

Value creation and capture – a Gautrain case study



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INTRODUCTION

In Africa alone it is estimated that \$93 billion per year are required to address infrastructure backlogs. A massive burden is consequently placed on local governments in terms of raising revenue to further finance major infrastructure upgrades and additions. Over the past ten years National Treasury has contributed significantly towards transport infrastructure investment in South Africa. While these fund allocations are expected to continue, or even increase in the near future, they will most likely not overcome the current infrastructure funding deficit (Brown-Luthango 2010).

While transport infrastructure provides access to various economic opportunities for individuals (World Bank 2009), McGaffin (2011) regards infrastructure expenditure as something more than just access provision. He believes the expenditure can be seen as an investment that can lead to possible value creation and value capture opportunities. Value creation is defined as the additional value created due to infrastructure investment, while value capture is the acquisition, by public and/or private entities, of a portion of the returns for the investment (Huxly 2009). This additional value can then be used for the financing of certain projects.

TRANSPORT INFRASTRUCTURE AND PROPERTY VALUES

While there are many theories behind what exactly it is that determines the value of a property, location is widely accepted as crucial. This is a topic frequently discussed by urban economists. Early studies suggest that land values are derived from transportation savings

due to the location of the land parcel relative to the CBD. Bid-rent theory posits that the price of a land parcel increases due to the proximity to the CBD, and land parcel sizes increase with an increasing distance from the CBD (Fujita 1989).

However, land value is not only dependent on the location of the site. Various authors have conducted studies to determine exactly what the different determinants for increased property values are, and most authors agree on three broad categories which include the following factors:

Physical: Physical factors speak to the quantitative and qualitative features associated with a certain property, such as the size, type of land use and existing infrastructure on the land parcel.

Environmental: Environmental amenities are the externalities that emerge from the surrounding neighbourhood. Externalities or secondary costs and benefits are those costs incurred by communities as a whole.

Accessibility: The accessibility of a place of interest is determined by different modes of travel (Bowes & Ihlanfeldt 2001).

VALUE CAPTURE FINANCE

Huxly (2009) describes value capture finance (VCF) as “the appropriation of value, generated by public sector intervention and private sector investment in relation to an underused asset (land and/or structure), for local re-investment to produce public good and potential private benefit”.

Value capturing can therefore be further described as a method whereby additional land value is extracted as a result of public investment into com-

munity infrastructure. This might occur where, for instance, a school, or more specifically public transport and other infrastructure, are provided. The additional land value is the total land value after the public investment, minus the value of the property had the additional public investment not occurred.

The main reason for value creation and capturing is simply because many municipalities do not have the necessary funding to undertake the required infrastructure expenditure. The components of the VCF positive feedback loop are as follows (see Figure 1):

Value creation: Unlocking of the potential value increases of underutilised assets. This is done by the public sector to increase the demand for private sector investment.

Value realisation: Actual investment from the private sector, ensuring that the value increase is realised.

Value capture: Public sector arrangements, which entail that a portion of the private sector investment is returned locally (as monetary or in-kind contributions).

Value recycling: Re-investment from the private sector, which might lead to further funding arrangements.

Value creation can take place in various forms. How the additional value is calculated is also a very important feature in the value creation and capturing process. There are different measuring methods, all leading to different results. It is important to understand exactly how they differ in order to avoid public and private sector disputes.

Various mechanisms to capture value have been developed across different continents. Although all mechanisms work differently, all of them can be divided into two broad categories:

- Mechanisms where the value is captured from income to pay for transport

or other urban infrastructure (monetary mechanisms).

- Mechanisms where the added value is used to facilitate broader planning outcomes (e.g. densification and inclusionary housing).

CASE STUDY

A case study was conducted on the Gautrain railway in order to see if there is any correlation between public transport infrastructure investments and adjacent property price increases. The Gautrain was specifically chosen as a case study, as it is a unique project in South Africa and required considerable investment when constructed. The potential for this additional value being captured was also considered.

Lightstone Property provided secondary data, which was used for the analysis. The data included Deeds Office Property Registrations for developed properties. Purchase dates since 2008 for properties within 8 km of the Centurion, Hatfield, Johannesburg, Marlboro, Midrand, Pretoria, Rhodesfield, Rosebank and Sandton Gautrain stations respectively were included in the data. A filter was applied to select only residential sales.

Repeat sales were used as the value creation measuring method in the analysis to avoid the pitfalls associated with changes in the types of properties that transact in one year versus another year.

In order to organise the data, and consequently simplify the analysis, the data was divided into three variables, namely:

- housing type
- distance from station, and
- analysis year.

Residential property value percentage change due to proximity is defined as:

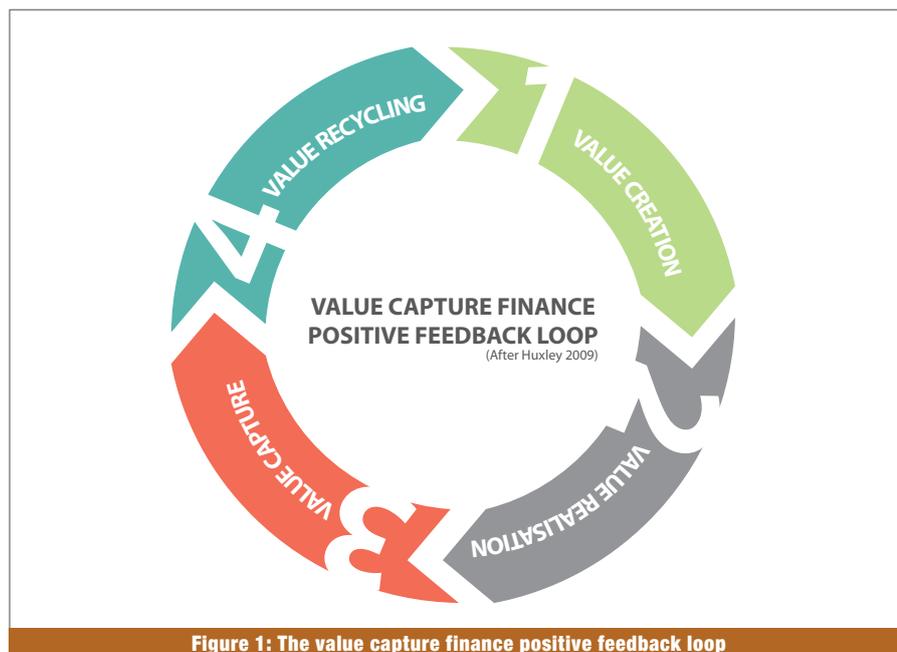


Figure 1: The value capture finance positive feedback loop



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(average inflation of properties 0–2 km from Gautrain station) minus (average inflation of properties within 5–8 km from the station). It is assumed that the Gautrain does not affect properties that are 5–8 km away from stations. This then serves as the base residential property trend for a certain area.

The reliability of the data was tested using a multiple regression model or 4-way ANOVA analysis which tests multiple predictors for a particular outcome variable such as, in this case, average property inflation. If a certain data set was deemed to have statistical significance, it amounted to a post hoc comparison which was done by using the Tukey's HSD (Honest Significant Difference) method.

The results of the case study are displayed in Table 1 and Figure 2. The results clearly indicate the residential property trends for each station. Not all stations experienced property value increases. Noise implications might be one of the factors for decreasing trends. Rosebank Station seems to perform best regarding property value increases. Pretoria Station and Johannesburg Station performed very poorly prior to operation, but outperformed the other stations in 2013. This might be due to city revitalisation projects and initiatives taking place in the city centres. In Johannesburg, properties within a 0–2 km radius from stations increased by 8.49%, and in Pretoria by 7.78% in 2013.

CONCLUSIONS

The primary observation from the case study analysis was a general increase in residential property values in close vicinity to Gautrain stations. Densification also took place around stations after the construction of the Gautrain. Residential properties closer to stations indicated a more significant

price increase than properties further away. All properties performed better after the operation of the Gautrain had started. In the ANOVA analysis, for all variables except for the Midrand Station, the dataset is significant.

Value capturing mechanisms are seldom considered when planning and financing transport infrastructure in a South African context, but if considered, might lead to significant financial savings on projects. In general, properties within close proximity of transport infrastructure have shown increased property values, and consequently the opportunity to capture these additional values arises. Transport infrastructure investment can also be used to change urban shape and stimulate development and rejuvenation, especially in areas susceptible to urban decay. Public-private-partnerships will most likely dictate value capturing agreements.

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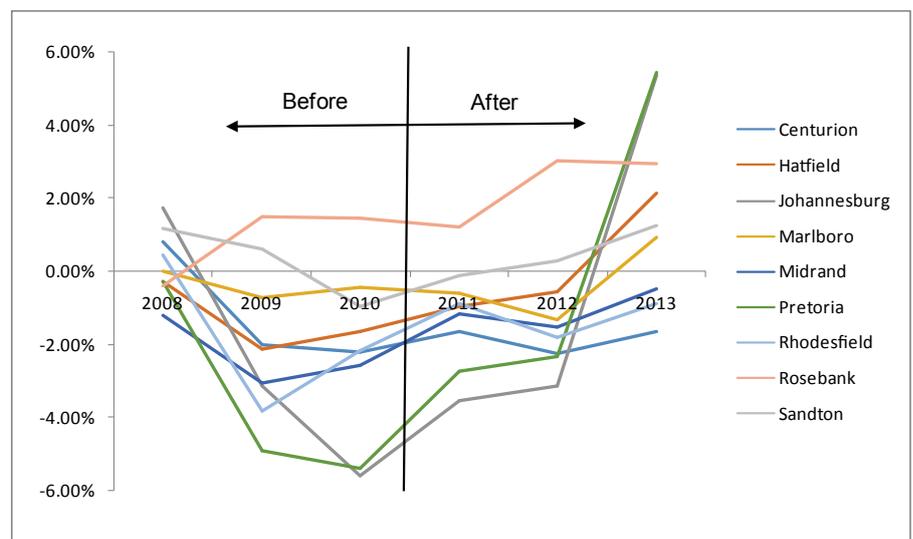


Figure 2: Weighted mean annual residential property value percentage change (0–2 km from station) between 2008 and 2013

Table 1: Weighted mean annual residential property value percentage change (0–2 km from station) between 2008 and 2013

Station & Year	Centurion	Hatfield	Johannesburg	Marlboro	Midrand	Pretoria	Rhodesfield	Rosebank	Sandton
2008	0.80%	-0.29%	1.76%	0.02%	-1.18%	-0.29%	0.45%	-0.40%	1.17%
2009	-1.99%	-2.14%	-3.12%	-0.72%	-3.05%	-4.89%	-3.80%	1.50%	0.62%
2010	-2.19%	-1.66%	-5.57%	-0.44%	-2.58%	-5.39%	-2.17%	1.47%	-0.95%
2011	-1.62%	-0.94%	-3.55%	-0.61%	-1.14%	-2.72%	-0.89%	1.23%	-0.12%
2012	-2.24%	-0.57%	-3.14%	-1.34%	-1.53%	-2.33%	-1.81%	3.05%	0.28%
2013	-1.64%	2.15%	5.35%	0.94%	-0.49%	5.45%	-0.90%	2.93%	1.27%