THE IMPACT OF FINANCIAL INCLUSION ON POVERTY ALLEVIATION IN GAUTENG

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Growing Gauteng Together

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INTRODUCTION

- Poverty and inequality in SA have worsened over years, with 46% of the population in GP living below the upper poverty line (59.1% for RSA) (IHS Markit, 2019). GP Gini coefficient, a measure of inequality shot up from 0,59 (SA: 0,61) in 1996 to 0,63 (SA:0,63) in 2018;

- Unemployment rate remains high (expanded 31.3% SA and 35% GP) in a low growth environment (SA GDP growth shrunk 3,1% in 2019Q1. Reprieve Q2 2019 GDP growth 3.1%).

- Greater focus globally on research activity to understand impact of financial inclusion (AfDB, IMF, World Bank) in overcoming the three evils (poverty, unemployment, inequality).

- The study determines if proxy variables for financial inclusion and economic variables have any significant impact on reducing poverty in GP.

- Application of the Autoregressive Distributive Lagged Model (ARDL).

- Complimenting the ARDL model, the Koyck Transformation is calculated to ascertain the long run adjustment of the poverty indicator to changes in the financial and economic proxy variables.

LITERATURE REVIEW

- Theory and evidence suggests that financial inclusion is important for poverty alleviation, social inclusion, wealth-building and economic growth (Stevans and Sessions, 2018; Fitzpatrick, 2015; Chibba 2014, Thorsten Beck & Cull, 2014; Demirgüç-Kunt, Beck, & Honohan, 2008; Triki & Faye, 2013).

- Transmission mechanism (Mollentze, 2004)

- Nerlove's Partial adjustment model, Cagan's adaptive expectations model

- *Dependent variable: t*otal population below poverty line, consumption expenditure,

- *Independent variable:* access to credit, money supply, bank assets per capita, population, consumer prices, GDP growth

- Panel data Bakari *et al* (2019)

- ECM (Muritala and Fasanya (2013); Chani *et al* (2011)

- ARDL (Ezra *et al* (2012)

- Recentered Influence Function model

MODEL SPECIFICATION - ARDL MODEL

- This model typically includes a lag of the dependent variable as an explanatory variable in addition to other lagged explanatory variables.

$$BelowUpper_t = \delta + \theta_1 BelowUpper_{t-1} + \delta_1 Credit_{t-1} + \delta_2 M2_{t-1} + \delta_3 GDP_{t-1} + \delta_4 Inf_t + v_t$$

- $BelowUpper$ refers to the share of the GP population to the total GP population who lives below the upper poverty line.
- $Credit$ represents the credit extended to GP individuals.
- $M2$ is the SA Money Supply (narrow money supply plus short-term deposits).
- Inf presents the SA CPI.
- GDP is GP GDP.

KOYCK TRANSFORMATION

- The Koyck transformation extends from the ARDL.

$$Y_t = \alpha(1 - \gamma) + \beta_0 X_t + \gamma Y_{t-1} + v_t$$

- The primary interest is γ: Rate of decay
- $(1 - \gamma)$: The speed of adjustment
- The rate of decay should always lie between 0 and 1.
- A rate of decay close to zero implies a faster speed of adjustment where as a value closer to one entails a slower speed of adjustment.
- The following will be calculated based on the rate of decay:

- $Median\ lag$: $-\left(\frac{log2}{log\lambda}\right)$ which shows the first 50% adjustment of y to x.

- $Mean\ lag$: $\frac{1}{1-\lambda}$ which shows the remainder of the adjustment (full period).

THE DATA

- 1993 – 2018 (26 observations).
- **Dependent variable (the poverty indicator):** Calculated as the share of the population who lives below the upper poverty line to the total GP population; earning an income of R1 227 per month.
- *Independent variables:*
  - **GDP:** This is Gauteng GDP annual in constant 2010 prices sourced from Quantec Easy Data.
  - **CPI:** The inflation data sourced is monthly. The index is converted to annual by calculating the annual average. The base year of the data is in 2010. Data source StatsSA . Given the high correlation between SA and GP CPI, the SA inflation is used as a proxy for GP CPI.
  - **M2:** The data is annual at constant 2010 prices. The data is sourced from the SARB.
  - **Credit extended**: The credit data obtained from the NCR credit market reports. Total credit for GP is used.

PRIOR EXPECTATIONS

Variable	Expected sign with poverty indicator
Inflation	+
Past poverty levels	+
Credit extension	-
GDP growth	-
Money supply	-

THE RESULTS: LONG RUN OVERALL RESULTS

Variable	Coefficient	t-statistic	p-value
Constant	15,10	3,46	0,00***
lnUpperBelow(-1)	0,77	4,74	0,00***
lnCredit(-3)	-0,02	-0,25	0,80
lnM2(-2)	-0,20	-1,93	0,07*
lnGDP(-3)	-0,45	-1,91	0,07*
lnInf	0,61	4,41	0,00***
R-squared	0,96	F-statistic	85,61
Adjusted R-squared	0,95	Probability (F-statistic)	0,00***

*** ** * Indicates statistical significance levels at a 1%, 5% and 10% respectively

THE RESULTS: LONG RUN

- In the long run, a 10% increase in the supply of money 2 years ago, to those who live below the poverty line, will decrease current poverty by 2,0% in GP.

- Money supply plays a statistically significant role in reducing poverty in GP. However, as in the case of the other financial proxy variable, the reaction is very low and most probably not a policy option to consider.

- GDP on the other hand does have a larger impact on reducing poverty in Gauteng given that in the long run, a 5% increase in economic growth three years ago will reduce current poverty in Gauteng by 2,25%.

- Inflation has a determinantal effect on the lives of the poor. A 1% increase of current inflation will imply that current GP poverty increases by 0,61%.

- In the long run, this explanatory variable has the 2nd largest impact on poverty as poverty seems to be quite sensitive to inflation.

THE RESULTS: SHORT RUN OVERALL RESULTS

Variable	Coefficient	t-statistic	p-value
Constant	-0,02	-1,06	0,31
ΔlnUpperBelow(-1)	0,72	3,87	0,00***
ΔlnCredit(-3)	-0,11	-1,96	0,07*
ΔlnM2(-2)	-0,25	-1,98	0,07*
ΔlnGDP(-3)	-0,40	-1,40	0,18
ΔlnInf	0,95	3,55	0,00***
R-squared	0,61	F-statistic	5,08
Adjusted R-squared	0,49	Probability (F-statistic)	0,01***

*** ** * Indicates statistical significance levels at a 1%, 5% and 10% respectively

THE RESULTS: SHORT RUN

- A 10% increase in poverty 1 year ago will increase current poverty levels by 7,2%.

- Inflation has a very detrimental effect on poverty in the short run. GP poverty increases by 0,95% when there is a 1% increase in inflation in the same period. Thus people who live below the poverty line are very sensitive to changes in prices.

- The statistical significance of credit extended in the short run changes compared to the long run. It would appear that the poor spend their income, whether it is from salaries, wages or credit borrowed, on basic goods and services such as food; all which are "short-run" expenditures.

- As a matter of fact, in SA, 36% of money borrowed goes toward food expenditure. More startling is that 56% of South Africans cannot afford to borrow (FinMark Trust, 2014).

- These statistics support the small and inelastic credit extended coefficients.

- Ultimately, a 10% increase in credit extended 1 year ago will reduce poverty by 1,1%.

THE RESULTS: SHORT RUN M2 RESULTS

- If there is a 5% increase in the money supply 1 year ago, GP poverty will decrease by 1,25%.

- Although the t-statistic and p-value is statistically significant, poverty reduction is not very sensitive to additional money supply.

- Money supply is a financial proxy variable used in this paper for poverty alleviation.

- The extension of money supply typically drives the demand for goods and services higher which leads to higher inflation.

- Would the expansion of M2 to individuals who live below the upper poverty line lead to higher inflation?

- This question can be argued from the income and expenditure side. If these individuals earn R1 227 a month, their annual income amounts to R14 724 which places them in the lowest income decile, the top 10% poorest of all households.

- The spending of these households contributes as lowly as 0,5% to total spending (StatsSA).

- This is the case for SA, however, spending patterns should not differ dramatically across provinces. So, if this spending is at 0,5% the probability of pushing up inflation is anticipated to be very low when money supply is extended to these individuals. Yet, inflation has a detrimental effect on poverty, especially food inflation.

- Also, it should be noted that the SA CPI basket mostly focusses on the "rich" since expenditure is mostly recorded in the upper income households rather than the lower.
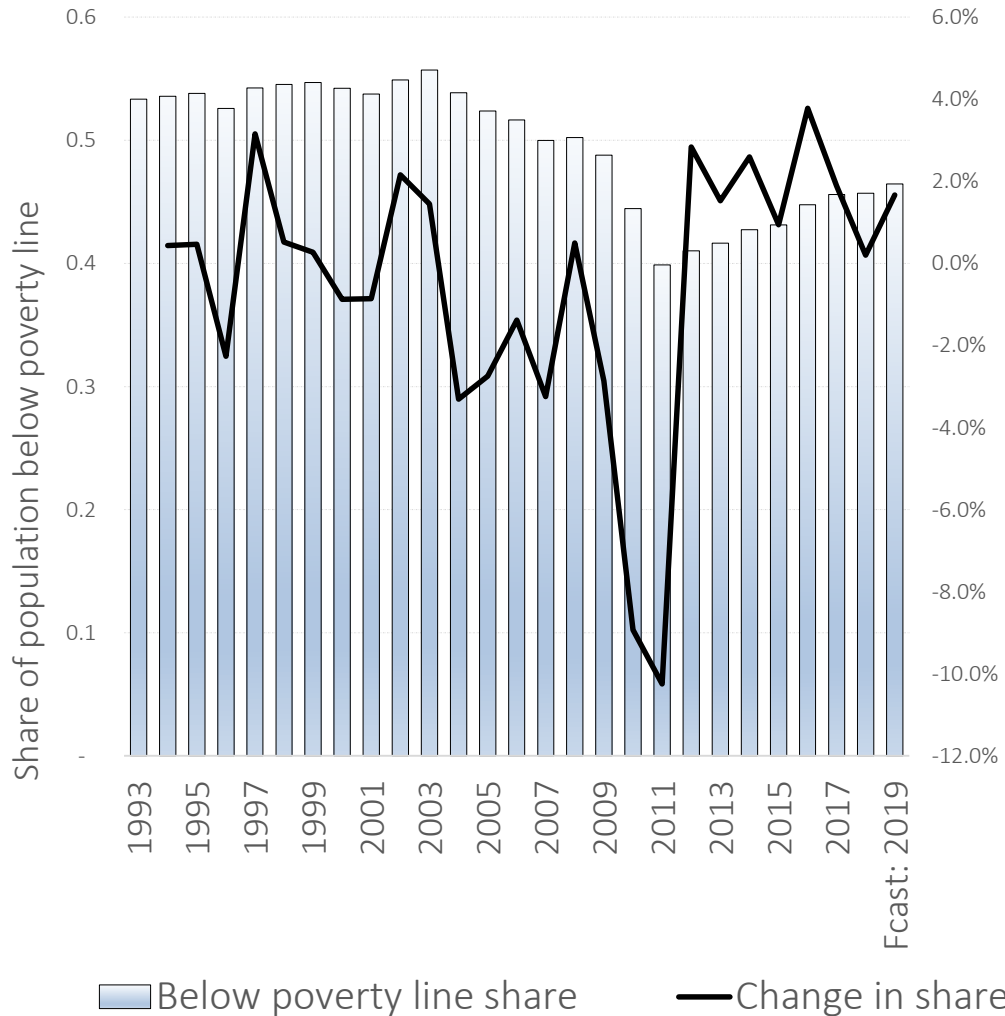
THE RESULTS: SHORT RUN EXPLAINED

- From the short run poverty model estimated in this study, the coefficient for the lagged dependent variable and GDP actually become smaller. To explain the results, it would be an anomaly if the share of the people who live below the poverty line's coefficient is smaller in the long run than the short run since it is evident that over a long period poverty will have become worse.

- People who lived in poverty years ago still live in poverty and so this number continues to grow. As for GDP, economic growth is not felt in the short run but rather over a longer period of time and thus the long run coefficient will be larger than the short run (insignificant in short run model). *This is attributed to the fact that any policy aimed at GDP usually takes 12 – 18 months to have some effect. No instantaneous response*.

- On the other hand, the estimated coefficients of the financial proxy variables and inflation are larger than the long run coefficients. This also makes sense given that these variables have an immediate impact on prices or consumption which plays a critical role in the survival of the poor.

KOYCK TRANSFORMATION RESULTS

- $Median\ lag: -\left(\frac{log2}{log0,77}\right) = 2,65$

- $Mean\ lag: \frac{1}{1-0,77} = 3,35$

- From first observation, it is evident that poverty in GP adjusts very slowly to credit extended, money supply, economic growth and inflation in the long run.

- According to the results of the median lag calculation, the first 50% impact of changes in the explanatory variables will be felt in more than 2.5 periods.

- The full impact is felt after more than 3 periods. This long adjustment period is also due to the fact that the estimated coefficients are relatively small. These results have important implications for policy makers who wish to impact poverty by the specific variables.

THE RESULTS: FORECAST

- The dynamic in-sample forecast exhibits a RMSE of 2,4%.
- Forecast: 6.62 million individuals in 2019 vs 6.38 million in 2018.
- This implies that the share increases from 45,7% in 2018 to 46,4% in 2019.

CONCLUSION

- Reducing poverty in the economy is at the forefront of policy making decisions and features substantially in key economic strategy documents like the NDP and TMR agenda.

- If economic growth does not occur, poverty cannot be reduced and vice versa.

- This study sought to ascertain whether financial inclusion has a significant role in reducing GP poverty by including proxy variables for financial inclusion in the model employed.

- macroeconomic variables were also added to the model to determine if they have an effect on poverty.

- The financial variables used were credit extended to GP consumers and SA money supply while the economic variables added were GP GDP and SA inflation.

CONCLUSION CONTINUED

- Financial inclusion does not substantially impact on the poverty indicator used.
- The estimated coefficients of credit extension and money supply are very small, implying an inelastic response of poverty to financial inclusion.
- As a matter of fact, credit extension in the long run was not statistically significant.
- This points to the fact that the less privileged spend money or credit received on immediate consumption of basic foodstuffs.
- The impact of the financial inclusion proxy variables is slightly larger in the short run model implying that financial inclusion policies are most suited for the short run rather than the long run.
- Inflation was found to have a determinantal effect on poverty levels in the long and short run.
- GDP growth was statistically significant in the long run model and had the third largest impact on poverty.
- 50% of the change in poverty as a response to changes in credit, money supply, GDP, inflation and past poverty will occur in slightly over 2.5 years whilst the total change takes effect in 3.3 years.

CONCLUSION CONTINUED

- The data had to be extrapolated based on the underlying trend in the data.

- Need for credit extension data from the banks.

- Additional financial proxy variables can be added in the future to expand the study.

POLICY PROPOSALS

- GDP impact on poverty is most significant in the long run, policy proposals and formulation should aim at short run application that will improve the long run.

- Inflation has an adverse effect on poverty and must be counter acted. Especially if inflation emanates from the supply side where in recent years consumption taxes such as VAT has increased and higher petrol prices etc.

- Financial inclusion as a policy intervention in reducing poverty will not per say mitigate the issue of poverty, at least not the two proxy variables for financial inclusion used in this paper; especially since the estimates indicate that poverty in GP is not sensitive to credit extended and money supply.

- It is proposed that instead of total credit extension, components of credit should be considered and what it is used for. For instance, credit extended to obtain qualifications.

- In overcoming poverty policy should consider availing more skills training opportunities post matric for example world class artisan training

THANK YOU