Wollongong.

12 February 2016

SMART Infrastructure Facility  
Building 6, University of Wollongong  
Northfields Ave, Wollongong NSW 2522

Phone: (02) 4221 5031  
Fax: (02) 4298 1489  
Email: [smart-facility@uow.edu.au](mailto:smart-facility@uow.edu.au)  
Website: <http://smart.uow.edu.au>

## Contents

Key points.....	4
1. SMART Infrastructure Facility .....	5
2. Scope of this Submission.....	5
3. General Comments.....	6
3.1 Value Capture: What is it? .....	6
3.1.1 Value Capture Tools.....	7
3.2 Value Capture and Economic Theory .....	8
3.2.1 History .....	8
3.2.2 Impacts of New Public Infrastructure .....	9
3.2.3 Political Economy Considerations.....	10
3.2.4 Efficiency and Fairness.....	11
3.2.5 Practical Issues .....	12
4 Specific Comments.....	14
4.1 Some Important Considerations.....	14
4.2 Social Benefits and Social Costs .....	15
4.3 Some Value Capture Happens Automatically .....	17
4.4 Distributional Matters.....	19
4.5 PT Pricing.....	19
4.6 Public Finances .....	20
4.7 Entrapment.....	20
4.8 Taxing Windfall Gains, Compensating Unexpected Losses .....	21
5 Hong Kong Metro – What Lessons for Australia?.....	22
6 Conclusion – Proceed with Caution .....	23
References .....	25



## Key points

- Value Capture mechanisms harness part of the unearned windfall increase in land value arising from improvements in transport connectivity. If designed correctly, these mechanisms can be an efficient component of financing transport projects, along with user charges and general revenues.
- Indeed, if the long-run trend towards increased densification of our major cities continues (supported by a willingness to pay for the benefits of agglomeration, amenity and liveability), then project-specific value capture mechanisms may play a greater role in funding public transport in the future.
- To most usefully contribute to the funding mix, value capture mechanisms need to be designed within the context of Australia's already extensive federal, state and local taxes that are linked to property values or unimproved land values, including capital gains tax, stamp duty and council rates, and company tax on developer profits.
- Issues to consider when designing effective value capture (VC) mechanisms include:
  - The broader issue of whether a public transport infrastructure project is needed and what level of cost recovery it is likely to achieve. This includes the impact on the overall level of debt and taxation, and government credit ratings.
  - Forecasts of land value uplift could be misused to make poor projects appear viable.
  - There is potential for double taxation of land value uplift, due to the interaction between VC and the federal, state and local tax systems.
  - VC should be levied on actual – rather than potential or forecast – value uplift delivered.
  - Route selection or train station locations should not be unduly influenced by the financing mechanism, such as availability of parcels of crown land.
  - Recent experience with implementing taxes on windfall profits (such as mining profits) demonstrates the complexity in defining windfalls and implementing such taxes.
  - VC should not be used as a second-best mechanism for recovering a sub-optimal pricing of public transport fares.
  - Land value uplift due to a rezoning should not be confused with (or combined with, or attributed to) land value uplift from new transport infrastructure unless the two are truly inseparable.
  - VC should be levied on true additionality rather than a redistribution of economic activity.
  - When drawing lessons from overseas experience policymakers should be cognisant of our different circumstances, including Australia's system of federal financial relations, our relatively low population density, and relatively high reliance on income taxation.

## 1. SMART Infrastructure Facility

The SMART Infrastructure Facility at the University of Wollongong is pleased to make this submission to the House of Representatives Standing Committee on Infrastructure, Transport and Cities. Our submission seeks to highlight key opportunities and challenges in implementing value capture mechanisms to fund public transport infrastructure in the context of the existing fiscal arrangements in the Australian Federation.

SMART was established to develop an integrated approach to public infrastructure research. Australia's first research centre dedicated to infrastructure commenced in 2011 and was jointly funded by the Commonwealth Government, the NSW Government (via RailCorp) and the University of Wollongong. The SMART acronym means 'Simulation, Modelling, Analysis, Research and Teaching' and our *modus operandi* is multidisciplinary and collaborative. We have established Australia's first Professorial chairs in infrastructure economics, infrastructure systems, and infrastructure modelling and simulation.

SMART has built a reputation of being able to provide the research, knowledge and tools required for evidence-based planning, public policy and investment decision-making. Our research and teaching focuses on four practical themes:

- Infrastructure governance, including project evaluation, cost drivers, pricing and economic regulation
- Infrastructure systems and complex modelling and simulation
- Infrastructure data aggregation and analysis
- Rail Logistics

Our mission is to generate, publish and disseminate ideas that support greater understanding of the value, interconnection and interdependencies of infrastructure – both public and private. For instance, the SMART Rail logistics division is establishing a research capability to support and champion the role of rail as part of the broader transport network in Australia.

## 2. Scope of this Submission

The House of Representatives Standing Committee on Infrastructure, Transport and Cities is conducting an inquiry into the role of transport connectivity in stimulating development and economic activity both in major urban areas and in regional Australia<sup>1</sup>.

---

<sup>1</sup> [http://www.aph.gov.au/Parliamentary\\_Business/Committees/House/ITC/Transport\\_connectivity](http://www.aph.gov.au/Parliamentary_Business/Committees/House/ITC/Transport_connectivity)

A key focus of the terms of reference is on 'value capture' as a means of funding transport infrastructure projects. These types of projects, especially the large additions to transport networks, are generally funded via a combination of Commonwealth, state and local grants<sup>2</sup> or proceeds from privatisations under the current asset-recycling fund. Ongoing operational expenditures are generally funded via a combination of state and/or local government recurrent expenditure as well as 'fare box' revenues. In Australia, fare box revenues generally account for less than one-quarter of full operating costs, leaving most of the funding to the taxpayer. For these reasons, value capture has been seen as an additional funding source for large public transport infrastructure projects.

This paper focuses on value capture in the context of the broader issue of the efficiency and effectiveness of public infrastructure funding (short-term) and financing (long-term), particularly in relation to Australia's unique system of federal financial relations. In other words, the 'viewing lens' of this paper identifies the overriding public policy objective as maximising economy-wide welfare (including increases in GDP per capita) rather than a narrower focus on the initial funding of public transport infrastructure projects (where, often, it is tacitly assumed that these projects are always beneficial).

Rather than addressing all the matters in the Committee's ToR, we have focussed our submission on some key aspects of value capture in the Australian context.

### 3. General Comments

#### 3.1 Value Capture: What is it?

The term 'value capture' or, more fully, 'land value uplift capture' describes the process of government 'capturing' (via taxation<sup>3</sup>) a proportion of any increase in the unimproved value (UV) of privately-owned land caused by the construction of new (or improved) publicly-funded infrastructure. In this submission, we discuss the merits of value capture in the context of publicly funded transport infrastructure.

The theoretical justification (from a public-policy perspective) for value capture is to address the inefficiency and inequity of a small number of private households or businesses enjoying a windfall gain from the provision of infrastructure that is funded by the whole taxpayer base. However, a more practical justification – being the potential availability of a new financing source – has been the dominant theme in the debate around this issue, particularly in the post-GFC and post-mining boom environment where fiscal constraints are binding.

---

<sup>2</sup> For instance, the \$949 million Gold Coast Rapid Transit (GC light rail stage 1) system was jointly funded by the Gold Coast City Council (12.6%), the Queensland Government (48.9%) and the Commonwealth Government (38.5%).

<sup>3</sup> Here, we define 'taxation' broadly as any government financial impost on households or businesses, such as taxes or levies.

Notwithstanding, the issue of value capture should be considered primarily from an efficiency and equity, rather than a 'financing', perspective.

### 3.1.1 Value Capture Tools

There are a number of relatively permanent taxes that act to capture value uplift in private property in the Australian Federation, these include:

- Capital gains tax (although the main residence is exempt)
- Stamp duty on property transactions
- Local government rates (including on the main residence), although subject to rates caps in some states, which limit the amount of value uplift captured
- Land tax (main residence is exempt), but only imposed in some States and Territories or with relatively high unimproved value thresholds
- Company tax, payroll tax and GST (in terms of any increased economic activity in the neighbourhood of the new publicly funded infrastructure, or developer profits)

There are a number of approaches to applying a temporary or project-specific tax or financing mechanism, such as:

- 'Betterment' levy or tax, whereby private landowners pay a temporary levy on the (ex ante) estimated increase in the unimproved value of their land
- Change of use charge, usually relating to a rezoning of land
- Tax Increment Finance (TIF), which is a form of public borrowing against the future uplift in revenue derived from existing property-related taxes (used in the United States but not in Australia)
- Joint Development, whereby private contractors are granted public land in exchange for developing that land
- Land sales, where the relevant jurisdiction owns parcels of land near.

Technically, land sales are a balance sheet transaction, which effectively swaps a government owned asset (land) for another government owned asset (transport infrastructure). A levy or tax is a revenue source that can contribute towards the debt servicing cost associated with constructing the transport infrastructure. Hence, in public sector finances, VC mechanisms will typically affect both the public sector balance sheet (net debt) and the operating surplus or deficit (fiscal balance).

There are a few examples of value capture mechanisms in Australia, such as the Sydney Harbour Bridge and Gold Coast Light Rail, see BITRE (2015). However, value capture has not been widely used in Australia. In some cases there have been rebates rather than value capture, such as the M5 cashback scheme,<sup>4</sup> which would appear to have the effect of increasing any windfall gain rather than reducing it.

## 3.2 Value Capture and Economic Theory

### 3.2.1 History

Value capture is justified from an economic theory perspective because it 'fixes' an unfair and inefficient distortion whereby private owners of land benefit (via an unearned increase in land values) from public expenditure on infrastructure. If left unaddressed, not only would taxpayers lose in the short-term, the provision of public infrastructure would be vulnerable to rent-seeking behaviour by private landowners.

There is a substantial literature<sup>5</sup> on the economics of taxation that demonstrates the relative efficiency of broad-based land taxes compared to taxes on capital, labour or transactions. Land taxes are relatively efficient because land is in fixed supply, is immobile and cannot be hidden. If land taxes are accurately set, they do not distort people's choices and, therefore, do not create any efficiency losses. Land taxes are, therefore, an efficient method for capturing any windfall gains in land value that might accrue to private landowners from the construction of taxpayer-funded infrastructure.

There is a long history of economists arguing for land taxation. Adam Smith argued that nothing could be more reasonable than capturing that "which owes its existence to the good government of the state"<sup>6</sup>. David Ricardo saw that land values capitalise the rents available to land owners from location specific factors. Henry George favoured land tax as a form of taxation that does not diminish effort or investment and taxes private value earned from community efforts. There is a general consensus in the literature that taxing unimproved value, without exceptions, has no adverse efficiency consequences. Finally, land taxes are progressive, with more owners of more valuable land (typically wealthier households) contributing more to overall revenues than owners of less valuable land (typically less wealthy households).

---

<sup>4</sup> <http://www.rms.nsw.gov.au/roads/using-roads/motorways-tolling/paying-tolls/m5-cash-scheme.html>

<sup>5</sup> The Henry Review (2009) provides a survey of the economics of taxation literature.

<sup>6</sup> Adam Smith (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*, (Book 5, Chapter 2) <http://www.econlib.org/library/Smith/smWN21.html#B.V, Ch.2, Of the Sources of the General or Public Revenue of the Society>



### 3.2.2 Impacts of New Public Infrastructure

Infrastructure improvements do two things: they change the cost of various kinds of trips, and they change the rents of various parcels of land. What is the combined effect of both changes?

An improvement in transport infrastructure lowers the cost of trips for nearby residents. This gain means people who don't own land are willing to pay more in rent to live in the area. Thus, the transport improvement resulting from the additional infrastructure will attract people to the area and population and rents will increase. Competition will cause rents to be bid up by the amount of benefits from the infrastructure improvement, so that tenants are no better or worse off. Thus, what the better transportation gives, higher rents take away.

In the open-city model<sup>7</sup> all of the benefits of a transportation enhancement accrue to landowners. Landowners receive higher rents, and these rents are capitalized in the form of higher land values. If you can figure out how much a transportation enhancement raises land values, you know what its benefits are. A transportation enhancement that raises land values by more than it costs is an efficient project, one that does not, is not.

It is important not to double count the benefits from the infrastructure improvement – they are not the sum of the benefits of lower-cost trips and higher land values (as these are two ways of measuring the same benefit in net present value terms); the benefits are higher land values only. Higher land values are good for owners of land but bad for consumers of land. In the open-city model, the gain that consumers get from better transportation is exactly offset by the loss they suffer from higher land prices; therefore the amount left over is the gain to landowners<sup>8</sup>.

Infrastructure projects almost always bring about a large increase in the value of adjoining land. When these infrastructure projects are funded by government they almost always involve a substantial transfer of wealth from a large number of taxpayers to a small number of property owners. For example, London's Jubilee Underground extension in 1999 cost £3.5 billion, raising land values by £2 billion in Canary Wharf and £800 million in Southwark<sup>9</sup>. Indeed, the entire net benefit from many public works is to be found in the rent they create.

---

<sup>7</sup> The open city model is a standard model in urban economics where it is (reasonably) assumed that there is unimpeded migration into and out of the relevant area. It is a long-run model, which is suitable to the study of long-lived infrastructure.

<sup>8</sup> From O'Flagerty (2005) p.135.

<sup>9</sup> Harrison (2006) p.16.

### 3.2.3 Political Economy Considerations

Taxpayer funded infrastructure projects raise an old problem: concentrated benefits, dispersed costs and rent-seeking behaviour (using the political process to seek a private gain). As a result, the political process can favour infrastructure projects whereby the costs exceed the benefits.

Demands that government should fund infrastructure projects often come from those who would benefit – from cheaper fares or increased property values. And here lies a potential conflict of interest between the proponents of a project or program and the rest of society. The benefits of transport infrastructure, more often than not, are concentrated on a relatively limited sub-segment of the population, namely those who live near the infrastructure. These people, anticipating the gains that the project will produce, will tend to be strongly in favour of it.

Also, if a major part of the costs of the project are drawn out of general government revenues, which are distributed widely over the whole society, no single group perceives itself as having to bear a significant proportion of the burden of the costs. The predictable result is that the potential beneficiaries of a project will tend to form a vocal interest group supporting it. On the other hand the potential losers (those who bear the costs) are often a diffuse group with small individual losses, and little incentive to accurately inform themselves about the project, and so do not form effective political opposition to the project.

The political scale, therefore, tends to be tipped in favour of accepting projects even if they are detrimental to the state or country as a whole.

Further, the influence of special interests distorts the kind of project favoured towards more permanent infrastructure. The difference between transportation enhancements that are reasonably permanent, like roads and light rail, and those that might only be temporary, like bus routes, is very relevant. A permanent enhancement increases (in the open-city model) the annual rent of land when the land market adjusts, but it raises the value of land—what you can get for selling your land— almost immediately (even before construction is complete). This is because the value of land is the expected present value of future rents. So land values go up before rents rise.

Consumers, too, benefit from better transportation right after the transportation enhancement goes into effect, although when the land market adjusts these benefits will vanish. So for a transportation enhancement that looks to be permanent, political support right at the start is much greater than what would be justified by long-run benefits. Since short-run political support may matter more for government officials than what people will think in thirty years, permanent transportation improvements may be unduly favoured in the political selection of projects.

### 3.2.4 Efficiency and Fairness

Capturing increases in land value has the potential to be a fairer and more efficient means to fund infrastructure projects. It is fairer that landowners who receive the benefits from infrastructure improvements also pay the costs of those improvements, rather than receiving a windfall gain. If the project has a strong benefit:cost ratio (say, a BCR of 2.5:1) then there are sufficient gains to both finance the project and also make those landowners better off – it is not necessary to harness 100% of the windfall gain to finance a project, if the project is strongly viable.

Further, ensuring that those who receive the benefits of infrastructure projects meet the associated costs reduces rent seeking pressures. If landowners bear both the costs and benefits, they are less likely to lobby for projects for which the costs exceed the benefits. In other words, the financing mechanisms forces them to weigh up estimated costs and benefits.

Moreover, because increased fare subsidies increase the benefit to users and means higher land rents, value capture makes it less likely that beneficiaries will lobby for fare subsidies. If the subsidies distort behaviour and cause inefficiency, then their costs are greater than their benefits. But that would mean the value capture charge to cover costs would increase more than rents.

Economists find other advantages to taxing land to make up transportation deficits. Most taxes cause greater losses to taxpayers than they raise in revenue for the government—taxpayers would be willing to pay more to the government to stop taxing them than the government is collecting.

Taxes impose economic costs not only due to administrative costs, but because they induce individuals to behave differently and make decisions they would not have made in the absence of the tax. Taxes encourage individuals to consume a mix of goods that is less desirable from the standpoint of their own subjective preferences. The result is what economists call a social cost or 'excess burden'. The excess burden from a tax is the difference between the cost to taxpayers from having a tax imposed and the amount of tax collected. The more the tax changes behaviour and are complex to administer and enforce, the greater the excess burden.

But land is in fixed supply and taxes on land rents have minimal excess burden. There are also administrative processes in place (such as the Valuer General's Office at the state jurisdictional level). What taxpayers lose is exactly what the government gains. This is a strong argument for funding infrastructure through value capture charges rather than general taxation. A conservative estimate of the excess burden imposed by general taxes is 30 per cent (but there are bad taxes that impose a much greater burden). Value capture could potentially reduce the costs of financing infrastructure by 30 per cent and make infrastructure projects more attractive, as part of a revenue-neutral change in financing mechanism. However, if value capture is used to increase the overall amount of taxation as a proportion of GDP, then there is no benefit from a revenue neutral tax mix switch.

Since the value of land is the capitalized value of land rent, taxing the rent of land and taxing its value are equivalent. But to be non-distorting, the unimproved value of land must be taxed. Structures on land are not in fixed supply and taxing the improved value of the property – the whole land and building package – discourages investing capital to improve land. The Henry Review finds:

While land is immobile, the capital used to improve it is not. Discouraging capital owners from investing in property improvements — particularly improving and selling property — is particularly inefficient.<sup>10</sup>

### 3.2.5 Practical Issues

It is difficult to accurately measure unimproved land value and so difficult to measure the increases in rents from an infrastructure project and so difficult to put on a non-distorting tax. In practice, real world land taxes will be distorting and have an excess burden.

If the value capture charge is ex post (after the infrastructure is built), it will be difficult to measure the resulting increase in land values attributable to the new transport service. The Valuer-General in the relevant state applied methodologies to determine UV, but decomposing that UV into an increment attributable to a specific transport project would be problematic.

In a built-up urban area, most land changes hands only as part of a package that includes buildings as well as land. The same is true for rentals. Trying to separate out the value of land from the value of the rest of the package and then further separating that into the value relevant to proximity to schools, employment, recreation and transport is very difficult.

---

<sup>10</sup> Henry et al (2010) p.254.

Sales of vacant land are rare and because land prices vary greatly across both time and space, the price of a particular block may not be a good indicator of other land later. Vacant lots, too, may be unrepresentative of the surrounding neighbourhood - there may be good reason why it is vacant. Physical characteristics may matter: the shape of the block, whether the land is rocky, and its previous use.

Even if land value could be accurately measured, it is a further difficult step to disentangle the rise in land values owing to the infrastructure project from other influences on land prices – such as changes in general market conditions and other factors that create land rents: natural features, public spending and private activity by others.

For example, if land prices fell, and would landowners accept that land prices would have fallen even more in the absence of the infrastructure project and willingly pay a value capture charge? If land prices rise, how much is due to infrastructure and how much to changing amounts and values of other factors.

Overall, estimates of UV by a Valuer General tend to be broad suburb averages (typically similar UVs apply along a street or across a suburb) and tend to lag actual movements in real estate values, so may not be sufficiently granular for the purpose of estimating value uplift from a new transport service. That noted, UV will tend to capture long term trends in value and significant uplifts that occur over a long period of time, and they are an existing and comprehensive tool – every suburban block is given an UV annually for rating purposes, though more work needs to be done before relying on a UV for rating purposes as the basis for a VC mechanism.

Rent reflects the resources supplied by nature (location, topsoil, minerals), the value generated by infrastructure and the value generated by private activity. When it is difficult to measure the independent influence each on increased land rents, it is easy to get the value capture charge wrong and distort the incentives to engage in value increasing activity.

Private-sector actors must also devote effort to working out the best use for a particular parcel of land is at a particular moment (and so they don't know "true" land values either). If the government taxes away their profits from doing so, people won't make this effort. Value capture may end up being a tax on developer effort, distorting behaviour and creating an excess burden.

If all you observe on a particular parcel is a restaurant that's phenomenally successful, how can you tell for sure whether that success should be attributed to a great location or a brilliant owner? If a shopping mall owner brings in an anchor store, which allows him to charge higher rents to the there stores, what should the charge for infrastructure be?

Alternatively, the value capture charge could be estimated by directly estimating the benefits from the infrastructure – such as how consumers value better transport – which is a good approximation to the increase in land rents (it is the source of their increase). This estimation faces all the usual problems in estimating benefits with cost benefit analysis, especially when the benefits do not have observable market prices. But it may be easier than directly estimating land rents.

## 4 Specific Comments

### 4.1 Some Important Considerations

The following are some important considerations for project-specific value capture taxes to be an effective policy tool in Australia.

- First, consider whether the transport project is warranted from an economy-wide perspective (that is, whether social benefits exceed social costs).
- Consider the proportion likely to be harvested from existing broad-based value capture mechanisms (rates, land tax and CGT) before considering project-specific mechanisms.
- If public transport fares are set well below optimal levels then value capture is a second best approach – the ‘first best’ approach is to properly price public transport fares.<sup>11</sup>
- If value capture mechanisms are designed to address the efficiency and equity problem then they could potentially improve welfare, but if they are simply designed to finance otherwise unviable infrastructure projects then caution and increased scrutiny should be applied to considering associated business cases and cost benefit analyses.
- If governments distributed new infrastructure equitably then a broad-based land tax would be more desirable than localised ad hoc (and therefore administratively complex) value-capture mechanisms.
- Unearned gains accruing to households (particularly in under-served areas) may be seen as less deserving of VC than one-off gains accruing to developers.
- Unearned gains resulting from rezoning should be separated out from those deriving from additional transport infrastructure.
- Only genuine additionality in economic activity (and not redistribution of existing economic activity) should be the subject of value capture.

---

<sup>11</sup> ‘Optimal’ pricing is a complex topic, which reflects the avoided externalities of congestion, accidents and pollution, along with consideration of the average cost, long run marginal cost, incremental costs, network costs, and risks associated with delivery of infrastructure.

## 4.2 Social Benefits and Social Costs

This sub-section defines a number of important concepts used in this submission.

First, what do economists and public policy makers mean by the term 'social benefits and costs'? Social benefit refers to the total benefits less costs of a policy, rather than the private benefits and costs. For instance, a policy might make public transport patrons better off, but there may also be another impact on people who do not use public transport – for instance a reduction in traffic accidents or pollution.

The social benefit<sup>12</sup> of improved transport connectivity can include:

- savings in travel time, freight costs and fuel use;
- reduced accidents, congestion and pollution; and
- economic development, tourism, liveability and various other benefits.

These benefits often have the effect of increasing property values in locations where new transport infrastructure has improved transport connectivity<sup>13</sup>. The social cost of providing the public transport infrastructure to improve transport connectivity can include:

- Construction costs (funded initially by borrowings or taxes) and disruption caused during construction; and
- Ongoing operating costs (funded from recurrent government expenditure, i.e. taxes)<sup>14</sup>.

The importance of ensuring the social benefits outweigh the social costs over the life of the infrastructure (in net present value terms) through a robust cost benefit analysis of a transport project is well known. Care is required to ensure value uplift is not a spurious source of additional benefit used to improve the benefit/cost ratio of an unviable project. Estimates of value uplift should be conservative, and net out uplift caused by exogenous factors (such as population growth). Most especially, the re-zoning of land (accompanied with a change-of-use charge to capture the value), which could occur in the absence of the transport project should not be counted as a benefit of the transport project, particularly if the rezoning is largely

---

<sup>12</sup> Social benefits are defined as the sum of benefits captured by the individual involved in the transaction (private benefits accruing to those using the new transport service) and those benefits captured by those external to the transaction (like reduced congestion elsewhere on the transport network). Social costs are defined as the sum of costs borne by individual involved in the transaction (private costs, such as train fares – which correlate to real social costs like drivers wages and construction and maintenance costs) and those costs borne by a collection of individuals or society (government subsidies or noise).

<sup>13</sup> It is important to avoid double-counting increases in land values and the benefits derived from improved transport connectivity, as they are the same thing.

<sup>14</sup> End of life decommissioning costs is a pecuniary externality (i.e. there is a 'gainer' and a 'loser') with no net efficiency effect.

separable from the transport project. As these examples illustrate, there can be appeals to tenuous windfall gains to make an unviable project appear viable.

All the usual warnings about cost benefit analysis errors still apply: over estimating patronage; underestimating construction costs; using Input-Output multipliers to overstate flow-on benefits; the inclusion of avoided costs as a benefit<sup>15</sup> and so forth.

Uplifts in retail rents or land values beside (say) a new train station may be partly offset by a decline in retail rents or land values in areas that are further away from the new train station – thus impacting on tax revenues. That is, there may be a shifting of economic activity from one location to another as a result of the new infrastructure. In terms of measuring potential benefits, only the potential net increase in revenue should be considered. A focus only on the potential increase in tax revenues from value uplift and capture may lose sight of the potential for losses in areas that are not on the new transport route, or near the new train station<sup>16</sup>.

Value uplift, and hence opportunities for value capture, occur when the private benefits of the additional public infrastructure outweigh the private costs, resulting in a windfall gain to people or businesses near the new transport project. Users of the transport project, and businesses serving those users, benefit from savings in travel time and reduced accidents, and incur costs (from user charges: tolls or fares). To understand and estimate the extent of value uplift it is necessary to decompose the cost benefit analysis into those costs and benefits that accrue privately and to society more broadly.

Where the new transport infrastructure is subsidised – as is often the case for Public Transport (PT) and some road upgrades for private vehicles or freight – the fare does not cover the total cost of providing the infrastructure. This can be efficient due to high fixed costs, low long run marginal costs and the positive externalities of reduced accidents, congestion and pollution. However, these pricing decisions result in a divergence between the private benefit and private cost, which in turn generates the value uplift for those living near the new project. Care is required to ensure the uplift is not artificially inflated by under-pricing: user charges need to carry some of the weight of project financing not the least because prices are an important signal of the strength of demand.

---

<sup>15</sup> For example, it is not appropriate to count – as a benefit of a new public mass transport service – that it will avoid the cost of building additional car parking, as these are separate options.

<sup>16</sup> For instance, when reading case studies of value uplift near train stations in major cities one should consider the impact on prices across the whole city since for a relatively fixed supply at a given point in time, a shift in demand will raise prices in one area and lower them in another.



There is a potential for a circularity between pricing PT at below cost (due to its positive externalities), and then recouping a value-capture tax from those users. Or in other words, should government subsidise people to use PT and then tax them when they do? Value-capture taxes that are levied either as a lump sum or other mechanism not dependent on that individual's utilisation of the PT can reduce this circularity.

In other words, often value capture is used to recoup foregone fare revenue but this has distributional consequences.

Interestingly, value capture is a concept unique to transport, although governments have imposed taxes on windfall gains in some circumstances. Governments also fund education, health, broadband and community facilities – these can benefit people in one location more than another. There is not the same focus on value capture from people that live close to a planned new aquatic centre or new school. A new PT service is often a much larger investment, so may cause a more pronounced uplift of property values. That noted, if value capture is a good idea for transport it appears inconsistent that it is not similarly applied to other location-specific public works. This could lead to a proliferation of project-specific levies, which could be administratively complex. While the focus of this inquiry is on transport, there is merit in considering whether there should be transport-specific financing mechanisms that are different to the financing of all other public works.

### 4.3 Some Value Capture Happens Automatically

Australia has a range of existing taxes that already generate (at least some) revenue from an uplift in land values caused by a new infrastructure investment (or new school or pool). As documented in the sources noted above, these include capital gains tax (excluding the primary residence), stamp duty and local government rates – although there can be a lag of many years before the revenue is recouped through these mechanisms. Projects can also generate increased company tax (on both on developer profits and increased economic activity more generally), payroll tax and GST receipts, and more contemporaneously with the increase in economic activity.

Australia (all levels of government combined) currently raises tax revenues that are 27.5% of GDP.<sup>17</sup> That implies that a transport project with a benefit:cost ratio of 3.6:1 (that is,  $1 \div 27.5\%$ ) would be approximately self-financing through existing taxes (at least in aggregate, not by individual levels of government), noting that our tax system is relatively more reliant on income taxes rather than other land and sales taxes, rather than uniformly 27.5% on all components of GDP. Interestingly, jurisdictions where value capture have been popular are in

---

<sup>17</sup> <http://www.oecd.org/tax/tax-policy/revenue-statistics-19963726.htm>

the lower taxing jurisdictions of Hong Kong and the United States, both of which have tax as a percentage of GDP that is lower than in Australia (15.7% and 25.4% respectively).<sup>18</sup>

A temporary specific levy on unrealised capital gains risks double-taxing that capital gain when the property is eventually sold. An investor may pay (say) a light rail levy for 10 years, and then many years later (after the temporary levy has ended), they also pay CGT on the value uplift. To avoid double-taxation and disincentives to invest, and unintended interactions between federal and state taxes, the temporary levy may need to be deductible against future CGT liabilities.

These existing value capture mechanisms have the benefit of being linked to the actual value uplift outcome, so do not rely on patronage forecasts or arbitrary guestimates of future value uplift. However, the project risk remains with the broad taxpayer base: if the PT project has lower than expected patronage then the value capture will not materialise and the taxpayer will wear the loss.

Value capture mechanisms such as a betterment levy set in advance may not accurately reflect the value uplift outcome, but transfers the project risk of lower-than-expected patronage to rate payers (and any windfall from an above-expectation outcome). The discipline of only capturing value on actual, rather than planned, performance has merit and improves the accuracy and fairness of the value capture.

Under the Australian federal system of government, not all of the capital gains, stamp duty or rates may accrue to the level of government financing the PT. Projects that are more readily financed through value capture mechanisms may be those where there is alignment between the taxing power and the funding responsibility, or an ability to negotiating a co-funding arrangement.

There may be a degree of tax-shifting onto another level of government. For example, PT that is partly funded by a State or Local government betterment levy could cause a reduction in Federal CGT or company tax receipts. There may be a weaker case for Federal co-funding if a value capture mechanism will usurp CGT or company tax receipts, or if a value capture mechanism becomes a de facto profit tax.

The Productivity Commission (2014) noted that value capture mechanisms based on land or property taxes may be relatively efficient taxes, so shifting the overall tax base slightly in the direction of value capture mechanisms could improve the overall efficiency of the tax system (provided negotiations between the three tiers of government can allocate funding responsibilities appropriately), double taxation is avoided, and the mechanism is not dependent on patronage.

---

<sup>18</sup> <http://www.heritage.org/index/explore?view=by-variables>

## 4.4 Distributional Matters

There is diversity of PT users, some with higher valuations than others, and some will be closer to the new PT service than others. It is very difficult to set a betterment levy or other value capture mechanism that accurately reflects the true value, resulting in winners and losers. The 'automatic' mechanisms have the advantage of being assessed on the true market value of each property, so are more likely to capture the diversity in benefits accruing in each location radiating out from a new station or corridor.

## 4.5 PT Pricing

There are many issues to consider in setting the pricing of PT fares:

- Ensuring price is cost reflective while still encouraging high utilisation (given PT often has high fixed costs and low marginal costs).
- Adjusting for positive externalities such as reduced congestion, accidents and pollution (Pigovian subsidy).
- Social objectives, such as discounts for concession card holders.
- Ramsey pricing, such as discounts for groups that are more price sensitive.
- Peak period pricing.

With so many factors to consider, and only a few price points available, PT pricing tends to be a compromise between achieving the above competing objectives. Pricing can also be difficult to change once the community is used to a certain level of fares.

That noted, large errors in pricing – such as fares set too far below cost – are more likely to result in losses on the PT, windfall gains to users, resulting in value uplift and the need to use value capture mechanisms to fund the PT. A simpler solution may be to set fares at a level that reduces the windfall gains (while still retaining some degree of subsidy for the reasons noted above).

Excessive reliance on value capture could result in a second-best funding mechanism: there needs to be a balance between user charges, value capture mechanisms and funding from consolidated revenues.

Transparency is also important: the breakup of funding, setting pricing efficiently and the cost of meeting social objectives should also be reported, with value capture levies and PT fares set by the appropriate regulatory authority based on an agreed set of principles. Value capture levies set by government could diverge over time from the appropriate level, becoming a de facto tax rather than an efficient financing mechanism.

Many of the issues in implementing a value capture mechanism are avoided if the government (conveniently) owns a large parcel of land near a planned new train station or PT corridor. Many of the potential distortions noted above are avoided if the windfall can be harvested simply through the one-off sale of Crown land, which also provides cash upfront for financing the construction. That said, it is important to ensure that a new station or corridor is selected on its merits – if location decisions are distorted to align with locations of government-owned land, the new train station may not be built in the optimal location.

#### 4.6 Public Finances

Fiscal constraints can make value capture attractive for financing PT. But ultimately, betterment levies or change of use charges to value capture involve an increase in taxation and increased expenditure. All taxation involves efficiency costs that generally range between 20-30 cents in the dollar for most types of Australian taxes.

One-off land sales removes an asset from the government balance sheet, with the proceeds invested into the PT service. Swapping land for a PT service may increase the risk profile of assets on that government's balance sheet and reduce liquidity of those assets (land is easier to sell than a PT service or train station). As noted earlier, a redistribution of activity may cause government-owned land located further away from the PT service to decrease in value, partly offsetting the value uplift near the new PT service.

Credit rating agencies consider a range of criteria when assessing the credit rating of a national, state or local government. Whether the value capture mechanism is a levy to finance the construction, or land sales to finance construction, these are likely to have some implications for budget flexibility, the risk profile of government-owned assets and overall borrowing levels, hence credit ratings. The use of value capture funded investment (albeit location-specific) needs to be considered within the overall fiscal strategy, including aggregate levels of taxation, borrowing, balance sheet and risk transfer.

There is some evidence that value capture has been used as a 'last resort' method of financing. Some overseas case studies of value capture have occurred in jurisdictions that are more heavily indebted or with weaker credit ratings than federal and state governments in Australia.

#### 4.7 Entrapment

A person living in a low density neighbourhood may not wish to become part of a high density PT corridor. Over time, people who value living within the betterment levy / high density corridor can move in and people who value it less can move out. However, stamp duty and relocation costs make it costly for a person to move out to a neighbourhood they prefer,

leaving them worse off – unless there is only partial value capture, leaving them with a partial windfall to defray the costs of relocating. There may need to be additional mechanisms to address this, such as an amnesty on stamp duty for those who want to relocate. The cost benefit analysis would also need to survey residents on their valuation of living in a high density PT corridor, to ensure any loss of amenity – of having higher densities retrospectively imposed – is included in the cost benefit analysis. These issues are less acute for greenfield developments – such as a new transport corridor that opens up a greenfield area of new suburbs – rather than providing new infrastructure to existing suburbs.

#### 4.8 Taxing Windfall Gains, Compensating Unexpected Losses

Recent Australian experience in taxing windfall gains (or compensating unexpected losses) is mixed, to say the least. As discussed above, there are many taxes already in place to capture windfalls or unearned value uplift on property, including CGT, rates and change of use charges (e.g. on a rezoning), and company tax on developer profits.

Other sectors of the economy use various mechanisms to harness ‘unearned’ or ‘windfall’ gains – or losses – in cases where there is an identifiable group affected by a policy change or investment. That said, in many cases, attempts to address windfall gains or losses have been poorly implemented. Indeed, the appearance of ‘undeserved’ gains or ‘unfair’ losses can result in attempts at harvesting gains or compensating for losses that have been poorly conceived<sup>19</sup>. There have been similar attempts at compensating losses that have come undone due to poor design.

There are many areas where ‘value capture’ for an unearned / windfall uplift (or loss) is not pursued. The rollout of the NBN or addressing mobile blackspots are not funded by location-specific value capture mechanisms. Rather, faster broadband/mobile services are mostly funded by government subsidy and user charges, not directly from value capture in areas where rollout has occurred. This makes sense as location-specific value capture would not be necessary for a service that aims to cover almost 100% of the population. Similarly, in relation to public transport infrastructure, if a state or local government plans to ultimately provide the same level of service to 100% (or close to) of the population, then a location-specific value capture mechanism would seem redundant. Rather, a more general method of taxation would be better.

---

<sup>19</sup> An example of a recent failed attempt at capturing windfall gains is the ‘super profits’ (RSPT/MRRT) tax. Other imperfect schemes include the HECS-HELP system, land release ballots, radio spectrum auctions and patents.

## 5 Hong Kong Metro – What Lessons for Australia?

The Hong Kong MTR is undoubtedly the world's most successful metro line, as measured by commercial viability, number of passengers and satisfaction metrics. The MTR has been largely funded by value capture mechanisms and is often cited as an example *par excellence* of the benefits of value capture in funding public transport infrastructure. And, undoubtedly, the MTR model suits the governance structure in Hong Kong where, for example, the government owns all land (and can thus more easily set lease terms). However, the question is what lessons can be drawn from the MTR for Australia.

The MTR funding mechanism is described as an 'Integrated Rail + Property Model' (R+P). The objectives of the R+P model are to: (a) expand and maintain the MTR network, (b) ensure no direct fiscal cost to government, and (c) increase utilisation of rail. If we accept those objectives as aligning with broader social welfare objectives, then picking under-developed / greenfield areas and building high density developments and new rail stations certainly achieves those objectives. And in densely populated regions such as Hong Kong, it is probably more likely that these highly prescriptive objectives do indeed align with broader social welfare objectives (such as increasing GDP per capita).

In significantly less densely populated cities, such as in Australia, it may not necessarily be the case that funding and maintaining a metro line via value capture mechanisms is the best way to improve welfare. For instance, with lower population density it is doubtful that increases in land values would by themselves fund new high-speed rail lines. Further, the opportunity costs would be different in less densely populated cities – investment in a metro line might mean foregoing better public transport in existing 'brownfields' areas. It might be the case that incremental public works may be more effective at improving living standards (of course, value capture can still play a role in the overall funding mix even in those cases, where there are clear recipients of windfalls).

The demographics of Hong Kong and Sydney are different (Table 5.1). Hong Kong is one of the most densely populated cities in the world, whereas Sydney is relatively sparsely populated compared to its peers, although there are pockets of high population density. As noted earlier, Hong Kong is also a relatively low-taxing jurisdiction, limiting the ability to raise revenues from increased economic activity more generally.

Value capture tends to work more neatly and easily where there is greenfield government-owned land around the new corridor or train station, which can be sold to finance the new transport service. For existing suburbs, it is harder to correctly implement value capture. As a result, value capture tends to skew decision making towards servicing new sites with development opportunities, rather than providing services to existing population centres, entrenching disadvantage on areas that are under-served.

In summary, metrics such as “higher utilisation of rail” and “no net fiscal cost to government” are not necessarily aligned with maximising social welfare – governments wouldn’t fund national security, education and health if the objective function was to simply minimise government outlays.

All that said, there is an increased trend towards urban densification in Australia, particularly in Sydney and Melbourne<sup>20</sup>. A related trend is reduced car ownership rates among young people. To the extent that citizens are willing to pay for the benefits of increased agglomeration, amenity and liveability, project-specific value capture mechanisms may have a greater role to play in the future.

**Table 5.1** Relative demographic and financial characteristics of Hong Kong vis-à-vis Sydney metro area

	Hong Kong Metro	Sydney Trains
Population	7,188,000	5,000,000
Land Area (km <sup>2</sup> )	1,104	12,368
Population per (km <sup>2</sup> )	6,511	404
Average daily trips (workday)	5,000,000	1,000,000
Farebox Recovery Ratio	186%	28%

Sources: <http://www.cityofsydney.nsw.gov.au/learn/research-and-statistics/the-city-at-a-glance/metropolitan-sydney> and <http://www.gov.hk/en/about/abouthk/factsheets/docs/population.pdf>

Note: The ‘Farebox Recovery Ratio’ is farebox revenue as a proportion of total operating costs, including depreciation costs.

## 6 Conclusion – Proceed with Caution

There is no doubt that funding options for large public transport infrastructure projects are especially limited this decade. In this post-GFC stimulus post-mining boom environment revenues are down and debt is increasing at the Commonwealth level and for most states. This more constrained fiscal environment has led governments to consider innovative ways to fund new transport infrastructure – such as asset recycling and value capture. In addition, there is a live debate about increasing the rate of the GST from 10% to 15% to increase states’ access to tax revenues.

While economic theory supports the use of value capture mechanisms to fund public transport infrastructure where private citizens make windfall gains from taxpayer-funded infrastructure investments, in our view the circumstances are particularly limited in the Australian Federation at this time. This is not to rule out VC mechanisms completely and, indeed, with increased urban densification in our largest cities they will almost certainly play a greater role in decades to come.

<sup>20</sup> In Brisbane, the trend towards higher urban densification has been slower. Perhaps one reason is the height restriction on buildings in the CBD.

Policymakers should 'proceed with caution' when considering these mechanisms and consider carefully cost benefit analyses that heavily rely on forecast revenue from value capture to achieve positive benefit-cost ratios. In this regard, a careful review of whether land-use changes linked to the additions to the transport network could be separately undertaken.

The more constrained fiscal environment provides governments with an opportunity to consider the broader issues of which level of government should ultimately fund public transport infrastructure and what role should the price signal play in managing demand and providing information about new investments in the network. There is also an opportunity for governments to consider issues around project selection and prioritisation.

This is not to say that public transport passengers should pay 100% full cost recovery for their journey, far from it given the spillover benefits (avoided costs) related to congestion, accidents and pollution. However, governments should – as a first-best option – consider increasing public transport fares at least towards optimal pricing while at the same time improving frequency and reliability metrics (to justify those increases). While value capture mechanisms are supported by economic theory, their implementation must be carefully targeted and seek to improve (rather than detract from) the efficiency of the broader tax system in the Australian Federation.



## References

Bureau of Infrastructure, Transport and Regional Economics (2015) *Transport infrastructure and land value uplift* [https://bitre.gov.au/publications/2015/files/is\\_069.pdf](https://bitre.gov.au/publications/2015/files/is_069.pdf)

Consult Australia and AECOM (2015) *Value Capture Roadmap*  
<http://www.consultaustralia.com.au/docs/default-source/cities-urban-development/value-capture-roadmap/value-capture-roadmap-as-web.pdf?sfvrsn=2>

Harrison, F. (2006) *Wheels of Fortune Self-funding Infrastructure and the Free Market Case for a Land Tax*, Institute of Economic Affairs.

Henry, K. (Chair), J. Harmer, J. Piggott, H. Ridout, and G. Smith (Henry Review). 2010. *Australia's Future Tax System Review, Report to the Treasurer*. Commonwealth of Australia

O'Flaherty, B. (2015) *City Economics*, Harvard University Press.

Productivity Commission (2014) *Public Infrastructure*  
<http://www.pc.gov.au/inquiries/completed/infrastructure/report>

Smith, A. (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*, available online at <http://www.econlib.org/library/Smith/smWN.html>

FOR MORE INFORMATION

<http://smart.uow.edu.au>

Enquiries

Phone: 02 4221 5031

Email: [smart-facility@uow.edu.au](mailto:smart-facility@uow.edu.au)

Address:

SMART Infrastructure Facility  
University of Wollongong, Northfields Ave,  
Wollongong NSW 2522 Australia

Tania Brown

Chief Operating Officer

Phone: 02 4298 1431

Mobile: 0447 611 481

Email: [tania\\_brown@uow.edu.au](mailto:tania_brown@uow.edu.au)

Professor Pascal Perez

Director

Email: [pascal@uow.edu.au](mailto:pascal@uow.edu.au)

Follow SMART on social media:

Facebook – Smartinfrastructure

Twitter – SMART\_facility

YouTube – SmartTv1

Flickr – smart-infrastructure