FINANCIAL LAND TOOLS FOR TRANSPORT INVESTMENTS

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ABSTRACT

There is strong evidence showing a clear relationship between transport infrastructure and land value. A literature studies have shown how the construction of transport services raises land and building value of properties that often are owned by few individuals. In this article, a system of land taxation is examined for two reasons. First because, if the infrastructure is funded via a public investment, the land value increase is accrued only to a few beneficiaries in the community, creating a problem of social distribution. Second, because given the limited public budget for building new transportation infrastructure, this taxation can be the most equitable solution to provide financial support for transport investment.
This article also analyses different types of land value capture mechanisms, offering an exhaustive panel of financial instruments. It examines, for each tool, the meaning, its aim, application, benefits and disadvantages, suggesting some considerations about their implementations. Then, for each mechanism, it illustrates the principle case studies in the world and it compares them through several indicators, including tax implementation, subjects, duration, and localization on territory.
The article shows the application of land value capture tools to the case of Milan, Italy. The city is facing a significant urban development due to the upcoming Expo 2015 as well as to improve mobility problems like congestion. The capture of land value increase is explored as a financial tool to sponsor new transport infrastructure, and the application of the Milan case aims to show the potential and the different facets of the land value capture mechanisms.

Keywords: land value capture, transport investment, land rent, Milan

INTRODUCTION

In periods when we observe a contraction in the availability of capital, it is particularly vital to seek alternative funding streams and new financial resources for investment in transport infrastructure, equipment, and maintenance. In order to maintain high mobility and

accessibility standards for people and goods, ongoing improvement of public transport systems is necessary. Therefore, accessing sufficient funding in a timely manner is a critical task for the development of public transport. One innovative and increasingly accepted way to fund public transport is anchored on the concept of Land Value Capture (LVC). Public transport investments have a variety of impacts on land value in the area around the transport system. Land Value Capture (LVC) is a financial mechanism that aims to return windfall profits of increased property prices (arising from the investment of public funds) back to the public. The basic assumption is to recover the capital cost of the transport investment by capturing some or all of the increments in land value resultant from the investment.

The aim of the present paper is to analyze land value capture mechanisms and examine the application of this approach on a specific case study. The paper is developed according to a twofold structure. In the first part we explore the characteristics of various innovative financial infrastructure methods with particular attention paid to land value capture mechanisms. The objective in these sections is to compare different case studies in order to highlight the pros and cons of each approach. In the final part of the paper we consider the application of land value finance for the new metro lines in Milan, and we suggest in this case two different types of its implementation. We conclude by reaching various policy implications of the applicability and feasibility of land value finance as a method to 'promote' public transport.

2. TOOLS OF LAND VALUE CAPTURE

Land value capture mechanisms are tools able to recover the whole or part of the direct and indirect benefits of new transport infrastructure. In general, land value capture mechanisms can be implemented in two different forms: by imposing a tax on the new added land value[1] or establishing a partnership between public sector and private developers[2]. The principal tolls of land value capture mechanisms are: Betterment Tax, Tax Increment Finance and Joint Development Mechanism.

Betterment Tax is a levy that public authority imposes on private landowners. The levy should be calculated proportionally with respect to the land value and it is applied directly to the owners who will receive an increase in their profit due to greater transport accessibility (Fensham P., Gleeson B., 2003). When we implement this type of tax we create a positive incentive such that landowners and developers are incentivized to develop brownfield areas thus increasing urban density and thereby preventing urban sprawl (Rybeck R., 2004). Betterment Tax has received some criticism, the most significant being that the evaluation of the impacts of a transport improvement on land value is extremely difficult to assess (Peterson G. E., 2009). Moreover, Betterment Tax may not have a high level of social acceptability because the landowners are not able to perceive their private benefit.

[1] The correct quantification of a levy is not always easy and, if it defined in a wrong way, it could bring some distortions in property market (Enoch M., Potter S., Ison S., 2005).

[2] This mechanism permits the public and private sectors not only to share the risks and costs, but also the benefits of the project (ULI, 2009).

Tax Increment Financing (TIF) is a tool to promote private investment through financial incentive mechanisms. The property developer can recover his initial investment due to a targeted fiscal mechanism on the added land value in the area. TIF is the most general land value capture mechanism because it is linked mainly to urban revitalisation projects, which also implies that of public transport investment. Therefore, this specific tool is not designed to consider merely transport investment. In light of the aforementioned, entering into a TIF requires that an area must show indications of degraded, obsolescent or inadequate services, the absence of maintenance, lack of sanitary services, and overcrowded infrastructures (Daley R. M., 2006). The TIF mechanism has received specific criticism: (i) the boundaries of TIF districts are sometimes too wide, having the intention of capturing a large proportion of profit; (ii) a possible collusion between policy makers and property developers; (iii) sometimes the profits are attributed mainly to the private sector (even if the initial investments are both public and private).

Joint Development Mechanism (JDM) is a public-private partnership to develop a commercial and residential development around a new transport system. Different mechanisms can be implemented such as build, operate and transfer (BOT); the core of the partnership however, is to accrue the increased value of the accessibility of the new transport system (Medda, 2008). We can observe that a Joint Development Mechanism is a win-win situation between the private and public sector (Transportation Research Board, 2002) because both can receive some benefits: private developers will receive benefits of high levels of accessibility and a wider amount of sales (high rent and more resident) and public authority will receive benefits of the share of construction costs or from leasing income. Since JDM does not utilize any fiscal tools, it has greater acceptability when it is applied.

Table 1 outlines the major characteristics of the three types of land value capture mechanism. In particular, the table shows the aim, the principal application modality and the advantages and disadvantages of each instrument. In this way it is possible to more easily compare the three mechanisms.

Table 1. Comparison of land value capture mechanisms

	WHAT	AIM	APPLICATION MODALITY	ADVANTAGES	DISADVANTAGES	CASE STUDIES
Betterment Tax	Tax required by the public authority to finance infrastructure works and/or for the supply of public services.	To capture the benefits of new transport infrastructure	Through a tax. Its application can take place through different ways (one-off or installments). It may depend on involved subjects (the whole or only some groups)	– Equity distribution among community (the construction of a public work do not give an advantage only at some subjects) – Funding of transport infrastructures otherwise not doable	– Difficulty to estimate land value and to isolate it from other factors, – Complex to quantify the obtained benefits and to determine the moment in which these benefits can be real – Low level of social acceptability	– Munich of Bavaria – London Crossrail
Tax Increment Financing	Mechanism to promote private investment to stimulate urban re-development	Funding of transport project through the activation of urban development in a specific area. Land value capture can be used to give back private investment	Through incentive and subsidy. Usually, private funding is equal to the amount of the added land value estimated. Different forms of agreement can be foreseen: – low interest rate and long period for reimbursement – private subjects can be dispensed payment of some taxes	Funding of transport infrastructures otherwise not doable	Difficulty to accurately quantify the project impact on land use, and separate it from other factors	– Chicago – Pennsylvania

	WHAT	AIM	APPLICATION MODALITY	ADVANTAGES	DISADVANTAGES	CASE STUDIES
Joint Development Mechanism	Private-public partnership to provide incentive for commercial and/or residential development around public transport stations, built following transport infrastructure project (usually rail infrastructure)	Funding of public transport infrastructure, through the involvement of private investments	Public sector, through land use instruments, encourages localization around new stations, promising high levels of accessibility. Private subjects fund the works (parts of it or the whole). The increase in land value will be used to cover the infrastructure costs supported by private funds.	– It is not necessary to estimate direct and indirect impacts of transport investment – There are not problems connected with the application of the tax (the subjects and the duration) – Dense development around the points with major accessibility – High level of social acceptability	– Community does not have a perception of the agreement's nature – Agreement is between two strong subjects and the possibility of less transparent processes may arise.	– Hong Kong Mass Transit Railway – Northway New York

3. CASE STUDIES

The following case studies depicted in Table 2 represent the successful implementation of land value capture mechanisms. For each project the table indicates the modality of implementation, the value of the tax, the amount captured of added land value, the total revenue recovered through the land value capture, the taxation duration, the subjects of the taxation, and the specific location of the implementation of the tax.
The case studies analysed for the Betterment Tax are Munich of Bavaria (Hass-Klau C., 2004) and London Crossrail (Greater London Authority, 2009). The case of Munich of Bavaria is noteworthy because the levy is directed to all the individuals interested in the new infrastructure. The levy is evaluated as 2/3 of the land value incremented. In the case of London Crossrail, the levy is implemented only on businesses with a rateable value of £50,000 and above.
For the Tax Increment Finance we have examined two case studies, the city of Chicago (City of Chicago, 2006) and the state of Pennsylvania (Department of Community and Economic Development, 2007). In these cases the levy is still in force and the objective of the taxation is not to finance new transport infrastructure but to redevelop degraded areas.
The Joint Development Mechanism case studies include the Hong Kong Mass Transit Railway (So H. M., Tse R. Y. C., Ganesan S., 1996) and the Nothway in New York (Batt W., 2001). The first case study shows that land value captured is around 40% and thus is able to cover around 55% of infrastructural costs. The New York case study demonstrates that in order to have a successful JDM there must be a robust link between the assessment of the new transport infrastructure (a motorway) and the increase in land value. It is estimated that the land value increment was nine times greater than the infrastructural costs.

An important result emerging from this comparison of case studies is the flexibility and capacity to tailor the land value capture tools in relation to the context and the objective that we need to achieve. In the next section we will consider the case of Milan and analyze in the same urban context two different options of land value finance.

Table 2. Case studies and their main characteristics

	CASE STUDIES	MODALITY	ENTITY	LAND VALUE CAPTURE OBTAINED	INCIDENCE ON TOTAL COSTS	DURATION	SUBJECTS	LOCALIZATION
Betterment Tax	**Munich of Bavaria**	Following up changing of land use patterns (building constraint level, use destination, etc.) from public sector, private owners involved must to pay infrastructural costs of the area.	2/3, based on land value increment. This value is calculated like a different among land value before and after changing of use destination	Land value obtained, from 1994 to 2004, was 172,9 euro million.	/	Payment of private owners is the essential requirement to have building permitted.	The entire of private owners with a destination use changing of their property	Taxation is foreseen on all private land with destination use changing
	London Crossrail	Tax is imposed towards all commercial activity, localized long rail line, with rateable values of £50,000 and above. In 2005 business with this required was around 15%	Tax is an annual business rate supplement (BRS). For each pound of value increased is applied a rate of 2 pence.	/	Total costs of the project: £16 billion. It is foreseen to recover £3,5 billion (around 22%)	BRS will become effective from April 2010. The rate is expected to run for between 24 and 30 years. Effective duration can depend on the interest rate payable on borrowing and the business rates entity (following each 5 years revaluation)	All owners of commercial activities with a ratable values of £50,000 and above	On the new rail line

	CASE STUDIES	MODALITY	ENTITY	LAND VALUE CAPTURE OBTAINED	INCIDENCE ON TOTAL COSTS	DURATION	SUBJECTS	LOCALIZATION
Tax Increment Finance	**Chicago**	Inwards TIF district, income generated with new tax is the base to calculate the amount received from taxation system for local authority	Tax is included in property price of new building	The entire land value increment is captured	TIF application foresees to cover all building costs of new urban development, funded of private developers	23 years. After this period the further increments will redistributed to Chicago city	All the buyers of new property unit of new urban development	TIF districts
	Pennsylvania	TIF toll is introduced from Pennsylvania State to re-develop some districts. For each project is foreseen a maximum of $5 million of funding, until to arrive to a total of $100 million	Tax is included in property price of new building	The entire land value increment is captured. An essential requirement to start a new TIF is a covering costs documentation	Economics benefits obtained with a TIF application must to cover all projects costs	It depends of projects	Subjects who want become a new projects promoters to develop degraded areas	TIF districts

	CASE STUDIES	MODALITY	ENTITY	LAND VALUE CAPTURE OBTAINED	INCIDENCE ON TOTAL COSTS	DURATION	SUBJECTS	LOCALIZATION
Joint Development Mechanism	**Hong Kong Mass Transit Railway**	The land is owned by the public sector. HK government gives in concession land to private developers to develop the area, in exchange for their manage for a determine period	A real tax is not foreseen. Proceeds arrived from selling or renting of property, from rail tickets and from commercial activities around stations	Among 1970 and 1991 the value captured was around 39% of land value obtained	Among 1970 and 1991 the land value capture has covered around 55% of infrastructural costs	The leasing of land concession is more than 50 years	Does not exist particular subjects. Community is not affected by taxation, because the taxation is inside an agreement between public sector and private promoters	Concession area
	Northway New York	Tax is calculated like a different between land value before and after the infrastructure building	/	Land value increment was estimated around $3,7 billion	Land value increment was 9 times more than infrastructural costs	/	All property owner involved by the project	2 miles long all Nortway trail interested (9 miles)

4. MILAN METRO SYSTEM

Milan represents an interesting case study because the city is currently undergoing numerous infrastructural projects in the run-up to the EXPO 2015 event. The new projects of the metro system are: M4 (in light blue is the first part of the development whereas the dark blue is the second one), and the extension of M5 (in pink) in Figure 1. We have selected M4 because it crosses through the city.

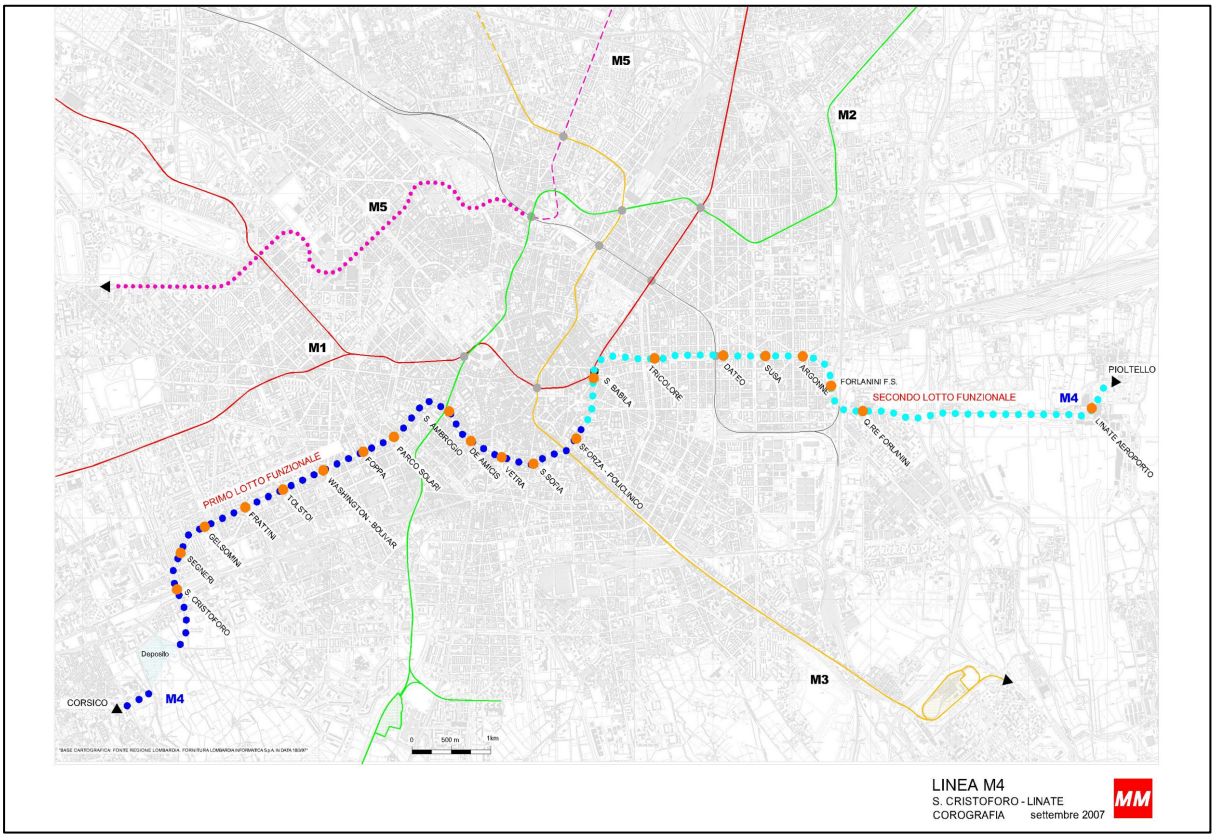

Figure 1. Scheme of the new metro network in Milan (Source: www.arifl.regione.lombardia.it)

Among the different types of land value capture mechanisms, we have selected the Betterment Tax[3] as the most feasible for the case of the new metro line 4 (M4) in Milan. We show the possibility to apply the same type of financial mechanism but in two different ways in order the flexibility of the method.

[3] It is possible to present various financing schemes: (i) traditional public funding, (ii) *project financing* plus shadow toll (similarly to the line 5, under construction), (iii) sale or securitisation of public areas, (iv) co-participation of private developers of new areas to the investment and running costs by means of earmarked taxes, value capture and increase of building permits and (v) implementation of a land value capture on existing buildings. Since the metro line 4 pass, essentially through existing building, the best method to apply is land value capture and, in particular, the toll of Betterment Tax for its characteristic of equity.

4.1 Proposal I

The first proposal is based on the following hypotheses: (i) the future population of Milan will need the new metro line, and (ii) the number of transactions for houses, offices and commercial (available from Agenzia del Territorio database) is assumed to be directly proportional to the population distribution in the territory. We consider an area of influence of stations of 500m, a proxy coherent with available studies. The infrastructural plan of Milanese Mobility Agency (AMA) quantifies the total land coverage of new infrastructure planned for 2015 at 8,4%. We assume that the new M4 will represent 2/5s of the new metro lines and will therefore cover approx. the 3,4% of the total area of Milan. We assume that 3,4% of all houses and offices sold in Milan in one year will have a land value increase due to the new metro line. In this case we are considering legal real estate values, which are lower than the market values, but are fixed in time. We assume that the average increase in land value will on average be equal to 15%, which is in line with literature in the field[4]. We assume that the Betterment Tax will accrue to 100% of the land value increase.

Table 3. Method of calculating the value to be captured

Average legal value (hypothesis)	Value increase due to M4 = 15%	Value capture share	Total value captured

In table 3 we depict the average legal real estate value obtained in one year. We assume that the impact on accessibility due to the new transport investment will last 30 years, therefore, in order to calculate the total tax, it is necessary to discount the financial flow generated yearly (8% per year) for the entire period.
We assume that the number of transactions is approximately similar to the number of transactions in year 2007[5]. The aggregate value that is captured through the Betterment Tax is approximately 55,3 million euro, which amounts to about 4% of the M4 total construction cost. This aggregate value, however, may be underestimated because: (i) legal values are lower than market values and, as a consequence, their increments are too; (ii) it is considered only an estimate of transactions, and we are considering only the estimation of the transactions. A final consideration in relation to this specific application of Betterment Tax is that a taxation based on transaction number may find wide social acceptability because the tax is levied at the time that the owner perceives the real benefit (tax on capital gains).

[4] The most important literature reviews (Martinez L. M., Viegas J. M., 2007; Smith J. J., Gihring T., 2006; GVA Grimley, 2004) show an average increase of land value around 15%.
In addition to this literature review, there are many single case studies, with very different outcomes, depending on the context: Portland in Oregon, a case in Scotland and BART in San Francisco, all show a value increase of around 10%-15%, DART project in Dallas shows an increment of 32% for residences and 25% for offices, and the evidence from Asian cities all show even more significant increases (32% for Bali and 49% for Jakarta).

[5] Year 0 to 4: no purchase is taxed because the new line did not influence the market yet. Year 5 to 7: 10% more purchases compared to 2007, due to the dynamism introduced in the market by the new line. Year 8 to 14: same purchases than 2007. Year 15 to 30: decrease of purchases number of 2% per year.

4.2 Proposal II

The second proposal is based on real estate market values and is evaluated along the entire metro line. After an initial research and homologation of reference data, the analysis starts with a research on average real estate market values for each area[6] that metro line goes through and their historical evolution. Milan has also been affected by the economic downturn. We did not evaluate the average land value increase through the standard hedonic price method, but by considering the literature and the economic crisis, we have estimated a 10% increase in land value. We have assumed that the tax will accrue to two-thirds of the total increase in land value. The tax rate is obtained by multiplying the average land value of each area (in € for square meters).

Table 3. Methodology adopted for the proposal II

	Methodology	Milan case study
1	Database research	
2	Real estate market analysis	Crisis phase of Milan
3	Definition of average market value	Different areas: from 1950 €/mq to 9175 €/mq /in central area)
4	Estimate of added land value	Value from literature review (15%). Considering the crisis period, value = 10%
5	Choice of amount of the increment to tax	2/3 Station | Average value (€/mq) | % of increment | Incremented value | % to tax =2/3
6	Subjects and localization	Every owners in 500 meters around the stations Station | Families number for area | Area dimension (Kmq) | Area considered with only a radius of 500 m | Families number in the radius | Families = property units
7	Calculation of the total added land value to tax	Station | % to tax = 2/3 | Families = property units | Total added land value to tax

The people who are subject to the taxation will comprise all the households living within a radius of 500m of the metro line. The estimation of the tax allows us to confirm that the BT in this case will be able to raise approximately 13% of the entire project cost of the M4 line in Milan.

5. CONCLUSION

Through an analysis of the main land value capture mechanisms, we have presented a practical application of the Betterment Tax on the Milan metro system. We have considered

[6] For Italy, real estate market database is divided in different areas. Along metro line M4, it has been find nine different areas.

two different practical applications of innovative financial instruments. Table 4 below illustrates the principal aspects of the two proposals.

Table 4. Principal aspects chosen for the two proposals

	Proposal 1	**Proposal 2**
Type of value	Legal value	Market value
Value incremented	15%	10%
Amount of the increment to tax	100%	2/3
Taxation modality	Transaction	*Betterment Tax* at time 0
Taxation subjects	Those who make a transaction (residential, commercial and services)	All the resident owners
Taxation duration	*Una tantum*	*Una tantum*
Taxation localization	Radius of 500 metres	Radius of 500 metres

The choice of methodology can significantly affect the outcome of the taxation, which thus highlights the flexibility of land value capture mechanisms in various urban contexts. The preferred proposal in so far as social acceptability is concerned, is the proposal with lower tax value (legal values) and payment at the time of residential transaction. The better proposal with regard to the economic aspects is the one that provides the highest investment recovery (market values) and immediate fiscal availability for the infrastructural costs. Political factors (local budget or local council elections) will also determine the choice between different proposals.

Some considerations on land value must be carried out. First is the issue of social acceptability that arises with land value capture mechanisms, this is because (i) households are often subject to other taxation; (ii) some households may not be interested in the new transport infrastructure for different reasons, i.e., elderly people not keen on public transport; (iii) this type of tax can be considered as regressive. It is important from this perspective that the tax rate should be transparent, clear and comprehensive. It is fundamental that the subjects of taxation are certain that their payment will be used to finance the transport infrastructure (earmarked tax). Secondly, the increase in land value is difficult to estimate and control by decision-makers since the estimation procedure depends on urban, economic and social variables. The evaluation is conditional to: (i) contextual factors, able to influence the value of that area (environmental quality, other transport infrastructures, social aspects, etc.); (ii) the difficulty in measuring the accessibility (distance between the station and every location, to find the correct boundary among locations with benefits and locations without it, etc.); (iii) the evaluation of public transport features (number of lines, frequency, connections with other transport systems, connection with urban centre or regional activities, proximity to parking, etc.).

We can certainly identify three main policy recommendations in relation to land value finance applied to transport investment. First, we recognize that although innovative, these methods

are not able to cover the bulk of the infrastructural costs. However, the cost recovery is noteworthy: the average share of cost recovery is around 10%-15%. Nevertheless, land value finance is useful as part of a financial portfolio for transport investment. A second recommendation relates to the fact that urban areas are different and have distinct characteristics, therefore we need to apply tailored tools and tax methodologies in the same urban context.

Our final recommendation concerns the role of accessibility as a factor for the reorganization of the city and urban services. Thanks to its capacity to increase land value, accessibility can guide new development in urban areas, thereby creating new focal points, and identifying new growth opportunities. Accessibility can be seen as an opportunity for land development, and urban planners need therefore to examine accessibility up front in their assessment of urban land use rather than simply be governed by accessibility needs.

REFERENCES

Al Mosaind M., Dueker K., Strathman J. (1993). Light Rail Transit Stations and Property Values: A Hedonic Prices Approach. Transportation Research Record 1400, pp. 90-94

Batt W. (2001). Value Capture as a Policy Tool in Transportation Economics. American Journal of Economics and Sociology, vol. 60, n. 1

Beria P., Scopel E. (2009). Financing methods applied to urban infrastructures. An application to Milan metro system. 8th Conference on Applied Infrastructure Research, INFRADAY, October, Berlin

City of Chicago (2006). Tax Increment Financing Assistance, Application Packet. Department of Planning and Development, Chicago

Daley R. M. (2006). Tax Increment Financing Assistance: Application Packet. Department of Planning and Development, Chicago

Department of Community and Economic Development (2007). Tax Increment Financing Guarantee. Program Guidelines, Commonwealth of Pennsylvania, Pennsylvania

Diaz R. B. (1999). Impacts of Rail Transit on Property Values. Paper presented at the Commuter Rail-Rapid Transit Conference Sponsored by the American Public Transportation Association, Toronto, Ontario, May

Doherty M. (2004). Funding Public Transport Development Through Land Value Capture Programs. Ecotransit

Dye R. F., Merriman D. F. (2006). Tax Increment Financing: A Tool for Local Economic Development. Land Lines, vol. 18, n. 1

Enoch M., Potter S., Ison S. (2005). A Strategic Approach to Financing Public transport Through Property Values. Public Money and Management, vol. 25, n. 3, pp. 147-154

Fensham P., Gleeson B. (2003). Capturing Value for Urban Management: A New Agenda for Betterment. Urban Policy and Research, vol. 21, n. 1, pp. 93-112

Geurs K. T. and Van Wee B. (2004), “Accessibility evaluation of land-use and transport strategies: review and research directions”, Journal of Transport Geography, vol. 12, pp. 127-140.

Greater London Authority (2009). The Crossrail Business Rate Supplement, Summary of initial prospectus. London

GVA Grimley. (2004). Developing a methodology to capture land value uplift around transport facilities. Scottish Executive

Hass-Klau C. (2004). Capture of land value premiums as source of funding for public transport: evidence and practice in selected European metropolitan areas. A study for the European Transport Authorities (EMTA), University of Wuppertal, Wuppertal

Hayashi Y. (1989). Issues in Financing Urban Rail Transit Project and Value Captures. Transportation Research A, 23A, vol. 1

Martinez L. M., Viegas J. M. (2007). Metropolitan transportation systems financing using the value capture concept. paper presented at the 11th World Conference on Transport Research conference, Berkeley (CA, USA)

Medda F. (2008,). Land Value Mechanisms in PPPs: Investment in Urban Mass Transit Systems. The World Bank Special Report. The World Bank. Washington

Peterson G. E. (2009). Unlocking Land Values to Finance Urban Infrastructure. Trends and Policy Options, n. 7, The World Bank

RICS Policy Unit (2002). Land value and public transport. Summary of findings, London: ODPM/RICS.

Ryan S. (1999). Property Value and Transportation Facilities: Finding the Transportation-Land Use Connection. Journal of Planning Literature, vol. 13, n. 4, pp. 412-427

Rybeck R. (2004). Using value capture to finance infrastructure and encourage compact development. Public Works Management & Policy, vol. 8, n. 4, pp. 249-260

So H. M., Tse R. Y. C., Ganesan S. (1996). Estimating the influence of transport on house prices: evidence from Hong Kong. Journal of Property Valuation & Investment, vol. 15, n. 1, pp. 40-47

Smith J. J., Gihring T. (2006). Financing Transit System Through Value Capture. American Journal of Economics and Sociology, vol. 65, n. 3

Transportation Research Board. (2002). Transit Oriented Development and Joint Development in the United States: A Literature Review. Research Results Digest, n. 52

Urban Land Institute ULI (2009). Bay Area Burden, Examining the Costs and Impacts of Housing and Transportation on Bay Area Residents, Their Neighbourhoods, and the Environmental. Washington, D. C.

Wrigley M. and Wyatt P., (2001). Transport Policy and Property Values. RICS Cutting Edge Research Conference. 5-7 September 2001. University of the West England, Bristol.