

International Center for Public Policy
Working Paper 23-15
August 2023

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Edutainment, Savings and Dwelling-Related Assets in Poor Rural Areas of Peru

Alberto Chong and Martin Valdivia*

August 2023

Abstract

We exploit a field experiment by Chong and Valdivia (2023) and test whether poor women from rural areas in developing countries that are able to save seek dwelling-related assets and find causal evidence that this is indeed the case. Furthermore, we also find that the older cohort of women, those aged forty and higher, also prioritize material assets related to health-related expenditures, in particular, access to public sewerage system.

Keywords: edutainment, material assets, dwellings, housing, developing countries

JEL Classification Codes: O10, D80

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1. Introduction

In their seminal work, Narayan and Petesch (2002) provide a list of what the poor in developing countries believe to be their main needs. The very first item listed is “material assets” and, explicitly, dwelling-related assets. These assets may be big or small and may range from better walls, better floors, improved rooms, added rooms, nicer dwellings, and improved water access and sewage. It appears that seeking material assets may help poor people achieve multiple complementary objectives. First, the value of the dwelling increases, which may be used as collateral to pursue other investments in productive tools. Second, a dwelling of higher quality both in terms of size and materials improves the quality of life of all the members of the household. Finally, a nicer, larger, dwelling improves the standing of the household members in the community and gives pride and satisfaction to the household members. We study whether poor individuals from developing countries do seek dwelling-related assets when they are able to save. We take advantage of a field experiment by Chong and Valdivia (2023), which was first conceived to show that when using a specifically designed short soap opera as an edutainment tool, it is possible to increase bank savings for women living in poor rural areas of Peru.¹ They demonstrate that treated women do increase their bank savings nineteen months after the edutainment intervention concluded, as women improve their attitudes towards banks and learn the importance of savings, especially as a precautionary motive. Here we go a step further and test the seminal claim of Narayan and Petesch (2002) by studying whether women invest in dwelling-related assets with their savings.

¹ La Ferrara (2016) defines edutainment as the process of designing and implementing a media message to both entertain and educate to affect knowledge, attitudes, and behavior.

This letter is organized as follows. Next section summarizes the field experiment by Chong and Valdivia (2023). Section 3 describes our data and the empirical strategy. Section 4 describes our findings, and Section 5 provides final remarks.

2. Intervention

Chong and Valdivia (2023) produce a five-episode soap opera with embedded messages highlighting the importance of savings. After almost one year of story development, pre-production and casting, the shooting of the soap opera was done during the third quarter of 2013 and the final, fully edited version was ready for viewing by August 2014, which is when the field experiment was performed. They targeted their intervention to female recipients of the Peruvian Conditional Cash Transfer (CCT), “Juntos”, a government program that provides a monthly subsidy of around 35 US dollars disbursed bi-monthly and deposited directly to individual bank accounts specifically created for the adult women of the household. The episodes of the soap were typical of the genre, where the main character, a young woman, faces an emotional roller coaster of deception, economic struggles and health emergencies while trying to provide for her family with a story full of drama. At the end, the main character finds love, personal happiness as well as economic success, including recognition for her wise use of savings placed in her bank.² Chong and Valdivia (2023) organized group viewing sessions in the treatment localities randomized treatment at the village level and stratify the sample at the district level and selected 150 eligible communities, based on population size and poverty rates where the treatment group consisted of women invited to a viewing session. Overall, 4220 women belonged to the 100 communities that

² A trailer of our soap opera may be accessed here: <http://www.grade.org.pe/proyectos/mini-novelas-educacion-financiera-y-promocion-del-ahorro/>.

were invited to the viewing sessions of the soap opera while 2163 beneficiaries in the other 50 villages were part of the control group.

Chong and Valdivia (2023) find that the older cohort of women, those aged forty and higher, increase their savings balances nineteen months after the intervention by about 6.2 percent with respect to the control group. The younger cohort of women, those aged 39 or lower, do not show any variation in behavior to the intervention. They attribute this difference to the legacy of terrorist violence in Peru, which was carried out by the Shining Path, a terrorist organization active in the poor rural southern highlands of the country during the 1980s and early 1990s and was well-known by its cruelty (McClintock, 1984). The younger cohort of women were either little girls or were even unborn during the period when the Shining Path was active. They grew in a dramatically different environment than the older generation who did suffer greatly from terrorism, reflected in profound mistrust in institutions and psychological isolation (Godefroidt and Langer, 2018). The younger generation of women grew up in a period of great economic bonanza and stability, illustrated by the fact that between 1992 and 2015 the annualized per-capita rate of growth of the country was 7.9 percent, the highest in Latin America and among the highest in the world (World Bank, 2023). The younger cohort of women already had a positive and likely higher stock of savings and given the context, interventions that nudged these women to further save may not be effective. This structural difference may explain the different outcomes between younger and older cohorts.

3. Data and Empirical Strategy

In order to test whether the edutainment intervention of Chong and Valdivia (2023) has a causal impact on seeking dwelling-related assets mediated by increased savings we apply a difference in treatment-control based on the randomly allocated intention to treat (ITT) and show

the effects of the treatment on dwelling-related assets, having been invited to the soap opera viewing sessions.³ The comparison between treatment and control groups allows to estimate ITT impacts of being exposed to the soap opera is as follows:

$$Y_{ijk1} = \alpha + \beta T_{jk} + \gamma X_{ijk0} + \delta_k + \varepsilon_{ijk} \quad (1)$$

where Y_{ijk1} denotes an outcome variable for a woman i residing in village j , of district k at time 1 (follow up), T_{jk} is a dummy variable that takes the value one if the woman resides in a village j , district k that was assigned to the viewing session of our soap opera. X_{jk0} is the vector of stratifiers used in the randomization, δ_k is the district fixed effect and ε_{ijk} is the error term. Thus, β is the effect and the error term is assumed to be uncorrelated across villages but not within them.

We evaluate the impact of the intervention using standard indicators related to dwelling-related assets by considering: (i) the quality of the materials that helped build the house where the individual lives; (ii) the quality of the basic services received in the dwelling, and (iii) the size of the dwelling. With respect to the quality of the materials employed, we focus on the walls, the floors, and the roof. In particular, the variable that captures the quality of the walls take a value of one if the predominant material employed to build them is either brick, stone or cement. Similarly, the variable that captures the quality of the floors in the house take the value of one if the predominant material for the floors is either cement, wood, tile, or parquet. In addition, the variable that reflects the quality of the roof in the house takes the value of one if the predominant roof material is either wood, concrete or tiles. With respect to the quality of the basic services received

³ Appendix 1 shows that randomization was well executed, as there are no statistical differences between treatment and control.

by the dwelling we mostly focus on water and sanitation.⁴ Water connection takes the value of one if the house has a connection to the public water supply. Sewage connection takes the value of one if the house has a connection to the public sanitation system. Finally, with respect to the size of the dwelling we collect information on the total number of individuals living in the house as well as the number of rooms available. With this information we construct an “overcrowding” variable, by which the lower the ratio of rooms to inhabitants would indicate that the dwelling is less cramped. Within each category considered, quality of construction, basic services and dwelling size, we estimate summary indices to help us capture each category of variables in a succinct manner considering that testing multiple outcomes using (1) independently increases the probability of rejecting a true null hypothesis for at least one outcome above the significance level used for each test. In order to do this, we first adjust the estimated p-values to test whether our treatment has an impact on the family of outcomes associated to the category considered by using a mean standardized treatment effect. We also define a summary measure Y^* as the unweighted average of all standardized outcomes of a family. We obtain that $Y^* = \sum_k Y_k^* / k$, where $Y_k^* = (Y_k - \mu_k) / \sigma_k$, where Y_k denotes the outcome variables within each family, where a larger value is better for the household. Standardization is done using mean and variance for the control group at baseline. The mean and standard deviation of β in (1) for Y^* allows us to test whether treatment had an overall positive effect on the corresponding family of outcomes. Thus, in the case of the family of quality of construction of the dwelling the three variables considered are walls, floors, and roof. In the case of basic services of the dwelling we include both water access and

⁴ All the treated households had access to electricity, as this was a basic consideration when Chong and Valdivia (2023) designed the intervention.

sanitation. Finally, we also construct a general measure of household assets and services, which is based on standardization at control group mean of the assets of the household.⁵

We do apply a household survey 24 months after the viewing sessions occurred to treatment and control that includes questions on dwelling-related material assets that include all the variables described above along with standard questions on basic characteristics of the household.

4. Findings

Table 1 shows the estimated treatment effects for household and material assets twenty-four months after the intervention concluded. When looking at the full sample we find that most of the material assets indicators are not statistically significant at conventional levels. One exception is the overcrowding variable, which appears to show that the increase in savings balances may have helped the household members enlarge their dwellings. This is corroborated by the variable “number of rooms”, which yields a positive and statistically significant coefficient. Table 1 shows that 61 percent of the households in the control sample are free of overcrowding, and that proportion increases in 8.7 percentage points for those in the treatment group. If we look more specifically to the number of rooms in the dwelling, we observe that the average number of rooms is 2.3 for 4.6 household members, and the number of rooms increase in 0.152 for the treatment group. Notice that the increase is the only 6.7 percent, but it represents three times the standard deviation in the number of rooms. Interestingly, we do not find significant effects on the materials used in the construction of the dwelling, access to quality water and sewage services or ownership of key assets.

⁵ We also follow Anderson (2008) and compute the q-values associated to the False Discovery Rate (FDR) approach.

Somewhat similar to the case of Chong and Valdivia (2023) we find some differences when considering age cohorts. For both the younger generation and older generation of women the overcrowding variable is again, positive and statistically significant at conventional levels and the variable related to number of rooms tends to follow an analogous behavior.⁶ Nevertheless, we also find that households with females aged forty years old or higher, do show an increase in the variable related to connection to the public sewage system as well as in the aggregate dwelling quality index. The older generation of women tend to have more children than the younger generation of women, so that while space might still be important to them, health-related issues, reflected by access to public sewage and overall quality of the dwelling, may also play an important role.

5. Final Remarks

We find causal evidence that poor rural women invest their positive bank savings in material assets related to their dwellings and find that the older cohort of women, those aged forty and higher, also prioritize material assets related to health-related expenditures, in particular, access to public sewerage system.

⁶ While yielding the correct sign of the coefficient and being very close to reaching statistical significance, it is true that, strictly speaking, the ‘number of rooms’ variable for the case of older women does not reach statistical significance at conventional levels.

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Table 1. Impact of Intervention on Material Assets

	Global		Younger		Older		P-value
	Control Mean	ATE	Control Mean	ATE	Control Mean	ATE	
Dwelling quality index	-0.000 (0.038)	0.105 (0.082)	-0.015 (0.053)	0.048 (0.100)	0.016 (0.055)	0.161* (0.085)	0.202
Dwelling materials quality index	0.000 (0.038)	-0.015 (0.057)	-0.028 (0.053)	0.012 (0.074)	0.031 (0.055)	-0.044 (0.067)	0.511
Walls	0.006 (0.003)	-0.002 (0.004)	0.005 (0.005)	0.003 (0.005)	0.008 (0.005)	-0.007 (0.005)	0.141
Floor	0.057 (0.008)	-0.025 (0.015)	0.065 (0.011)	-0.025 (0.016)	0.048 (0.012)	-0.024 (0.020)	0.936
Roof	0.582 (0.018)	0.053 (0.034)	0.548 (0.024)	0.049 (0.040)	0.618 (0.025)	0.054 (0.040)	0.922
Water & Sewage index	-0.000 (0.042)	0.092 (0.113)	0.066 (0.058)	0.004 (0.121)	-0.072 (0.060)	0.189 (0.120)	0.047
Water connection	0.367 (0.017)	-0.008 (0.050)	0.385 (0.024)	-0.038 (0.052)	0.348 (0.025)	0.024 (0.054)	0.063
Sewage connection	0.041 (0.009)	0.032 (0.020)	0.055 (0.013)	0.017 (0.022)	0.027 (0.013)	0.049** (0.021)	0.114
No overcrowding	0.610 (0.017)	0.087***†††	0.563 (0.023)	0.053† †	0.660 (0.024)	0.117***†††	0.157
# inhabitants in the house	4.598 (0.059)	-0.020 (0.096)	4.531 (0.082)	-0.003 (0.110)	4.671 (0.086)	-0.044 (0.135)	0.784
# rooms in the house	2.277 (0.040)	0.152**	2.108 (0.055)	0.156*	2.461 (0.057)	0.132 (0.091)	0.832
Household Assets & services index	-0.000 (0.034)	-0.013 (0.070)	0.058 (0.047)	-0.052 (0.077)	-0.062 (0.049)	0.031 (0.085)	0.307

Notes: We define our variables as follows: Walls takes value of 1 if the predominant wall material of the house is brick, stone or cement; Floor takes the value of 1 if the predominant floor material is cement, wood, tile or parquet; Roof takes the value of 1 if the predominant roof material is wood, concrete or tiles; Water connection takes the value of 1 if the house has a connection to the public water supply; sewage connection takes the value of 1 if the house has a connection to the public sewage system. Household Assets & services index is constructed based on standardization at control group mean of household's assets such as: internet radio, stereo, tv, blender, etc; and household's services such as: landline telephone, mobile telephone or television service. All regressions include fixed effects for the Juntos local coordinator, distance in kilometers to the district capital, number of health centers, schooling and number of beneficiaries on the village as covariates. Clustered standard errors at village level in parentheses. Stars denote significance levels (* 10%; ** 5%; *** 1%) based on unadjusted p-values. Daggers denote significance levels († 10%, †† 5%, ††† 1%) based on sharpened FDR q-values. We did not calculate FDR q-values for Dwelling quality index nor Household assets & services index.

Appendix 1. Socioeconomic Characteristics at Baseline

	Control	T1	P-value (T-C)
Characteristics of the junto's beneficiaries			
Age	39.550 (0.215)	40.218 (0.401)	0.181
Educational attainment			
None	0.237 (0.029)	0.238 (0.019)	0.983
Primary education	0.590 (0.025)	0.573 (0.020)	0.584
Secondary education or more	0.173 (0.033)	0.189 (0.016)	0.523
Language most used at home (Quechua=1)	0.701 (0.093)	0.695 (0.082)	0.820
Financial variables			
Account balance Aug 2013 - Jul 2014 (US dollars) ¹	14.051 (1.738)	12.105 (1.287)	0.078
Village-level variables			
Distance to the district capital (kms)	48.148 (13.312)	46.292 (13.368)	0.732
Level of terrorist-related violence in district (=1 if high)	0.530 (0.215)	0.570 (0.197)	0.564

Notes: ¹ Winsorized means. Clustered standard errors at agency level in parentheses.
Source: Chong and Valdivia (2023)