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The Comprehensive Agricultural Support Programme's (CASP) Training and Capacity Building: An Impact Analysis on Income Levels of Emerging Farmers in Limpopo Province (South Africa)

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Abstract

The Comprehensive Agricultural Support Programme (CASP), which came into effect in 2004, provides funding targeted at supporting emerging farmers. CASP has six pillars, of which this study focused on one, which is capacity building and training. The study investigated the assessment of the impact of training on the projects' beneficiaries who had benefited from the CASP pillar of training and capacity building in the Limpopo Province. The methodology applied was the difference-in-difference technique. Projects that benefited from funding were regarded as the treatment group and those that did not benefit from the programme were regarded as the control group. The findings were that there was variation in the increase of income levels. There was a positive relationship between training and reported increase in income levels in some projects, and a negative relationship between training and income levels for other projects. It was interesting that income levels increased for projects that had benefited from the CASP pillar of training and capacity building when the projects were analysed as a group, but when projects were analysed individually, it was revealed that there was a marginal decrease in income levels.

1. Introduction

Agricultural support programmes continue to play a significant role in alleviating poverty. The role of government in supporting agriculture is fundamental to the generation of employment and economic development of the country. Within the global context, government continues to strengthen its support for influencing the production process through subsidies. The seminar for strengthening agricultural support programmes held in Japan in 2001 served as a platform within the global context for developing economies, which had gathered to synergise efforts towards the establishment of efficient support programs (Sharma, 2004).

Governments within the African context have realised the need to foster and strengthen agricultural development. In the Regional Agricultural Policy the SADC member states acknowledged that 70% of the population in the SADC depends on agriculture for food, income and employment. This has necessitated that the SADC member states synergise their countries policies to a regional agricultural strategy with the focus on supporting agriculture through various pillars in order to achieve food security and regional economic development (SADC, 2011). South Africa is one of the signatories to the SADC agreement.

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Post 1994, the South African government introduced programmes which were meant to address the injustices of the past. Agriculture was targeted as one the industries to be transformed. This was through a land reform programme, and also providing post settlement support to the beneficiaries of land reform. The Comprehensive Agricultural Support Programme (CASP) came into effect in 2004. It is a government funded grant aimed at assisting emerging farmers with after settlement by providing the necessary support and training leading to increased production, poverty alleviation and subsequent job creation, which would result in the reduction of inequalities (CASP, 2005).

CASP has six pillars, namely, CASP had six pillars namely; information and knowledge management; technical and advisory assistance; financing mechanisms, training and capacity building, marketing and business development and, lastly, on and off farm infrastructure. Intended beneficiaries of the programme were the hungry and vulnerable. The expected outputs of the CASP pillars were household food security, farm and business-level activity and an agricultural macro-system within the consumer economic environment (CASP, 2005) The study focused on one pillar of CASP, that of training and capacity building. The objective of the study objective was to measure the impact of the training and capacity building of CASP, with findings that would inform the government's future approach to funding for emerging farmers.

2. Background to CASP Support in Limpopo Province

The Comprehensive Agricultural Support Programme (CASP) came about as a response to the need for government to address post-redistribution settlement. The Strauss Commission, which was appointed in 1995, focused on the role of government policies towards developing rural communities. The Strauss commission report recommended a comprehensive agricultural support programme. The recommendations were two-fold; first, that government should provide 'sunrise' subsidies. The Strauss Commission referred to the 'sunrise' subsidies as financing that streamlines and align service delivery within the three tiers of government. The second recommendation was to adopt a 'sunrise' package to support land reform beneficiaries who required finance. In 2003, an intergovernmental committee conducted by the Treasury found that agriculture was underfunded, particularly regarding capital funding (Hall and Aliber, 2010). CASP was adopted in 2003, and was launched in 2004 in Kwa-Zulu Natal by the then Minister of Agriculture and Land Affairs Ms. Thoko Didiza (CASP, 2007).

CASP had six pillars namely; information and knowledge management; technical and advisory assistance; financing mechanisms, training and capacity building, marketing and business development and, lastly, on and off farm infrastructure. Intended beneficiaries of the programme were the hungry and vulnerable. The expected outputs of the CASP pillars were household food security, farm and business-level activity and an agricultural macro-system within the consumer economic environment (CASP, 2005). The rationale and the justification for the CASP programme was to assist the emerging farmers, through the various pillars so that they would be in a position to produce; first for subsistence and that they would then graduate to become the commercial farmers.

CASP was financed by means of the fiscal budget through the National Treasury. As guided by the Division of Revenue Act (DORA), allocation of the CASP budget per province was based on the provincial business plans presented by respective provinces to the Department of Agriculture, Forestry and Fisheries (DAFF). The CASP programme had a policy guideline that stated that 70% of the total funding should be targeted to the support and development of land reform farms and 30% to food security projects. From the total budget allocated to CASP, 10% was allocated to the pillar of training and capacity building (CASP, 2007). The allocated 'share' might differ from province to province, as other provinces could allocate 75% of the budget to land reform, depending on the scope or magnitude of land reform farms. As pointed out in the CASP report of 2007, Limpopo allocated 75% of the total budget to land reform farms.

Since the programme came into effect in 2004, the focus had always been on infrastructure development, as transferred land most needed the infrastructure support. Over the years the infrastructure deteriorated and the farms' production declined; low skills levels was one of the main reasons identified for most of the land reform failures, including vandalised infrastructure (Lahiff, 2008). This failure was also attributed to inadequate extension and advisory capacity within the Department of Agriculture (CASP, 2007). In the same CASP report it was also noted that there was a need to reskill extension officers so that they were better equipped to skill the farmers, as more often than not the extension officers lacked the necessary technical expertise and were not adapting to technological changes in order to effectively impart training to farmers.

In the Limpopo Province the funding that had already been channeled to training and capacity building had increased over years. In the financial year 2008-009, the CASP budget allocation for training and capacity building was R6.9 million and 176 beneficiaries were trained. In 2009-2010 the budget was R7.6 million and 529 beneficiaries were trained; in the financial year 2010-2011 the budget was R8.3 million and

206 beneficiaries were trained and in 2011-2012 a budget of R8.4 million reached 349 beneficiaries (LDA, unpublished). Looking at the funding trend and the budget allocation, it is evident that the budget had increased year on year, and the number of beneficiaries was at its highest in 2009-2010. The training and capacity building to date has therefore reached a large number of land reform beneficiaries.

3. CASP Supporting Policies and Strategies

Whilst there are other policies and strategies aligned to training, agricultural development and employment creation, this section cannot give exhaustive details of all the policies that inform or complement CASP, but will mention a few which are listed below.

3.1. White Paper on Agriculture (1995)

The White Paper on Agriculture was the departure point and guiding document for transforming agriculture post 1994. It was responding to the interim Constitution, which had given guidelines that agriculture should be the competence of the various provinces, and yet acknowledging that a national agricultural policy was necessary. The White Paper on Agriculture had goals, which one was that ' financial systems should focus on resource-poor farmers enabling them to purchase land and agricultural inputs' with a mission statement encompassing seven policy areas, the seventh policy area being agricultural technology, research, extension and training (White Paper, 1995).

3.2. The Agricultural Sector Strategy (2001)

The Agricultural Sector Strategy (2001) was developed as a response to addressing the agricultural constraints that faced emerging farmers. The strategy highlighted the vital importance of agricultural reforms, especially land reform and financing strategies and stated that an environment conducive to their successful implementation should be created (CASP, 2004). Departing from the Strategic Plan for the Department of the Department of Agriculture, CASP was established to deliver comprehensive agricultural support to emerging farmers.

3.3. Agriculture Education and Training Strategy (AET)

Training and skills development was aligned to the Agricultural Education and Training strategy (AET), which came into effect in 2005 having been developed to address the inequalities in the provision of training, and strengthen the provision of sound agricultural training for sustainable agriculture (AET, 2005). The alignment of the CASP pillar of training and capacity building with this strategy had to ensure that agricultural training would result in productive and sustainable farms, transforming the emerging farmers into commercial farmers, which should result in increased income levels.

3.4. Comprehensive Africa Agricultural Development Programme (CAADP)

The Comprehensive Africa Agricultural Development Programme (CAADP) also promoted the development of agriculture in Africa. The CAADP focus is on investing in four pillars, namely: extending the area under sustainable land management and reliable water control systems, improving rural infrastructure and trade related capacities for improved market access, increasing food supply and reducing hunger, and agricultural research. The CAADP encouraged growth and development in rural communities (NEPAD, 2003). The pillars of CASP were then aligned to the broader African development agenda, particularly looking at the pillar of training and capacity building of CASP with its intended objectives. The CAADP mission was to resolve the agricultural crisis, reducing hunger through targeted investment, and CASP was in place to enable farmers to improve their production and therefore support poverty alleviation through focused pillars.

3.5. SADC Regional Agriculture Policy (RAP)

The SADC Regional Agriculture Policy (RAP) also complemented the CAADP and CASP, in that the objective of the policy was to mitigate poverty as a response to the trend of low economic growth, high levels of unemployment and poverty that had been noted in Africa. The RAP then responded by stimulating agricultural production in the SADC region and therefore assisted in alleviating poverty (SADC, 2011). The corresponding policy documents with RAP in South Africa are the Agricultural Policy and the Strategic Plan for South African Agriculture, which have the objectives of reducing inequality by increasing income, through increased agricultural production. The CASP objectives were formed on the foundation of the Agricultural Policy and the Strategic Plan for Agriculture with the expected impact being poverty alleviation and the creation of employment.

4. Literature Review

4.1. Agricultural Training and Raising Income Levels

The extent of the importance of the support of agricultural training funding in raising income levels differs from country to country, and from less developed economies to developed economies. Developed economies tend not to prioritise

agricultural training as a means of developing the economy; whereas the least developed economies pay particular attention to agriculture development. In developed economies as in the case of Italy, agriculture training focus ranks the lowest, the ranking of agriculture does not change whether they have measured impact on training or not. The incidence of training by sector was lowest in agriculture, and yet the economy had still experienced rising incomes and wages in this sector, although the country is not dependent on agriculture for development (Conti, 2005).

Asia had conflicting priorities between industrialisation and agricultural development in terms of targeting growth. This conflict was termed the 'agricultural problem' because Japan had jumped from being a middle-income economy to a developed economy through industrialisation; other Asian countries also refocused their priorities and concentrated on industrial development to the detriment of the agricultural sector. In that regard income levels were raised through industrialisation, as opposed to agricultural development (Hayami, 2007).

In Liberia, as a response to the unemployment of ex-combatants, the government acknowledged that agriculture would continue to be a major source of income for rural Liberians. A dedicated NGO Landmine Action ran an intensive training programme to upskill the ex-combatant youth together with a grant package. In the same study by Blattman and Annan (2012), little effect was found on the observed income and other measures of economic advancement; although there was a change or increase in household durable assets, there was no change in the current income for the programme participants (Blattman and Annan, 2012).

Not much literature has been documented on impact evaluation of the CASP programme, specifically focusing on the training and capacity building pillar; however, it was noted in the study by Jacobs et al. (2010), that a majority of the provinces that had benefited through CASP, had still not improved regarding their productivity (Jacobs et al., 2010). In the Free State, a study was done on CASP, not using the impact assessment of training, but focusing on the progress of CASP projects on all pillars combined (Idsardi et al.,2008).

There is therefore no conclusive argument as to what could have worked and what might not have worked in the case of CASP and, therefore there is a need for research to examine the extent in which there has been an impact resulting in raised income levels.

4.2. Difference in Difference in Training Impact and Raising Income Levels

In a study done in East Germany on training and creation of employment, which should have resulted in increased income levels, it was noted that employment was a state dependent process. The study focused on the transition between employment and non-employment, where the difference in differences method was used to measure impact. From the results it was found that training, at the first participation in the programme, showed zero to small positive effects on employment and the raising of income levels (Bergemann *et.al*, 2005).

In a study done by Card and Sullivan in the United States of America, the difference-in-differences methodology was used on both the control and the treatment groups to measure the levels of employment after the training intervention. The study focused on two probabilities; the first was the effect of the labour market status after training had been completed and the second was the effect of training on the probability that participants remained employed. Both these probabilities tested the income as a variable. The study recommended modeling the two probabilities separately to measure effect, which could provide a more complete picture of the effect of training, and which then had conclusive results (Card and Sullivan, 1987).

5. Methodology

5.1. Data Collection and Sampling

The initial data gathering was the secondary data from the LDA reports, and the interview with the provincial CASP Manager. The follow up was the interviews in the five districts previously mentioned, the projects sampled having been drawn from the LDA database of the CASP funded projects. The sampling focused on the projects that had received funding for the period between 2008 and 2012. This sampling of the financial years was informed by the availability of data and the database. Four projects were selected from each district, namely Capricorn, Vhembe, Sekhukhune, Mopani and Waterberg, totalling twenty projects, which constituted the sample. Of the four projects selected in each municipality, two projects are for which training was provided and two projects are for which none had been provided through CASP.

The selection of two projects for which training was provided and two projects for which none had been provided resulted in the sample having a treatment and a comparison group. The treatment groups were the projects for which training was received tthrough the programme and the control group was the projects or group of projects for which training was not provided through the programme. This method of selection is important when conducting an impact assessment, as it allows measurement of the difference when

all the other environmental and economic conditions are the same for the projects, including the duration of the involvement of people. The difference is that during the same period one group participated in the programme and the other group did not. This methodology is also supported by Ravallion (2001), who feels that such a comparison group model can give a reliable assessment, due to the fact that with the same baseline data, one can evaluate whether the groups had similar training needs, and how many times each received the training required, enabling one to measure the post intervention impact (Ravallion, 2001).

5.2. Data Analysis

To measure the outcome, the impact was measured using the natural experiment approach, which aims to find a naturally occurring comparison group that can mimic the properties of the control group. This is a quantitative analysis method and quantitative methods are best suited to measuring the levels and changes in impact on the treatment group and that on a control group. Data analysis was done through the STATA software program. STATA is best suited to analyse panel data. Although there could be various methods of testing, the research focused on investigating the sample means through a t-test using the 'difference-in-differences' analysis. The method of difference-in-differences refers to the comparison of a treatment group or comparison group before (regarded as the first difference) and after the programme has been implemented, which is referred to as the second difference (Ravallion, 2001). This method relies on two assumptions; common time effects across the groups and no changes in composition within the groups (Blundell and Dias, 2000).

The simple approach of using the mean value of difference-in-difference is presented in Table 1 below.

Table 1. Non statistical approach of using D-I-D

	Treatment group	Control group
Before	T_B	C_B
After	T_A	C_A

Source: Author's research data (2014).

Calculate the difference-in-difference without the regression as follows:

$$Treatment effect = (T_A - T_B) - (C_A - C_B)$$

However, because this research methodology used a statistical model, the regression framework was applied, and the difference-in-difference is computed as follows:

$$y_t = \beta_0 + \beta_1 treat_i + \beta_2 after_i + \beta_3 treat_i * after_i + \varepsilon_i$$

Where = 1 if in treatment group

= 0 if in control group

= 1 if after treatment

= 0 if before treatment

The coefficient on the interaction term (β_3) gives us the difference-in-differences estimate of the treatment effect:

$$y_t = \beta_0 + \beta_1 treat_i + \beta_2 after_i + \beta_3 treat_i * after_i + \varepsilon_i$$

The difference in difference estimate of the treatment efffect is also illustrated in Table 2 below.

Table 2. D-I-D estimate of the treatment effect

	Treatment	Control	Difference
Before	$\beta_0 + \beta_1$	β_0	β_1
After	$\beta_0 + \beta_1 + \beta_2 + \beta_3$	$\beta_0 + \beta_2$	$b\beta_1 + \beta_3$
Difference	$\beta_2 + \beta_3$	β_2	β_3^*

Source: Author's research data (2014).
The coefficient β_3^* measures the impact of training.

This method was chosen because trying to find the equivalents of 'treatments' and 'control groups' in which everything apart from the variable of interest is the same, could be difficult. The difference in difference method has the ability to take into account omitted factors and variables. Concisely differencing is a way to deal with omitted variables (Bergemann *et al.*, 2005).

6. Findings and Discussions

6.1. Difference in Difference Analysis Per District

For individual district levels, the D-I-D with regression was the only one applied; and results for each district are presented and discussed per district below. The tables that are presented indicate the income before training, which is regarded as baseline (BL) and after training intervention, regarded as follow up (FU).

First, the impact of the training was assessed for each of the five districts separately. Thereafter a joint estimation was done. In all these estimations the selected significant levels for inference purposes are as given in Table 3, to determine the confidence level. If the observed p-value is greater than 0.1 (p>0.1) then the statistic is not significant and no inference is possible; however directional relationship can be construed. D-I-D was used for identifying difference-in-difference.

Table 3. Inference description for significance and confidence levels.

Inference	Significance	Confidence level
*** p<0.01	1%	99%
** p<0.05	5%	95%
* p<0.1	10%	90%

Source: Author's research data (2014).

6.2. Income by District

The study revealed that income varies per district, with Capricorn having the highest reported income. Table 4 reports the income means and their related standard deviation per district.

Table 4. Income means per district and standard deviation.

District	Observations	Mean (income 'R')	Std. Dev
Capricorn	8	R2125.50	2150.75
Vhembe	7	R1286.29	1496.46
Sekhukhune	8	R812.88	961.69
Mopani	8	R1250.50	1363.20
Waterberg	8	R2063.00	2211.15

* R = 0.085 USD
Source: Author's research data (2014).

From Table 4 the following can be observed: On average, incomes are highest for projects in Capricorn, where the mean was R2 125.50, followed by Waterberg, then Vhembe, Mopani and lastly, Sekhukhune at R812.88. Similarly, the variability of income as measured by standard deviation is also highest in Capricorn, and least in Sekhukhune.

6.3. Difference in Difference Analysis Per District

For individual district levels, the D-I-D with regression was the only one applied; and results for each district are presented and discussed per district below. The tables that are presented indicate the income before training, which is regarded as baseline (BL) and after training intervention, regarded as follow up (FU).

6.4. District One: Waterberg

As shown in Table 5 below, the income for the group treated was at R2 000.00 before training, and after training at R500.00. For the control group income was at R2 750.00 before training, and R3000.00 on a follow up. This means that the trained group income dropped by R1 500.00, while for the control group in went up by R250.00. This is counter intuitive as training would be expected to increase management and related skills and therefore the performance (which can be gauged from income levels) of the projects. However, the results are in line with other studies; for example, Blattman and Annan, (2012) found no impact on income as a result of training in Liberia, which is also a developing country. Such findings corroborate those of Jacobs *et al*., (2010) who reported that a majority of the provinces that benefited through CASP had nevertheless not improved in terms of productivity. Productivity drives income, which may explain the counter intuitive outcome observed here. Table 5 illustrates the D-I-D results in Waterberg.

Table 5. Waterberg D-I-D results.

	Treated (BL)	Control (BL)	DIFF- BL	Treated FU	Control FU	Difference FU	D-I-D
Income	2000.00	2750.00	750.00	500.00	3000.00	2500.00	1750.00
P >| t	0.33	0.21	0.77	0.80	0.12	0.39	0.65

Source: Author's research data (2014).

The D-I-D results indicated that there was an increase in income of R1 750.00 due to training; however, the results were not statistically significant, given that the observed p-value of 0.65 is greater than the 10% significance level. No inference can be made here besides checking the relationship between training and income; a positive relationship does exist implying that the training in Waterberg resulted in the projects increasing their incomes, however no generalisation is possible. The above estimations, given the standard linear regression assumptions provide only a partial view of the relationship. Given these results it may be necessary to describe the relationship at different points in the conditional distribution of income. A quantile regression was applied and the results are presented in Table 6 below.

Table 6. Quantile regression.

Outcome variable	Control (BL)	Treated (BL)	Diff (BL)	Control (FU)	Treated (FU)	D-I-D (FU)	D-I-D
Income	4001.00	5001.00	1000.00	1001.00	5000.00	3999.00	2999.00
P > | t |	0.02	0.01	0.55	0.41	0.01	0.05*	0.23

Source: Author's research data (2014).

A quantile regression results at the 90th percentile, showing that significant differences do exist in the follow up period (Diff [FU]) at 10% significance level (0.05<0.10). This means that at that point (90th percentile), there are significant variations in income during the follow up period, however the D-I-D is still not significant and therefore only an overall directional relationship can be interpreted.

6.5. District Two: Capricorn

The results presented in Table 7 indicated that in the Capricorn district there are significant differences in the baseline, with the treated group having a baseline income of

R500.00 and the control group a baseline income of R4 501. 00. When following up on the income after training, the treated group had an income of R1 001.00, and the control

group an income of R2 500. 00. Table 7 presents the results for Capricorn.

Table 7. Capricorn D-I-D results.

	Treated (BL)	Control (BL)	DIFF- BL	Treated FU	Control FU	Difference FU	D-I-D
Income	500.00	4501.00	4001.00	1001.00	2500.00	1499.00	(2.5e+03)
P >| t	0.72	0.02	0.09*	0.48	0.12	0.452	0.38

Source: Author's research data (2014).

The D-I-D results demonstrated that there was a negative relationship between training and income levels. While, due to the p-value being at 38% the results can be assumed to be relational, it was not possible to make inferences as the results were not statistically significant

6.6. District Three: Mopani

In Mopani the baseline income was the same for both the treatment and the control groups, at R500.00. After training, the treated group had an income of R2 001.00 and the control group at R2 500. 00. Table 8 indicates the D-I-D results for the Mopani district.

Table 8. Mopani D-I-D results.

	Treated (BL)	Control (BL)	DIFF- BL	Treated FU	Control FU	Difference FU	D-I-D
Income	500.00	500.00	2000.00	2001.00	2500.00	0.33	0.67
P >| t	0.58	0.75	1.00	0.08	0.24	1.00	1.00

Source: Author's research data (2014).

The D-I-D results indicated an increase in income of R1.00 but the p-value was not significant, therefore it can be concluded only that there is a positive relationship between training and the income of the control group but that the increase in income was not statistically significant.

6.7. District Four: Vhembe

The Vhembe case was basically the same as that in

Capricorn, in terms of the difference between the projects for which training was provided and those for which none had been provided. A significant difference exists in the baseline period (0.046<0.05). This difference is in the relationship between training and income, it shows a negative relationship between the trained group and income that is under D-I-D. Table 9 presents the results for the Vhembe district.

Table 9. Vhembe D-I-D results

	Treated (BL)	Control (BL)	DIFF- BL	Treated FU	Control FU	Difference FU	D-I-D
Income (R)	3001.00	0.00	(-3.0e+03)	2001.00	500.00	-1.5e+03	1500.00
P >| t	0.02	1.00	0.04**	0.12	0.49	0.27	0.38

Source: Author's research data (2014).

The D-I-D was positive at R1 500.00, although again we cannot make any inferences given that the D-I-D was not statistically significant.

6.8. District Five: Sekhukhune

Incomes for the treated and control groups were R500.00 and R333.00 as baseline respectively. The follow up indicated incomes of R1 001.00 and R1 334.00, respectively. Table 10 presents the results for the Sekhukhune district.

Table 10. Sekhukhune D-I-D results

	Treated (BL)	Control (BL)	DIFF- BL	Treated FU	Control FU	Difference FU	D-I-D
Income (R)	500	333	-166	1001	1334	333	499
P >| t	0.67	0.63	0.90	0.41	0.10	0.81	0.79

Source: Author's research data (2014).

The D-I-D, however, indicated an increase in income of R499.00, which was again not statistically significant at 79%. It was therefore concluded that there was a positive

relationship between training and income levels.

In conclusion, the location of the project with regard to district was immaterial. The findings are contrary to the

conclusion reached by Betcherman *et al.* (2004) and Attanasio *et al.*,(2011) that training programmes often have more of an impact in developing countries than in developed ones. This may be due to the fact that in each district beneficaries of two projects received training and beneficiaries of the other two projects did not, therefore the differences cancelled out statistically.

6.9. Measuring Impact from the Total Sample of Treatment and Control

The non-regression approach and the regression approach came up with the same value in terms of the impact. With the non-regression approach, it was found that training had contributed positively to income levels, with an increase of at least R166.49 in income witnessed by the projects that had received training, which cannot be explained by any other factor. Below is the model specification formula that was applied;

D-I-D Non-regression approach:

Treatment effect = (1800.5- 1600.3) – (1334.11-1300.4) = 200.20-33.71=166.49

The results of non-regression analysis demonstrated an increase in income of R166.49. One limitation of the non-regression approach is that there are no statistics to assess or base inferences, however, there is an advantage in obtaining the results quickly and more easily. Although such benefits do exist, the focus of this study is on more than simply getting results quickly. Regression analysis was therefore performed and the results are presented in the next sub-section.

D-I-D with regression:

The analysis took the full sample of the projects that had received training and those that did not receive training. Table 11 presents the results with the p-value where the confidence level determined the significance of the results.

Table 11. D-I-D for treatment and control.

Dependant variable	Coefficient	P> | t |
Training	299.90	0.71
After	33.711	0.97
Train_after	166.49	0.88

Source: Author's research data (2014).

Though a similar result to that with non-regression was obtained, it proved that it was not statistically significant at 88%, therefore the results can provide only a directional relationship, which is, that there exists a positive relationship between training and income levels. The results demonstrated that training had a positive impact in raising income levels. In this regard, income improved for the training group by R166.49 compared to that of the control group. These results

had taken the mean value; which was due to the fact that income was stated as categorical, so the lowest value of the category was considered.

As check for robustness, the study looked at the linear combination of estimators (lincom) to get the average output variable given various conditions, in this case either before or after training. This gives the various means of the D-I-D estimator under regression. This is useful for viewing coefficients for one group (the treated group) relative to another group (the control group). The results are presented in table 12 below.

Table 12. Lincom results as a test of robustness.

Lincom	Income	Coefficient	P> | t |
Training + _cons =0	1	1600.30	0.01
After + _cons = 0	1	1334.11	0.03
Training + after + train_after + cons=0	1	1800.50	0.00

Source: Author's research data (2014).

Given the p-values of less than 0.05, as indicated in Table 3, on the significance of the p-values, the results of Table 11 are all statistically significant at 95% confidence level. When deciding whether a group has been successfully trained or not, the average income of R1 600.00 was compared to R1 334.00, a variation over time. Although passage of time has an effect on income, training also contributes since R1 600.00 > R1 334.00.

The results were further tested for individual projects regarded as model (2), as opposed to treating the sample as homogeneous. The results are presented in the Table 13 below. Model (1) based on Table 11 above is for comparison, reporting results on the estimation assuming homogeneity among projects

Table 13. D-I-D with project identity as model (2).

Income	Model (1)	Model (2)
Training	299.90	1066.80
After	33.711	333.80
Train_after	166.49	-133.58

Source: Author's research data (2014).

When the control variables were added to those of project identity, the D-I-D coefficient changed to -R133.58. A closer look at the effect controlling for project reveals that income actually decreased by that much after the groups had received training.

Overall differences in income exist, albeit most not statistically significant. This is however echoed in literature; for example, Millennium Challenge Corporation (2012) conducted an independent evaluation that failed to detect any impact on when the training was adopted, on productive income or household income, citing the necessity of the

coordination of different support systems as the key to improving performance, and thus the impact of training. The results in general are in sharp contrast to those of Klein *et al*. (2003), who found that median household income increased by 87%, significantly reducing poverty and those of Kahramanoğlu and Gündüz (2011), who observed the clear benefits of agricultural training in Turkey.

In their research in Liberia, which used the treatment group and control group methodology to measure the success of a training programme, Blatman and Annan observed little effect on the raising of income levels, as well as in other measures of economic advancement (Blatman and Annan, 2012).

In a study on the impact of CASP impact in the Free State, which was conducted to measure the socio-economic benefits, a regression model was used using the Ordinary Least Square (OLS) to measure the impact. The findings were that the success of CASP projects was marginal, with only one out of five projects really being successful and sustainable (Idsari *et al*., 2008).

7. Conclusion and Recommendations

7.1. Targeted Training

Training has improved skills, but has not had a positive impact on the income levels. There is therefore a need to review the training programmes offered. The improved skills should also have had a positive relationship with an increase in income levels. The type of training provided should be focused on an entrepreneurial format, moving away from the focus on subsistence farming training modules. This would also enable the department to offer structured training for entrepreneurial development. The importance entrepreneurship cannot be overemphasised, as this would at the same time provide a solution to the dependency syndrome, which is a point where projects have sometimes been funded for many years, and training has been provided, yet there has not been much improvement in the productivity of the projects.

7.2. Farmer to Farmer Extension Model

A farmer-to-farmer extension model can also serve as a good strategy for training and capacity building. This model identifies and uses those farmers who are successful in their communities, pinning down their leadership qualities. The model combines expertise, leadership and communication as tools for imparting skills. These are coupled to what the successful farmers have learnt from experience and their best practices, and would therefore relate to the goals and objectives of other emerging farmers in the area. The cluster approach, which combines farmers with similar commodities, is also recommended, as it will also increase the scope and efficiency of training.

7.3. Train the Trainer and Extension Officers

The role of extension officers has to be more than after-care, as the rationale and justification for employing extension officers is related to training and advisory services to farmers. Extension officers need to be capacitated so that they are capable of delivering training to farmers, this is fundamental as extension officers are employed by the department, as opposed to an external service provider who would provide a training service for a short duration. This is the argument in favour of the efficient use of internal resources.

7.4. Training Through Mentorship

When we focus on government output number four, creating decent employment through inclusive economic growth, there has to be a shift in the approach to strengthening training and the creation of employment. The results analysis indicated that not much employment had been created through the projects investigated. As much as it is appreciated that it is the nature of agriculture to have more seasonal workers than permanent employees, the extent to which the farm has experienced growth and the entrepreneurship of the owner, will have a positive relationship and hold the potential to absorb more employees permanently. Agriculture has a role to play in terms of job creation, as also alluded to through the National Development Plan. This job creation is related to growth and increased productivity, which would accompany the farmers graduating from subsistence level to commercial level. Capable mentorship would be fundamental to address this gap.

The mentorship would have to complement the training and capacity building, taking into account that the focus would be on commodity-based mentorship. Mentorship has clear objectives; one of the most important is that of narrowing the skills gap in farming, notably by providing business skills. This objective advocates complementing the mentoring of farmers by teaching organisation and management development.

A mentorship programme is a long-term project and also brings the advantage of an established relationship, with clear exit plans. All the above recommendations integrate into a more sustainable skills development programme. The last recommendation looks at sustainability. With the exit of the mentor, the project should have sustained businesses, created more jobs and the beneficiaries' income levels should have

increased, driven by farmers exporting to regional and international markets.

8. Conclusions

The success of any programme of government intervention relies on coordinated efforts to achieve its intended objectives. Training and capacity building will require a shift in focus, in which industry also plays a part in up-skilling the beneficiaries through mentorship programmes. The relationship that extension officers have with the farmers can empower them to respond to the farmers' training needs, and to implement training which is based on the individual needs of the farmers. The training budget needs to be reviewed, in order for it to correspond to the extent of the low skills levels of farmers, as the present priority of infrastructure support over training and capacity building reverses the intended gains of the programme.

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