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# Aspirations and Farmers Investment Choices - An Investigation of Aspirations Failure in South Africa

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## **Abstract:**

*Recent literature in development and welfare economics tackles the interaction between aspirations and investment and their role in sustaining poverty. Our paper investigates this relationship by exploring income aspirations of emerging farmers and their investments in agriculture inputs in South Africa. It follows the theoretical approach introduced by Appadurai (2004) and Ray (2006) and employs a simplified version of the empirical model introduced by Janzen et al. (2017). We find no significant evidence of aspirations failure or the inverse-U shaped relationship that is predicted by the theory. Our analysis does not show any effects nor does it predict different hypothesis. We provide possible attributes for these outcomes, mainly on the design of the survey, type of investments, and motives behind engaging in small-scale agribusiness.*

*Acknowledgment: We express our sincere gratitude to the Department of Agriculture Economics at the University of Stellenbosch, the Bureau for Food and Agricultural Policy (BFAP), and the great team of enumerators for their dedication, for providing valuable insights and for assisting with the survey in the field.*

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# **Aspirations and Farmers Investment Choices**

## **An Investigation of Aspirations Failure in South Africa**

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Recent literature in development and welfare economics tackles the interaction between aspirations and investment and their role in sustaining poverty. Our paper investigates this relationship by exploring income aspirations of emerging farmers and their investments in agriculture inputs in South Africa. It follows the theoretical approach introduced by Appadurai (2004) and Ray (2006) and employs a simplified version of the empirical model introduced by Janzen et al. (2017). We find no significant evidence of aspirations failure or the inverse-U shaped relationship that is predicted by the theory. Our analysis does not show any effects nor does it predict different hypothesis. We provide possible attributes for these outcomes, mainly on the design of the survey, type of investments, and motives behind engaging in small-scale agribusiness.

*Keywords: aspirations, aspirations failure, emerging farmers, agriculture investment, poverty*

### **Introduction**

The traditional research in development and welfare economics attributes persistent poverty to external constraints. The lack of financial support, market failure, poor health, education gap, absence of strong institutions are few examples (Tanguy et al. 2014; Dalton et al., 2016; Lybbert and Wydick 2017). Recent efforts, however, investigate the dynamics of internal constraints or behavioral biases through which poverty traps seem to perpetuate. Evidence shows that hopelessness, external locus of control, low self-efficacy, fatalism and lack of aspirations impose adverse effects on the individual's behavior, both in the developing and developed worlds (Genicot and Ray 2017). Poverty, nonetheless, exacerbates these constraints and leads to counterproductive activities and underinvestment (Appadurai 2004; Tanguy et al. 2014; Dalton, Ghosal, and Mani 2016). This is not to imply that internal constraints are outcomes of poverty, rather than highlighting poverty conditions which expose individuals to higher risks and costs (Appadurai 2004).

A profound understanding of these biases will help explain the failure of poor households to optimize their efforts towards income generating activities despite obvious benefits. Such optimization failure is observed even when returns are attainable in the long run or when an intervention for economic betterment exists (Dalton, Ghosal, and Mani 2016; Janzen et al. 2017; Lybbert and Wydick 2017). In this paper, we utilize a survey data to investigate the relationship between aspirations and investments made by emerging farmers in South Africa. A team of enumerators under the supervision of the Department of Agriculture Economics at the University of Stellenbosch conducted a survey between July and August 2017 and covered three regions in Eastern Cape.

## **Related literature**

Studying the relationship between poverty, aspirations and economic choices has been the focus of recent theoretical and empirical research. The seminal work of Appadurai (2004) and Ray (2006) laid early foundations. Followed by the significant contributions of Mookherjee, Ray, and Napel (2010); Dalton, Ghosal, and Mani (2016); Genicot and Ray (2017); Janzen et al. (2017); Lybbert and Wydick (2017), among others. The scholars approach aspirations as a capacity that is influenced by the individual's social surroundings (Genicot and Ray 2017). They shed light on how aspirations are formed and investigate the dynamics by which aspirations alter our economic behaviors. The research enriches current efforts to understand how poor households engage in their future and how the terms of this engagement are built (Appadurai 2004).

Poverty as put by Appadurai (2004, p. 7): *"is many things, all of them bad"*. Poor households find themselves in weak positions with limited resources forcing them to take decisions out of adaptation and not optimization. Mani et al. (2013) for instance, find that farmers in India exhibit diminishing cognitive capacity prior to harvest compare to after harvest when they are richer. They argue that poverty leaves less mental resources for the poor to explore better opportunities. On the other hand, Appadurai (2004) emphasizes that the poor often have no choice, or "voice", but to acquiesce to terms that are not in their favor. Moreover, it is harder

for the poor to contest and alter their conditions as they lack the means to build their aspirations capacity.

One of the main arguments in the literature is that aspirations are formed through individual's interaction with her cognitive surroundings. She observes the experiences and achievements of her peers or neighbors and uses them as a yardstick to define her own goals and search for the pathways to achieve them. Thus, aspirations can be perceived as an accumulative capacity nourished by what an individual can observe from others within the same spatial, economic and social cognitive space (Appadurai 2004; Ray 2006; Genicot and Ray 2017). Beaman et al. (2012) for instance, explore the long-term effects of having female leadership in certain villages in India on the occupational aspirations and educational choices of adolescent girls. They find a positive influence compare to villages with no quotas for female leadership. This interaction between aspirations and individual's choices has been introduced by Ray (2006). In the following paragraph, we expand on his concepts of aspirations gap, aspirations window and aspirations failure.

Aspirations gap, put simply, is the level of aspired status relative to the level of current status. Taking education as an example, if an individual's education goals are closely aligned with her current education status, she will have low incentive to embark on a better level. The gap is relatively small, and so the investment in better education. On the other hand, if her education goals are way higher than her current status, the efforts to achieve them become a burden. The gap is too large, and she abstains from putting efforts. Ray (2006) defines this type of low, or lack of, investment as aspirations failure. Within this context, it is essential to explore the causes of such failure. Is it due to the lack of "aspirational resources" which individuals can act upon to build their aspirations capacity? The aspirational resources, as we discussed earlier, are obtained from the immediate cognitive space, or aspirations window as put by Ray (2006). If aspirations are constructed socially, then intervention programmes that are designed explicitly to strengthen aspirations capacity could play an inducing role for productive behaviors. In Macours and Vakis (2014) experiment, poor Nicaraguan households reported positive attitudes towards future investment after interacting with local leaders. They attribute these changes to the role-modeling effect of local leaders who received large transfers from the experiment. T. Bernard and Seyoum Taffesse (2014) on the other hand,

find that investment in education increased for Ethiopian farmers as well as for their peers after watching aspirational videos.

In the next section, we start by establishing the historical context of the South African agriculture structure and the conditions faced by its farmers. Our primary focus in this paper is on the behavior of emerging farmers. The extensive literature and available resources on smallholder farming indicate the lack of a standard and unified definition of emerging or small-scale agribusiness in South Africa (Mabaya et al. 2011). The resources indicate that there are more than 2 million small-scale farming households, of which 140,000 approximately are believed to produce beyond survivalist levels (DAFF 2012; Aliber and Hall 2010). For our survey, we identified emerging farmers to be the ones who are selling at least 20 percent of their production.

### **The South Africa Context**

The agriculture structure in South Africa is described as being dualistic, consisting of two systems: the “white” commercial farms that are capital-intensive and linked to the global markets, and the “black” smallholding farms that are often for subsistence production, with low-input and intensive-labor (Binswanger and Deininger 1993; Hall 2004). This dualism is widely recognized as a feature of the racial system that was under the apartheid governments. The black were perceived as a reserve of labor to subsidize the industrialization and economic growth in the white manufacturing and mining sectors (Wolpe 1972; Hall 2004). While there have been undeniable efforts to redress the historical injustice through land policy reforms, there is a strong consensus that they have fallen short of meeting their targets. The three-tiered program: land restitution, land distribution and tenure reforms that have been introduced after the fall of the apartheid has failed majorly. No holistic pro-poor development was established and the past injustice has not been redressed (Hall 2004).

There is a common disappointment in South Africa due to the contradictory constitutional arrangement made during the political transition in the 90s (Hall 2004). The arrangement aims at facilitating the redistribution of land to the dispossessed households but remains restricted

by the protection of the existing property rights, mainly, of white farmers ( Van Zyl, Van Rooyen, and Van Schalkwyk 1994; Maharaj, Desai, and Bond 2011).

The difficulties facing emerging farmers as well as new entrants into the agriculture market in South Africa act as a counterproductive force. Farmers often lack the means and capacities to engage in capital accumulation. They are also unable to sustain the risk involved in moving beyond survivalist production. This has been worsened by the government failure in establishing secure tenure rights or providing better access to the markets. Consequently, most farmers, even the ones engaged in collective farming, are forced to adapt risk-minimizing strategies or avoid taking any decisions (Andrew, Ainslie, and Shackleton 2003; Hall 2004). Andrew et al. 2003 believe that the differences in experience, skills, income, resources, education, and orientation make it difficult for these groups to make instructive and consensus decisions.

Another critical dimension to highlight is that most of the smallholders live in the former homelands which are rural and spatially dispersed regions as demonstrated in figure 1. Around 2.3 million households farm on approximately 14 percent of the total agriculture land (16 million ha) (Pienaar and von Fintel 2014). The physical distance and poor infrastructure make it difficult for them to connect with more developed regions in South Africa. This is combined with the lack of small and localized groceries and the concentration of food industry in the hands of few food retail giants (Mabaya et al. 2011). According to Ray (2006), this form of disconnectedness affects aspirations formation through two possible ways. First, commercial farmers (who by definition are more successful) are not in the direct cognitive space of emerging farmers. Thus positive spillovers from the experiences and achievements of these farmers do not find their way to contribute to the aspirations formation of emerging farmers. This implies that smallholders' aspirations are relatively low and so their future investment. The second possibility is that emerging farmers are aware of the experiences and achievements of commercial farmers and can aspire to their level. However, the efforts, costs, and risks of attaining such aspirations are too high. Aspirations become beyond their reach which in turn creates frustration and sometimes envy (Ray, 2006).

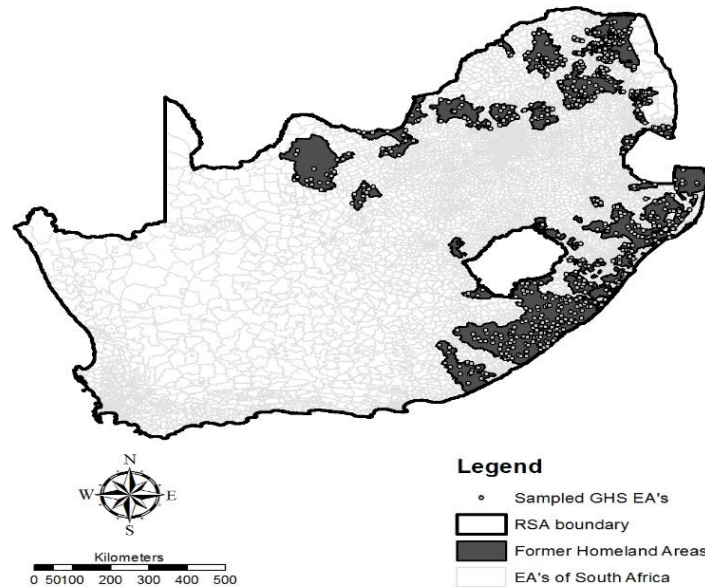


Figure 1. Location of former homelands and enumerator areas in the General Households Survey GHS 2010

Source: Pienaar and von Fintel (2014) own compilation<sup>1</sup>

## Database and Methods

The fundamental hypothesis introduced by Appadurai (2004) and Ray (2006) and further developed by Genicot and Ray (2017), is that the relationship between aspirations and investment takes an inverse-U shape. If aspirations are low, so will future investment. As aspirations arise, future investment will increase up to a threshold where beyond it aspirations fail and investment is abstained. Genicot and Ray 2017 main argument is that aspirations determine individuals' decisions to invest, which when aggregated, influence the overall development of a society. Janzen et al. (2017) on the other hand offer an empirical proof of the inverse-U shaped relationship between income aspirations and savings behavior for rural households in Nepal. They also find the same evidence between education aspirations for own children and education expenditures. Their data was obtained from a baseline survey of an asset transfer experiment on around 3300 women from Rural Nepal. The scholars consider individual's aspirations to be socially formed. It is a capacity that is accumulated not only through individual's own experiences and achievements but also through spillovers from the experiences and achievements of others in her social window.

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<sup>1</sup> Pienaar and von Fintel (2014) use the geographic information and system information from the Department of Rural Development and Land Reform (2004) to locate the former homeland areas in South Africa.



Between July and August 2017, the Department of Agriculture Economics at the University of Stellenbosch surveyed 379 emerging smallholders from Eastern Cape Province in South Africa. The Province has the highest proportion of agriculture households in South Africa, around 27,9% (StatsSA 2016a). The survey targeted emerging farmers who are selling at least 20 percent of their production to the market. It took place in the district municipalities of Amathole, Chris Hani and OR Tambo which are primarily inhabited by smallholder farmers (StatsSA 2016a). Table 1 presents the descriptive statistics of the survey data. Around 34 percent households have a female head, 86 percent of which are above 50 years old. While 57 percent of male heads are above 50. The average income is approximately 6,900ZAR (557USD), and the average aspired income is approximately 39,900ZAR (3,218USD).

In the survey, we asked the farmers if they feel constrained in their farming areas and to indicate their reasons. Around 78 percent answered by yes. The dominant reasons were a shortage of land and for climatic reasons, 50 and 33 percent respectively. We also asked the farmers on the type of occupations they aspire for their children. 46 percent indicated that they wish for their children to have an agriculture occupation, more precisely to become large-scale commercial farmers.

We used the measurement approach introduced by Bernard and Seyoum Taffesse (2014) to collect data on aspirations across income dimension. We asked household heads questions in the following order:

- 1. What is the maximum level of income that a farmer in your village is expecting to earn this year?*
- 2. What is the minimum level of income that a farmer in your village is expecting to earn this year?*
- 3. What is your present personal level of income?*
- 4. What level of income you personally think you might be able to achieve in the future?*

The questions were asked in Xhosa which is the dominant language in Eastern Cape (StatsSA 2016b). The enumerators were trained on how to ask the questions and on using words such as “you would like to achieve or think you will be able to achieve”. Bernard and Seyoum

Taffesse (2014) emphasize that for these measurements to be valid, farmers should report on their hopes and ambitions and not on their expectations.

To construct income aspirations gap, we follow Ray (2006) and Janzen et al.( 2017). We calculate the income aspirations gap  $(g = \frac{a-s}{a})$ ; where  $a$  is the aspired income and  $s$  is the current income. This is mainly to state that an individual with a very high income aspirations compare to her current income will have a gap equals to 1. While an individual with income aspirations that are not beyond her current income ( $a \approx s$ ) will have a gap equals to 0 (Janzen et al. 2017). Figure 2 shows the income aspirations and income aspirations gap we constructed using the survey data.

**Table 1**  
Descriptive statistics

	Mean	Standard Deviation
<b>Socioeconomic characteristics</b>		
Age of household head	58.92857	(8.526923)
Households with female heads	0.3333333	(0.4720293)
Household who receive transactions from remittances and grants	0.5519288	(0.4980356)
<b>Agriculture Inputs</b>		
Farmers who purchased fertilizers	0.5564516	(0.4988184)
Farmers who purchased water pipers	0.2516556	(0.4354085)
Farmers who purchased seeds	0.5441176	(0.4998911)
<b>Aspirations</b>		
Highest income in the village reported by the farmer	34283.23	(56234.76)
Lowest income in the village reported by the farmer	5832.839	(6162.346)
Household income reported by the farmer	6930	(11015.25)
Aspired household income reported by the farmer	39899.63	(62382.46)
Income aspiration gap	0.6805239	(0.2837031)
Farmers aspirations for agriculture occupation of own children	0.4609929	(0.4993623)
<b>Other</b>		
Farmers who feel constrained in their farming areas	0.7840237	(0.412108)

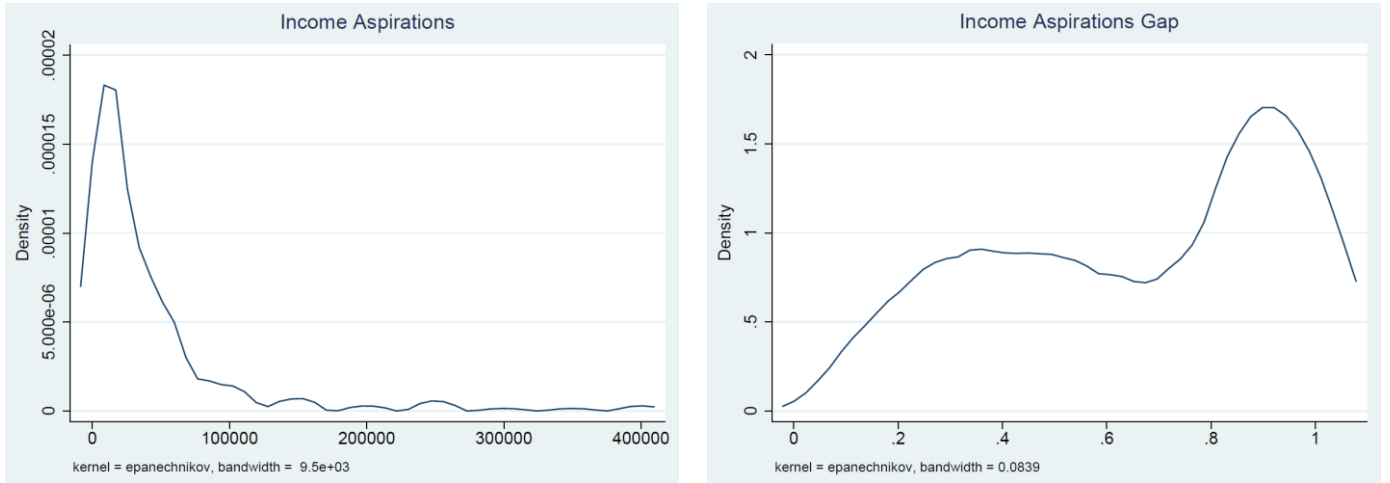


Figure 2. Distribution of income aspirations and income aspirations gap

Our model investigates the inverse-U shaped relationship by estimating an OLS regression model of an investment decision (mainly inputs of agriculture production) on aspirations gap as demonstrated in equation (1). We assume that farmers make decisions over two periods.

$$i = \alpha + \beta_1 g + \beta_2 g^2 + \beta_3 ci + \beta_4 x' + \varepsilon \quad (1)$$

$i$  represents the investment made by the farmer in the past farming year. We estimate separately for farmers who purchased fertilizer, those who purchased seed, and those who purchased pipes for water supply (either bought own irrigation system or participated in government irrigation schemes). We also control for  $ci$  which is the individual's current income. According to Janzen et al. (2017), we need to control for  $ci$  for two reasons: first, individual's current status may be correlated with her economic behavior through other aspirational channels (if her current income is more, she can save more). Second, the point at which the aspiration gap becomes large enough to cause aspirations failure is increasing in individual's current status. We also control for  $x'$  a vector of covariates. Among these are farmer's age, gender, and households that are receiving transactions from remittances and grants.

The estimations results of equation (1) are reported in table 2. Columns (a) to (c) present investments in agriculture inputs made by the farmer for the farming year between June 2016 and June 2017.

Results in column (a) show an inverse-U shaped relationship between income aspirations and investment in fertilizer. The coefficient  $\beta_2$  that estimates the relationship between  $g^2$  and  $i$  is negative but far from significant. Besides, the turning point of the inverse-U shape is at 0.442 (estimated by taking the first derivative). On the other hand, column (b) and (c) show a regular-U shape relationship between income aspirations and investment in water supply and seeds. The coefficients in the seeds are positive for  $g^2$  and significant in the case of seeds investment. The turning points for water and seeds investments are at 0.411 and 0.578 respectively (estimated by taking the first derivative). Figure 3 demonstrates the estimations results of equation (1).

**Table 2**

Relationship between income aspirations gap and investment decisions

	(a) Purchased fertilizer	(b) Purchased Water Pipes	(c) Purchased seeds
Income aspirations gap $g$	0.998 (1.449)	-0.515 (1.039)	-2.815** (1.271)
Income aspirations gap squared $g^2$	-1.127 (1.141)	0.626 (0.893)	2.431** (1.055)
Current income	6.07e-06 (7.07e-06)	-9.99e-06** (4.03e-06)	1.40e-05** (6.60e-06)
Age of household head	0.000141 (0.00698)	-0.00242 (0.00600)	0.00566 (0.00625)
Female household head	-0.0571 (0.132)	0.106 (0.0954)	-0.00150 (0.123)
Household received income from transactions	-0.0897 (0.130)	-0.0467 (0.0973)	-0.00616 (0.118)
Constant	0.416 (0.526)	0.440 (0.482)	0.771 (0.489)
Observations	70	86	77
R-squared	0.090	0.082	0.096

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

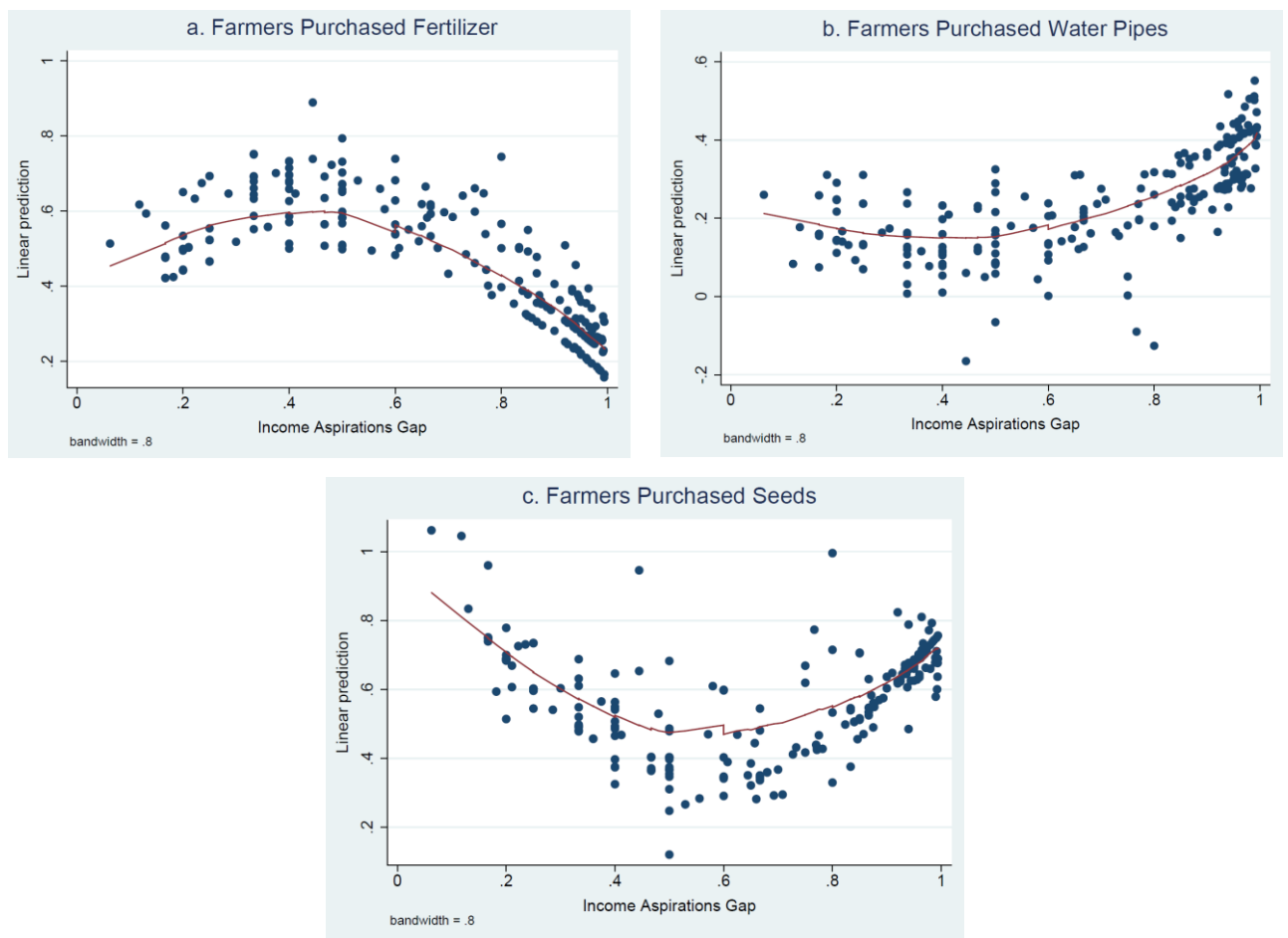


Figure 3. Linear Relationship between income aspirations gap and investment decisions

## Discussions and Conclusion

Throughout this paper, we explore individuals' aspirations, their effects on individuals' economic choices, and their role in sustaining poverty. While recent empirical literature proves the existence of these effects, our analysis does not show any effects nor does it predict contradictory or different hypothesis. In the following we explore possible explanations:

A first possible explanation is the set-up of the survey and number of observations: Janzen et al. (2017) survey is designed specifically to target aspirations and their formations. They identify real social links between women participating in the experiment to construct the aspirations window. Their sample also amounts to 3300 women. In our case, that was not possible due to budget and time constraints. Given that aspirations are formed socially through one's interaction with her immediate cognitive surroundings, it is highly crucial that

such surveys target high numbers of observations. Aspirations are an accumulative capacity nourished by what individuals can observe from others within their cognitive space. Therefore, the analysis must investigate the existence of these interactions on a broader level. The more observations we cover, the more social links we can detect and the wider the aspirations window we can construct.

A second possibility is the type of investment: Most emerging farmers in the surveyed region indicated that they plant crops to feed their livestock and to sell some to the market. Purchasing fertilizer implies better yields thus it is an incentive for them to invest. However, 78 percent of farmers in our sample feel constrained in their farming areas, primarily due to a land shortage. This might explain the low number of farmers who invested in fertilizer. If this is the case, the analysis should capture the interaction between external constraints (being a land shortage) and aspirations as an internal constraint prior to constructing the aspirations gap. As for seeds investment, an explanation could be that farmers use seeds stored from previous farming seasons. In this case, investing in new seeds is not an optimal choice for the farmer since she can have cheaper or free access to seeds. This might explain the normal-U shaped in the regression results. The same rationale could be applied to investment in water pipes. Eastern Cape has the highest percentage of households engaged in animal combination (67 percent) compare to other regions in South Africa (StatsSA 2016a). Therefore, farmers would want to invest towards more immediate livestock production.

A third possibility; an emerging farmer out of necessity and not out of choice or aspiration: Unemployment in South Africa is 27.7 percent (32.2 percent in Eastern Cape region alone) (StatsSA 2017). Besides, inequality is among the highest in the world; the Gini coefficient is 0.65 and 0.69 based on expenditure and income data respectively (World Bank 2018). Some of the emerging farmers might find no choice but to start up with what is available in their regions, mainly agriculture. Therefore, the research on aspirations of South African emerging farmers should first investigate their characteristics and profiles. Several studies such as Williams (2008); Williams, ROUND, and Rodgers (2009); Thurik et al. (2010); Poschke (2013) indicate the importance of motives in engaging in entrepreneurship. This matters for agriculture policymakers to implement intervention with particular care to the motives and aspirations of those engaging in small-scale agribusiness. In other words, understanding the

dynamics of sustained poverty and underinvestment (or misallocation of investment) goes in parallel with understanding aspirations and motives.

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We express our sincere gratitude to the Department of Agriculture Economics at the University of Stellenbosch, the Bureau for Food and Agricultural Policy (BFAP), and the great team of enumerators for their dedication, for providing valuable insights and for assisting with the survey in the field.

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