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# Effects of Government Housing Subsidies in Khayelitsha, Cape Town

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## Abstract

*Property rights are widely imagined to have considerable direct and indirect effects on urban poverty. Evidence is however scarce, more so in Southern Africa. This paper examines the effects of property rights in South Africa through a case-study of subsidised privately-titled housing for poor people in Khayelitsha, Cape Town using a difference-in-differences estimation strategy. The results show that housing subsidies are associated with better physical health and (counter-intuitively) higher occurrence of teenage pregnancy. Improvement in health is attributed to better housing quality and environment. The effects of titling extend to human capital, which is understudied in the literature. Scholars thus need to go beyond examining economic effects alone. Since titling showed no effect by most measures, it is likely that poverty is driven so strongly by factors such as unemployment that property rights make little overall difference to poverty.*

## 1. Introduction

Titling has been advanced as a solution to urban poverty (De Soto, 2000; Leckie, 2004; Durand-Lasserve and Selod, 2009: 110-111). Titling may be defined as the process of integrating informal tenure into a system recognised by public authorities through the delivery of real property rights authenticated and guaranteed by the state through freehold and leasehold title deeds (Durand-Lasserve and Selod, 2009: 105). Titling has been favoured over the administrative recognition of occupancy. Administrative recognition of occupancy is a process of delivery of temporary rights in which building is conditional on standards set by authorities (Durand-Lasserve and Selod, 2009: 10).

Despite the promotion of titling, the state of empirical knowledge of the effects on individuals, households and communities in developing countries is scarce (Durand-Lasserve and Selod, 2009: 115). In Southern Africa particularly, very few evaluations have been carried out despite the existence of titling programmes. Studies on the effects of titling on social and human capital are even less common. Most studies analyse the economic effects of titling through

labour participation and access to credit. In addition, some scholars have gone on to argue that the claims about the effects of titling are exaggerated given the scarcity of evidence (Reerink and van Gelder, 2010: 84).

This paper examines the economic, social and human capital effects of a subsidised homeownership scheme in South Africa with a focus on Khayelitsha, a township in Cape Town. It aims to understand the benefits of both titling and homeownership in comparison to the possession of administrative occupancy rights. In this way, it adds to knowledge by going beyond the narrow economic focus to include social and human capital effects and adds to understanding of the effects of titling in the Southern African context.

## 2. Literature

Although there is a rich literature on housing in South Africa, there are few empirical studies enquiring into the effects of property titling. These studies mainly focus on economic benefits and are less concerned with human and social capital effects.

Franklin (2011) has shown that titling has positive labour market outcomes among beneficiaries. In assessing the impact of the South African government's housing subsidy programme he examined the effects of the new housing policy on labour market participation, earnings and household income in neighbourhoods in Cape Town that received housing subsidies. He demonstrates that labour market participation, earnings and household income are higher among beneficiary households, particularly for young female adults.

It is claimed that titling can lead to an increase in income through its effect on access to credit. In the South African context, studies find almost no evidence of this effect mainly because the beneficiaries of housing subsidies are wary of the risk involved in using their property as collateral (Kingwill *et al.*, 2006: 53-65; Boudreaux, 2008; Lemanski, 2011).

Boudreaux (2008) and Meintjes (2000) suggest that titling has a positive effect on wealth while Rust (2006) suggests a similar finding but further shows that home-based entrepreneurial activities do not result in more wealth. It is held that titling has a positive effect on home-based entrepreneurial investments which in turn increase wealth. Boudreaux (2008) demonstrates that some titleholders use their homes as secure places of business, generating income that residents use to support their families. Meintjes (2000) finds that homeowners in Lusaka city and Soweto Township are encountered with an obligation to fill

their homes with household durables. However, Rust (2006: 44-52) shows that property titles are not enough because they require a functioning secondary property market, sufficient housing stock, people's ability to afford repayments on housing finance and mortgage lenders' willingness to move downmarket. From this discussion, titling may lead to increased home-based entrepreneurial activities but these are found not to be meaningful enough to create long term substantive and sustained increases in wealth.

Titling has also been shown to have a positive effect on housing improvements. Turner and Fichter (1972) and Abrams (1966) suggested that occupants in informal settlements have no incentive to invest in their houses because of tenure insecurity. Titling and upgrading may reduce this insecurity and result in various household investments. For example, title-holders in Langa, Cape Town were found to invest in improving their homes, which raised property values (Boudreaux, 2008). Also, home improvement projects provided entrepreneurial opportunities for a wide variety of local artisans. However, because Boudreaux's study relied on qualitative evidence, it is deficient of evidence on the extent of improvements and percentage increase in property values. In addition, it has been shown elsewhere that untitled households may also make improvements which the study failed to acknowledge.

Several qualitative studies explore low-income housing and emerging relationships in low-income neighbourhoods in South Africa (Lemanski, 2006; Seekings, 2008b; Harper and Seekings, 2010; Ross, 2010; 2011; Muyeba and Seekings, 2012). This literature suggests that as a result of obtaining ownership of new low-income housing, residents espouse values of respectability, decency, dignity and belonging as they forge their relationships (Lee, 2005; Ross, 2010). These values are in contrast to the dehumanising experiences that they experienced during apartheid. However, quantitative analysis of these effects is scarce.

However, community-making efforts among subsidy beneficiaries are undermined by persistent segregation (Oldfield, 2004; Lemanski, 2006; 2011) although there is some tolerance as a result of contact in new mixed neighbourhoods (Muyeba and Seekings, 2011). Other factors that constrain community making include jealousy and gossip (Ross, 2010: 160-163), witchcraft (Ashforth, 2005), and violent crime and criminality (Centre for the Study of Violence and Reconciliation, 2010). The literature further identifies that coping mechanisms such as kinship support are not as supportive as previously thought because residents are recognising fewer conditional obligations toward kin (Seekings, 2008a; Harper and Seekings, 2010). There is also evidence of privacy which constrains community making (Muyeba and Seekings, 2012). However, there are signs of domestic fluidity in the sense that

individuals are moving between households and become members of multiple households at a time (Spiegel *et al.*, 1996; Seekings, 2008a).

### **3. The Context: Khayelitsha**

Khayelitsha (meaning ‘new home’ in isiXhosa) was a township planned in 1983 by the apartheid state to accommodate Africans that were legally in Cape Town and squatting in formal African townships (Cook, 1992: 125). It became the apartheid government’s response to the severe shortage of housing for Africans in the Western Cape (Seekings *et al.*, 1990: 8). Building of houses and formal occupation was completed by 1985 with ninety-nine years leasehold tenure allowed for Africans who were legally in Cape Town at the time.

Shortly before in November 1984, the government announced that illegal African migrants in Cape Town would be allowed to build shacks on site-and-service plots in Site C, Khayelitsha, near the current N2 highway (Cook, 1992: 125). This meant a temporary administrative recognition of occupancy. The part of Khayelitsha known as Site C was first established as a transit camp for the transfer of illegal migrants to rural areas (Cook, 1992; Mdewu, 2004; Zonke, 2006). Forty-two families who came from the nearby shack settlements of Old Crossroads were the first to be resettled there (Mdewu, 2004). Soon after, 8,300 squatter families occupied 4,150 site and service plots. One tap was provided for four sites and one bucket toilet for every two sites. However, adjacent land that had no services of any kind was also occupied and these shack settlements became permanent.

Continued urbanisation that followed both the repeal of the pass laws in 1986 and the removal of influx controls led to dense clusters of shacks. They were erected on un-serviced sites and on any available open space both in Site C and other areas of Khayelitsha. By mid-1989, an estimated 13 000 families were squatting on un-serviced sites. The population increased without the increase in serviced sites. In 1988, the population of Khayelitsha was approximately 189 000. It increased to 305 323 in 1989 and was estimated to have stabilised around 450 000 in late 1990. Of the 450 000, 36 percent (162 000) lived in shacks on un-serviced sites in Site C, Site B, Town Two and other areas of Khayelitsha (Cook, 1992: 125-130).

In 1994, the new post-apartheid state developed a targeted one-off subsidy in the form of a grant to low income households, which provided eligible households with ownership of a newly-built, fully-serviced one-bedroom house. Allocation procedures were as follows. Individuals first registered on the housing waiting list by completing a registration form at the Cape Town

municipal housing office. The office then captured their information on the Housing Demand Database. A project plan was then drafted by the municipality for approval by the Provincial Government of the Western Cape (PGWC).

Once the project plan was approved, the municipality applied the selection criteria. In order to be eligible, respondents were required to show proof by ID that they were South African citizens, have a household size of 4 or more, provide birth certificates of dependants, and provide a copy of the ID book of their spouse if married, or partner if in a partnership. The application forms were then processed through the Housing Subsidy System (HSS), an operational system which tracks housing subsidy applications and allocations on a national scale. To be allocated a subsidy, applicants had to prove using a payslip that they had a maximum monthly household income of R3 500 or less (Republic of South Africa, 1994). Joint spouses who earned R800 and below would receive a capital subsidy worth R15 000 and those who earned between R801 and R1 500 would receive one worth R12 500. Following this, the municipality publicised the list of beneficiaries. Construction of the houses commenced after beneficiaries contributed R2 479 to the project – this was required in order for them to have an economic stake in their new asset (Tomlinson, 2006). Once houses were completed, from 1997 onwards, the project manager handed them over to beneficiaries under freehold tenure (Provincial Government of the Western Cape, 2013).

Although housing allocation generally met targeted households, there were several problems with the process of allocation which has a bearing on empirical analysis. Firstly, the waiting list did not operate on a first come first served basis. There were many waiting lists which were drawn up during the apartheid years and some people were on multiple lists in different locations. Attempts by municipalities and the province to merge lists failed (Tissington *et al.*, 2013: 25). Although the Cape Town Municipality kept a waiting list, they used it alongside a system based on allocation to communities in catchment areas of specific building projects. Housing subsidies were allocated according to quotas for each community under a specific housing project. Communities established project committees that were responsible for allocating houses to their members (Franklin, 2011: 10; Tissington *et al.*, 2013: 26). Through this system, people of Khayelitsha were called to register during a given time period of up to two weeks at a time if they wished to apply for a house. It did not matter how long an individual had lived in the community – some applicants came from other communities during the registration period and from as far as the Eastern Cape in order to register and were successful in being awarded

subsidies<sup>1</sup>. Meanwhile, others had received their subsidies through the housing waiting list, the allocation of which was chaotic and was further impeded by occurrences of fraud and corruption – some beneficiaries received more than one subsidy and some who had not been allocated subsidies invaded houses but were allowed to stay on by the state. (Franklin, 2011: 10; Tissington *et al.*, 2013: 26).

Despite the problems, the case of Khayelitsha provides an opportunity for the investigation of the effects of real property rights (of both titling and homeownership) on beneficiaries relative to those with administrative recognition of occupancy. The existence of a group that benefitted and one that did not provides a treatment and a comparison group. Those who remained in shacks in Site C, Site B, Town One and Town Two are the comparison group while those who moved to serviced sites in Site B, Makhaza, Kuyasa and eventually moved into state-built houses are the treatment group. Furthermore, the allocation of subsidies was done in phases which ensured that at any one time, there were beneficiaries and non-beneficiaries in Khayelitsha existing simultaneously. Many non-beneficiaries remain on the waiting list on serviced and un-serviced sites.

## 4. Data

Data from the Cape Area Panel Study (CAPS), which is an on-going panel study in Cape Town, was analysed to examine the effects described above. CAPS follows the lives of a large representative sample of young adults living in metropolitan Cape Town as they undergo multiple transitions from adolescence to adulthood. However, CAPS also administers household level questionnaires. The first wave commenced in 2002. There have been 4 subsequent waves with the latest wave (wave 5) carried out in 2009 when the young adults were aged between 22 and 30. CAPS includes a range of aspects of adolescence including schooling, entry into the labour-market, housing, neighbourhood, sexual and reproductive health, and family and kin relations. The panel asks questions about whether the household head or anyone in the household received a government housing subsidy to acquire land or build the house. The original panel consisted of approximately 4,750 individuals. After attrition, the panel shrunk to less than 3,000 people by 2009. Respondents were aged between 14 and 22 years in 2002 and between ages 19 and 35 in 2009. Sampling involved three stages. Firstly, neighbourhoods were selected using

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<sup>1</sup> One of the respondents registered a week after coming from the Eastern Cape and received a housing subsidy six months later. Another used ID books of other family members in order to obtain two houses.

probability proportional to size and were stratified according to population group<sup>2</sup>. 440 clusters of neighbourhoods roughly corresponding to the 1996 Census enumerator areas were selected. Secondly, from each cluster, some households were selected. Thirdly, up to three young adults were selected from each household. Since CAPS covers all of Cape Town, a sub-sample consisting of only those respondents who were from Site C Khayelitsha in 2002 was selected.

*Table 1: Variable Descriptions*

<b>Variable Name</b>	<b>Variable Type</b>	<b>Description</b>
Labour participation	Ratio scale	“How many hours do you work on your current job per day?”
Per capita income	Interval Scale	Log of household income per capita from imputed per capita income variable
Household durables	Composite scale	“Does anyone in your household own ...?” (E.g. radio, television, microwave, refrigerator, car etc.)
Physical health	Ordinal scale	“How good is your health?” 0=poor, 1=fair, 2=good, 3=very good, 4=excellent
Teenage pregnancy	Dummy	“Have you ever been pregnant?” 1=pregnant, 0=otherwise, restricted to females below age of 18 years
School dropouts	Dummy	Average number of respondents who had not completed matric and were above 18 years 1=dropout, 0=otherwise
Neighbourhood Stability	Dummy	“Did your household move in the past five years?” (wave 1)/ Have you moved since the last interview (waves 4 and 5) 1=moved in last 4/5 years, 0=otherwise
Membership in associations	Composite scale	“Are you a member of...?” (E.g. youth group, political party, church...)

The dummy variable “freehold” was derived from the questions “Did anyone receive a government housing subsidy to buy land or build this residence?”, asked in wave 1 and wave 3, and “What is the main material for the walls of the

<sup>2</sup> By population group, I mean the apartheid era reference to “race”. The terminology has remained in common use in post-apartheid South Africa. I will use this terminology where necessary in this paper purely for purposes of clarity. The population groups include “Black”, “white”, “coloured” or “mixed heritage” and Indian.

residence?”, asked in wave 3. The dummy allocates 1 to those who responded “no” in wave 1, “yes” in wave 3, and had responded “permanent building (brick block)” regarding the main materials for the walls of their residence in wave 3. The dummy assigns 0 to those who responded “no” to receiving a housing subsidy in both waves and had responded “traditional materials, temporary shack or permanent shack for wall materials” in both waves. In this way, I take advantage of the phased in allocation of housing subsidies to restrict the sample to individuals in the panel who had not yet received a subsidy in 2002 (wave 1) but received one between 2003 (wave 2) and 2004 (wave 3). In this way, 2002 was the baseline because at that point in time, all the individuals selected had not yet received their housing subsidy. Table 1 above provides a description of the variables used in the analysis.

## 5. Method

Difference-in-differences (DID) estimation was used to assess the effect of a housing subsidy on the outcome variables. The models are of the form:

$$Y_{it} = \beta_0 + \beta_1(\text{treat\_period})_{it} + \beta_2(\text{RDP\_homeowner})_1 + \beta_3(\text{treat\_period} * \text{RDP\_homeowner})_{it} + \beta_{ki}X_{ki} + e_i$$

Where  $Y_{it}$  is any one of the outcome variables for observation  $i$  at time  $t$ ,  $\text{treat\_period}$  is a dummy variable with the value of 1 for the post-treatment period and 0 for the pre-treatment period,  $\text{RDP\_homeowner}$  is a dummy taking the value 1 if the individual is in the treatment group and 0 if they are in the control group, the coefficient of the interaction between  $\text{treat\_period}$  and  $\text{RDP\_homeowner}$ ,  $\beta_3$ , is the OLS difference-in-differences estimator, or the logistic regression odds ratio. The vector  $X_{ki}$  specifies the pre-treatment covariates, or controls.

The DID coefficients were estimated for labour participation, per capita income, assets, physical health, and membership in associations using OLS regressions. The DID odds ratio was estimated for teenage pregnancies, stability and the proportion of dropouts using logistic regressions.

## 6. Results

### 6.1 Characteristics of RDP homeowners and shack-dwellers

Table 2 below shows that there are no significant differences in terms of demographics while some characteristics of the dwelling are significantly different in both periods, with beneficiaries scoring higher. The lack of demographic differences supports the use of shack-dwellers as my comparison group in the difference-in-differences estimation.

*Table 2. Characteristics of housing subsidy beneficiaries versus shack-dwellers in 2002 and 2009*

Variable	Wave 1 (2002)			Wave 5 (2009)		
	Control (N=219)	Treatment (N=111)	t	Control (N=187)	Treatment (N=102)	t
Age	17.7	18.0	-1.16	24.5	24.6	-0.13
Male	0.43	0.43	-0.10	0.42	0.45	-0.50
Education	8.44	8.72	-1.14	10.03	10.26	-0.92
Marital status	0	0	0.72	0.07	0.10	-0.84
Child	0.22	0.27	-0.69	0.32	0.31	0.21
Household size	5.35	5.66	-1.43	5.52	6.06	-1.62
Employment	0.10	0.12	-0.63	0.48	0.43	0.61
Rooms	3.7	3.7	-0.14	3.6	4.3	-3.63***
Piped water	0.61	0.94	-6.60***	0.67	0.93	-5.10***
Flush toilet	0.75	0.93	-4.05***	0.70	0.93	-4.66***

\*  $p < 0.10$  \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

At baseline both groups have an average age of 18 years with  $t(317) = -1.16$ . At endline, respondents in both groups are on average aged 24 years with  $t(225) = -0.13$ . At baseline, the proportion of males to females, 0.43 with  $t(328) = 0.10$  for both groups, shows no difference while at endline, the proportion of males in the treatment group, 0.45, is slightly more than that in the comparison group, 0.42, but with no statistically significant difference,  $t(225) = -0.50$ . However, in both groups and both periods, we see that there are fewer males than females in the sample. I find that on average, both groups have the same number of years of education: at baseline, beneficiaries score an average of 8.7 years while shack-dwellers have 8.4 years,  $t(273) = -1.14$ ; at endline, both groups have an

average of 10 years with  $t(271) = -0.92$  showing no significant difference between them. There are almost no married respondents at baseline: the proportion of married respondents being 0 for both groups, with  $t(314) = 0.72$ ; at endline, there seem to be more married respondents among beneficiaries, 0.10, than among non-beneficiaries, 0.07, although the difference is not statistically significant,  $t(225) = -0.84$ . Similarly, the proportion of respondents with children at both baseline and endline did not differ between the two groups. At baseline, the proportion for beneficiaries is 0.27 while that for shack-dwellers is 0.22,  $t(317) = -0.69$ . At endline, we see an increase to 0.31 and 0.32 for beneficiaries and shack-dwellers respectively,  $t(224) = 0.21$ . It appears that the rate of increase in the proportion of respondents with children was faster among shack-dwellers than among beneficiaries over the same period. In terms of household size, both groups have an average of 5 members at baseline,  $t(319) = -1.43$ , while at endline beneficiaries have almost significantly more members with an average of 6.0 while shack-dwellers have 5.5 members,  $t(286) = -1.62$ . However, there is no statistically significant difference. Finally, there are no differences in the proportion of employed respondents; few respondents are employed at baseline, with beneficiaries scoring 0.10 and shack-dwellers 0.12,  $t(317) = -0.62$ . The proportions rise to almost half at endline with beneficiaries scoring 0.43 and shack-dwellers 0.48 but with no statistically significant difference,  $t(225) = 0.61$ .

There are differences in the characteristics of the dwelling in both periods, except for number of rooms in which there are no differences at baseline  $t(328) = -0.14$ . The significant differences are in the household's most often used source of drinking water and the most often used kind of toilet for the residence. In this case, RDP homeowners have better sanitation facilities than shack-dwellers at both baseline and endline. Among beneficiaries, a proportion of 0.94 have access to piped water versus 0.61 among non-beneficiaries,  $t(328) = -6.60$  at baseline, and 0.93 versus 0.67 respectively,  $t(286) = -5.10$  at endline. At baseline, the proportion of beneficiaries with access to a flush toilet is 0.93 versus 0.75 among non-beneficiaries,  $t(325) = -4.05$ , and 0.93 versus 0.70 respectively,  $t(286) = -4.66$  at endline. This reveals that more beneficiary households lived on serviced sites than non-beneficiary households prior to treatment. It may also indicate that the roll-out of housing subsidies prioritised households living on serviced sites.

Table 3 reports that there are no significant differences in the number of hours worked on the current job, that beneficiaries are likely to report lower income, more durables, poorer physical health, and a higher proportion of teenage pregnancies. There are no significant differences in proportion of school dropouts, stability of tenure and membership in voluntary associations. At endline, there are no differences in number of hours but beneficiaries are likely

to report less per capita income and more assets. Physical health, teenage pregnancies, proportion of school dropouts, and stability are the same. There is significantly less memberships in voluntary associations among beneficiaries.

*Table 3: Summary Statistics on various outcome variables: Beneficiaries versus shack-dwellers in 2002 and 2009*

Variable	Wave 1 (2002)			Wave 5 (2009)		
	Control (N=219)	Treatment (N=111)	t	Control (N=187)	Treatment (N=102)	t
Labour	0.77	1.00	-0.74	4.02	3.41	1.03
Income	5.56	5.24	3.47***	6.11	5.88	1.97**
Durables	3.89	4.77	3.24***	6.01	6.63	-2.08**
Health	4.13	3.78	2.88***	3.81	3.94	-0.85
Pregnant	0.06	0.40	2.97***	0.28	0.31	-0.32
Dropout	0.71	0.78	-0.78	0.69	0.73	-0.77
Stability	0.86	0.91	-1.34	0.90	0.93	-0.79
Memberships	1.50	1.50	0.06	0.95	0.64	2.82***

\*  $p < 0.10$  \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

On the basis of these mean scores and mean differences, we cannot ascertain that the government housing subsidy was responsible for the observed differences, particularly during the post-treatment period. This is because from the post-treatment mean differences, exogenous factors that may have affected the parameters of interest during the course of time are not controlled for. Constant factors in terms of demographics are, however, controlled for since it is the same individuals observed at different points in time. To control for exogenous factors, difference-in-differences estimation is employed.

## 6.2 Effects of the housing subsidy

This section reports the difference-in-differences estimates for the outcome variables. It shows that the housing subsidy has the effect of improving self-reported health and increasing teenage pregnancies among beneficiaries but has no effect on the other hypothesised outcome measures. Tables 4 and 5 below summarize these findings.

*Table 4. Effects of the Housing Subsidy on labour participation, household per capita income, household durables, physical health, and membership in voluntary associations: Difference-In-Differences Estimation (Multivariate OLS Regression)*

	(1)		(2)		(3)		(4)		(5)	
	Hours worked per day		Per capita household income (log)		Number of household durables owned		How is your health		Membership in voluntary associations/ organisations	
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment
RDP homeowners	3.24 (1.85)	0.62 (1.86)	6.0 (0.41)	6.6 (0.41)	0.21 (0.08)	0.35 (0.08)	2.99 (0.52)	3.04 (0.52)	0.09 (0.10)	-0.02 (0.10)
Shack-dwellers	3.16 (1.84)	0.06 (1.83)	6.2 (0.40)	6.64 (0.40)	0.16 (0.08)	0.32 (0.08)	3.35 (0.51)	2.89 (0.51)	0.12 (0.09)	0.04 (0.09)
Difference	0.08 (0.49)	0.68 (0.50)	0.22* (0.11)	0.05 (0.12)	0.06** (0.02)	0.03 (0.02)	0.35** (0.14)	0.14 (0.14)	-0.03 (0.02)	-0.06** (0.03)
Difference-in-differences		0.60 (0.70)		0.16 (0.16)		-0.02 (0.03)		0.50** (0.20)		-0.03 (0.04)
Adjusted R <sup>2</sup>		0.209		0.244		0.284		0.057		0.123
Observations		464		417		437		436		440

\*  $p < 0.10$  \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

*Notes:* standard errors are in parentheses. Only demographic and significant variables are controlled for in each model. Regression of hours controls for sex, marital status, children, education, household size and physical health. Regression of per capita income controls for age, sex, marital status, children, education, hours of labour and household size. Regression of household durables controls for age, sex, marital status, children, education, employment status and household size. Regression of physical health controls for age, sex, marital status, education, hours of labour and household size. Regression of membership in associations controls for age, household size, education, civic duties and political awareness. Number of observation is a combined total of the baseline and endline observations.

As Table 4 reports, the marginal effect on physical health estimated by the coefficient of the interaction term between RDP homeowner and treatment period is significant at 0.50 controlling for demographic and other explanatory factors. The DID estimator represents the estimated improvement in health attributed to being a beneficiary of a housing subsidy. This coefficient means that a housing subsidy increases physical health by 0.5 on a scale of 1 to 5 with 1 being poor and 5 being excellent. The housing subsidy has had an impact of improving self-reported health by 10 percent among the beneficiaries in the data. I therefore reject the null hypothesis of no association between (self-reported) health and receiving a housing subsidy.

*Table 5. Effects of the housing subsidy on teen pregnancy, proportion of school dropouts and stability: Difference-in-Differences estimation (multivariate logistic regression)*

	(1) Proportion of teenage pregnancies	(2) Proportion of School dropouts	(3) Stability
Treatment period	25.79*** (30.53)	0.53 (0.23)	4.01*** (2.05)
RDP homeowner	49.25*** (65.85)	1.51 (0.94)	2.05 (1.16)
Period*homeowner	0.02*** (0.03)	0.77 (0.55)	1.42 (1.75)
Pseudo R <sup>2</sup>	0.186	0.079	0.176
Observations	116	273	409

\*  $p < 0.10$  \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

*Notes:* Standard errors in parentheses. Only demographic and theoretically important variables controlled for. Regression of teenage pregnancies controls include age, marital status, education and per capita income. Regression of school dropouts controls include age, sex, marital status, children, household size, per capita income and mother's education. Controls for stability include age, sex, marital status, children, household size, education per capita income, hours of labour and memberships. Number of observation is a combined total of the baseline and endline observations.

There is no effect of the housing subsidy on the number of labour hours worked. The marginal effect implied by the estimated coefficient on the interaction term between RDP homeowner and treatment period is 0.60 hours. This coefficient corresponds to an increase in the number of hours of labour. However, the estimate is not statistically significant. This means that both housing subsidy beneficiaries and shack dwellers work for a similar number of hours per day. I thus fail to reject the null hypothesis. Similarly, there is no effect of a housing subsidy on household per capita income. The difference-in-differences estimate is an increase of 0.16. This implies an increase of 16 per cent in household per

capita income. However, this was not statistically significant. Therefore, I fail to reject the null hypothesis. Likewise, there is no effect on the number of household durables. The estimated treatment effect is -0.02 implying a reduction in the number of household items. This effect is not statistically significant. I therefore fail to reject the null hypothesis of no association. I find no effect on the proportion of school dropouts. The marginal effect reported in the DID estimate is 0.77 but this is not statistically significant. I fail to reject the null hypothesis. Finally, with regard to membership in voluntary associations, there is no effect: the estimated DID coefficient is -0.03 representing a reduction in memberships but this is not statistically significant. I thus fail to reject the null hypothesis.

In Table 5 above, the DID estimates are reported for the hypothesis that homeownership leads to socially desirable youth behaviour and stability using basic logistic regression. With regard to teenage pregnancies, I find that teenage girls in households of beneficiaries have higher odds of being pregnant than teenage girls who are shack-dwellers. The DID estimates that the odds of being pregnant for a teenager in beneficiary households are 0.02 times higher than the odds are for a teenage girl belonging to a household of shack-dwellers, when controlling for other factors (0.11 without controls). Although at baseline teenage girls from beneficiary households have a significantly higher proportion, it reduces after treatment while that of shack-dwellers rises during the same period. Nevertheless, the proportion remains higher. I therefore reject the null hypothesis of no association but find that the direction of association is opposite to what was expected. This means that being a beneficiary of a housing subsidy is associated with a marginally larger proportion of teenage girls who become pregnant. I also report no effect on stability, with the odds ratio being 1.42. I thus fail to reject the null hypothesis of no association.

## **7. Discussion**

The paper has examined the effects of real property rights in the Southern African context, in which empirical studies are limited. It has examined economic, human and social capital effects of the subsidised low-income housing scheme in South Africa, with a focus on Khayelitsha in Cape Town. The study goes beyond common practice by examining effects of titling on human and social capital measures of poverty, which have hitherto remained largely understudied in the literature on titling.

Titling did not translate into positive effects on labour market participation in terms of hours of labour. This finding is inconsistent with the theory. It is not that the mechanism of reallocating time from securing housing and services

towards work is not effective. Rather, in an economy with high unemployment averaging 24 percent in 2010 (StatsSA, 2010) and decreasing market demand for unskilled labour, it may not be realistic to expect that an increase in supply of unskilled labour would lead to an increase in the number of hours worked, or let alone to an increase in employment status. It may be that the pool of the unemployed increases but people cannot find work even though they have the time.

In an extensive study using detailed nationally representative surveys, Banerjee *et al.* (2008) investigated why so many South Africans were unemployed. They found that large increases in labour supply (especially among women) have not been matched by increase in demand for labour (2008: 716). This mismatch is especially acute for unskilled labour, with declining demand for unskilled labour in mining and agricultural sectors. Unemployment has persisted in part because as demand for labour has been falling, it has not been accompanied by a fall in wages large enough to clear the labour market (Banerjee *et al.*, 2008: 716-717). In this kind of labour market, increases in labour market participation within titled households (or resulting from any other intervention) would have little or no effect on employment and hence income. In the broader literature, this finding is similar to that of Galiani and Schargrotsky (2010), but differs from that of Field (2003) who found that titling in Peru leads to an increase in labour participation. The mechanism and economic context in Field's study are different. In Field's case, titled households had significantly low tenure security at baseline that they had to have an adult member present at home at all times. In my study, beneficiaries already had considerable tenure security because they had been allocated plots and were provided with services before baseline. Arguably, in Field's study the Peruvian economy could absorb an increase in labour supply. Perhaps further research can be done in contexts where there is demand for unskilled labour coupled with low unemployment.

No evidence is found supporting the hypothesis that titling may result in increased household per capita income. This finding is also inconsistent with theory. Because there is no evidence of labour market participation, which is the main mechanism through which the association would occur, it follows logically that there is no effect on income. Other mechanisms such as investments in home businesses and increased home employment for members of the household have not been examined because the data is deficient of these variables. Despite the lack of data, it may be the case that these mechanisms do not operate in the South African context. This would not be surprising because previous studies find similar evidence. Galiani and Schargrotsky (2010), for example, found no effect of titling on income in Buenos Aires. Similarly, Franklin (2011) found no association between the housing subsidy and income in Cape Town but when he broke down the analysis by gender, he found

significant impacts on income for female beneficiaries. These female beneficiaries were able to reallocate their time from home to the labour market. However, these conclusions differ from the findings of Moura *et al.* (2011), Field and Torero (2006) and Field (2003) in which an increase in income was preceded by an increase in labour market participation, which may not have occurred in the case at hand.

Additionally, titling did not result in increases in wealth. Although beneficiaries of housing subsidies have significantly more household items, this difference cannot be attributed to the housing subsidy. Perhaps beneficiaries already had enough space such that they had no obligation to fill their home with household items, as Meintjes (2000) expected.

However, a modest but positive effect of the government housing subsidy on physical health is evident among beneficiaries. We should expect that moving shack-dwellers to houses under the housing subsidy would improve their self-reported health by 10 percent. Although this subjective measure is the best measure available in the data, it is not deficient of limitations. It is not known how much of it may reflect the mood of the respondent on the day or time of the interview. It is also not clear whether this effect on health is long-or short-term. Furthermore, there is no differentiation between the effects on chronic diseases and short-term illnesses. Neither is there differentiation between child health and adult health. The effect estimated is for general self-reported health status, which has not been previously assessed. The mechanism seems to be that the improvement in housing quality and environment, as shown by the figures on access to piped water and toilets, actually translates into better health. Shacks in Khayelitsha and other townships are susceptible to fire, flooding and dust; sources of respiratory and waterborne diseases. Once these are improved, health status improves. Previous studies elsewhere have found positive effects of titling albeit on children. Positive effects of titling on short-term health (weight-for-height) among children but not long-term (height-for-age) have been found in Argentina (Galiani and Schargrotsky, 2004; Vogl, 2007). In Peru however, the improvement raises the risk of obesity among children (Vogl, 2007). Among adults, titled households have a lower occurrence of some chronic diseases although the actual mechanism through which this occurs is not evident (Gandelman, 2010). Future studies should consider examining the effects of titling on physical health among adults using a more objective measure such as actual physical medical tests.

Furthermore, titling does not reduce anti-social behaviour in terms of teenage pregnancies and school dropout rates. Counter-intuitively, having a housing subsidy resulted in an increase in teenage pregnancies. Parents may not allocate more resources to education and monitoring of children because they may not

have the financial resources to allocate in the first place. Also, with low levels of education, they may not have the kind of cultural capital to transmit to their children. In addition, a house may provide the privacy that is lacking in shacks for teenagers to engage in sexually risky behaviour. The shacks may provide a deterrent for teenagers since the shacks are very close together, rooms are small and the wall materials thin and unstable. In contradiction, elsewhere Galiani and Schargrodsky (2004) found lower teenage pregnancies among untitled households. Caution must also be exercised in interpreting this result. The sample size at baseline was very small and this may have had an influence as the sample size grew larger over each wave. Larger sample sizes at baseline may help improve representativeness and generalisability.

The evidence also fails to support the hypothesis that the housing subsidy reduces the proportion of school dropouts. In fact, the proportion of school dropouts was very high for both groups with only 30 percent of those above 18 having completed high school. Similarly, there may not be as many resources to allocate to education considering that the respondents belong to poor households, some of which depend entirely on government grants to survive. Some authors have shown that in some contexts, titling favours home investments by holders rather than investments in human capital as indicated by education and health (Gandelman, 2011). This means that even with scarce resources, education may not get as large a share of investment as we have hitherto thought. Future studies should therefore look into the effects of titling on the allocation of resources in the household.

Finally, no effect on neighbourhood stability is found as a result of having a housing subsidy. In the first place, the neighbourhoods were highly stable with only 10 percent of the respondents reporting a move in the previous 4 to 5 years before the baseline and endline surveys. It is possible that shack-dwellers did not move in anticipation of obtaining a housing subsidy. It is also possible that the reported movements out of the neighbourhoods obscure moves that occur when a household sells the house and moves into a backyard shack within the same neighbourhood; these neighbourhoods are in a high state of flux (Seekings, 2008). Further studies are necessary to build knowledge in this area. For example, why is there a high state of flux within the neighbourhood but not between neighbourhoods? Another question that needs to be answered particularly in the context of South Africa is how long do beneficiaries live in their houses following obtaining of a housing subsidy, and which beneficiaries are likely to live in the house for the longest period? For example, many of the beneficiaries in Cape Town who originate from the Eastern Cape do not consider Cape Town as their home. In fact, they look forward to their return. Are other tenure options more cost-effective in this regard? Such questions need to be asked for the programme to improve cost-effectiveness.

## 8. Conclusion

There is limited empirical research regarding the effects of titling in Southern Africa. This paper examined the effects of titling and slum upgrading in this part of the developing world by evaluating the economic, social and human capital effects of subsidised housing in Khayelitsha, a township in Cape Town, South Africa. The study was undertaken with a view to understanding the benefits of real property rights and ownership of a capital asset among beneficiaries of low income households. As other studies have shown, this analysis revealed the methodological challenges in studying the effects of titling. Out of 8 measures, the housing subsidy improves self-reported health status by 10 percent and increases the proportion of teenage pregnancies while having no effect on six measures; the actual effects were smaller and fewer than expected. Titling was not associated with improvements in most of the measures of poverty reduction, supporting the argument that the benefits of titling may be exaggerated if researchers focus on selected variables rather than a broader set of measures. The positive effect on physical health is small and can more appropriately be attributed to a better living environment and improved housing quality, rather than to stronger tenure rights. The effect of increased teenage pregnancies is counterintuitive and inconsistent with studies in different contexts. Substantively, it is likely that poverty in Cape Town is driven so strongly by factors such as unemployment that real property rights make little overall difference to poverty. The study shows that the effects of titling extend beyond economic effects to human capital effects, which are understudied in the literature. Further analysis of this effect is necessary, thus, scholars need to go beyond examining only economic effects.

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