

The Efficiency and Sustainability of Co-operative Financial Institutions in South Africa

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DECLARATION

By submitting this dissertation, I, Master Mushonga, declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third-party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Signature:

Date: December 2018

Master Mushonga

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Africa, 23-25 August 2017 (The co-operative movement in South Africa: Can financial co-operatives become sustainable enterprises?); and (vi) The Economic Society of South Africa (ESSA) 2017 Biennial Conference, Rhodes University, Grahamstown, South Africa, 30 August; 01 September 2017 (Cooperative Financial Institutions in South Africa at Cross Roads: Facing Reality and the Future).

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ABSTRACT

Co-operative Financial Institutions (CFIs) are proving to be an effective tool for grass-root innovation to bring about local sustainable development. As a result, not only are financial co-operatives improving the financial well-being of their members but they are also an instrument to enhance social cohesion in societies experiencing poverty and inequalities. The power of collaboration in CFIs helps members to help themselves collectively in tackling financial exclusion. Their response to the perceived failure of the mainstream banking system to serve marginalized communities had received global recognition. CFIs' global membership and total assets are showing a strong growth trajectory supported by deregulation in some countries. In transition and mature economies, mergers and acquisitions are becoming popular growth strategies to sustain the cooperative movement. A driving force encouraging merger activity has been the pressure to cut costs and remain competitive. Despite having a third of the world's CFIs, Africa's contribution to the world CFIs in terms of membership and total assets is insignificant.

The co-operative movement in South Africa has come a long way, but the results of such a long revolution are yet to be seen despite an enabling legislative environment and government incentives which increased their formation from 4,000 in 2004 to 132,000 in 2016. The sustainability of these co-operatives outside government grants is very doubtful, with most of them just appearing on paper without any meaningful economic activity happening on the ground. For co-operatives to be truly sustainable they need to work towards full implementation of the co-operative movement principles and values through a bottom-up approach to co-operative formation by reducing their overdependence on the state. In order to understand the challenges facing South African CFIs the questions addressed in the study have been organized into four empirical essays whose objectives, methodology, findings and recommendations are discussed in the following four paragraphs sequentially.

The first essay examines the financial sustainability of community-owned financial institutions in their contribution to the social and ecological well-being, which makes the research of immense interest to ecological economists. The study utilized a CFI dataset of audited financials from South Africa with 202 observations for the period 2010–2017. Evidence show that South African CFIs are financially unsustainable at 91.3% against a benchmark of 100%. The regression results further suggest that return on assets, deposits, cost-income ratio, loans-to-assets ratio, investments-to-assets ratio and grants are the major determinants of financial

sustainability. To improving CFIs' financial sustainability requires a swift enhancement in efficiency by reducing costs, credit risk and grants reliance whilst improving revenue generation through product diversification and embracing new innovative delivery channels that reduce transaction costs. The ultimate objective of financial sustainability is to help CFIs contribute effectively to sustainable development by helping more poor people. The financial sustainability of community-owned financial institutions is crucial as they are an intergenerational endowment, as current members have to pass on to future generations the accumulated commonly-owned wealth inherited from past generations.

The second essay examines the CFIs' dual objective of attaining social and financial efficiency in their role of improving access to financial services for the poor and marginalized communities. The study employed the two-stage double bootstrap data envelopment analysis (DEA) methodology on unbalanced panel. The results from the first stage give evidence that industry is socially and financially inefficient at 91.6% and 61.57% respectively. Second stage results suggest that size does matter in improving efficiency whilst age does not matter, return of assets is important but not significant, whilst average savings balance per member improves financial efficiency but has a negative significant impact on social efficiency. In addition, the capital adequacy ratio has a negative significant impact whilst the association of the CFI to a group negatively affects its social and financial efficiency but not significantly. Our findings are of interest to CFI management, regulatory authorities and the CFI trade association to implement a number of bold measures such as an industry strategy, business skills in leadership, driving growth and an effective asset allocation approach.

The third essay investigates productivity change of South African CFIs using both unbalanced and balanced panel dataset of 192 and 120 observations respectively for the period 2010-2017. The study employed a bootstrap DEA-based Malmquist Productivity Index (MPI) approach to estimate the productivity change. Results on unbalanced dataset indicate that CFIs have experienced an annual productivity regress of 3.9% on average, which is mainly attributable to technical efficiency change decline of 12.3%. Analysis by CFI type indicates that cooperative banks experienced productivity gains, whilst savings and credit cooperatives and financial services cooperatives had a productivity regress. Results on a balanced panel of 15 CFIs show productivity marginal regress of 0.2% annually. A second-stage bootstrapped regression analysis is employed to investigate the impact of some environmental variables on productivity change scores. Results reveal that financially sustainable CFIs have a higher productivity and

technological progress than otherwise. Results also show that mature CFIs tend to experience lower productivity compared to their younger ones.

The fourth essay examines the performance drivers and inhibitors in South Africa's CFIs by employing a hybrid Delphi-SWOT study. Issues generated by 36 experts over four rounds of questionnaires suggest that the sector is suffering more from internal than external inhibitors. From the 22 future developments identified by these experts, six growth strategies within the control or influence of management were drawn in the areas of technology, people, marketing, culture shift, environmental and policy interventions. The study presents a CFI performance ecosystem based on identifying key drivers, inhibitors and strategies to achieve high-performance growth.

The overarching evidence presented in this thesis suggests that CFIs in South Africa can play a significant role in improving the social and financial well-being of its members and society provided that they work toward achieving financial sustainability of their operations through cost reduction strategies, credit risk management and reducing their dependency on grants. At the same time, there is a need to put in place growth strategies to recruit more members and mobilize more savings as the current scale of operations is low resulting in marginal social impact and financial performance. The industry will need to consider reducing their asset allocation in investments to free up financial resources to lead members to improve both social and financial efficiency. More importantly, the industry needs to improve managerial capabilities, technological adoption, governance structures, public perception and its outreach for the industry to play a meaningful and significant role.

DEDICATION

I would like to dedicate this thesis to my late young brother, my best friend and my motivator, Crebbie Mushonga, whose life and character was an inspiration to me but was suddenly cut short during my study period. He had much interest in whatever I was doing and I also had great interest in his life. May you please rest in eternal peace, we shall meet again, I will guide the family through. I salute you.

TABLE OF CONTENTS

DECLARATION.....	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT.....	vi
DEDICATION.....	ix
LIST OF TABLES	xvi
LIST OF FIGURES	xviii
LIST OF ACRONYMS	xix
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 INTRODUCTION.....	1
1.2 STATEMENT AND SIGNIFICANCE OF THE RESEARCH PROBLEM	3
1.3 RESEARCH QUESTIONS.....	7
1.4 RESEARCH OBJECTIVES	7
1.5 MOTIVATION: WHY THE STUDY OF PERFORMANCE IS IMPORTANT	7
1.6 THE MAIN CONTRIBUTION OF THE STUDY	9
1.7 THE STRUCTURE OF THE THESIS	9
1.8 REFERENCES.....	11
CHAPTER TWO	15
CO-OPERATIVE FINANCIAL INSTITUTIONS PERFORMANCE EVALUATION OVERVIEW	15
2.1 INTRODUCTION.....	15
2.2 THE IMPORTANCE OF CFIs IN REDUCING CREDIT MARKET FAILURE ...	16
2.3 THE ECONOMIC THEORY OF FINANCIAL COOPERATIVES	18
2.4 THE GROWTH AND DISTRIBUTION OF CFIs WORLDWIDE.....	20
2.4.1 Stages of CFI development and market classifications	22
2.4.2 CFIs growth strategies along the developmental stages	25

2.5	EMPIRICAL REVIEW OF CFIs PERFORMANCE POST RESTRUCTURING ..	26
2.5.1	The impact of mergers on CFI performance and members welfare	26
2.5.2	The impact of internal growth on performance	29
2.5.3	Beyond cooperative: demutualization and the privatization of credit unions....	29
2.6	CONCLUSION	30
2.7	REFERENCES	32
CHAPTER THREE		37
THE CO-OPERATIVE MOVEMENT IN SOUTH AFRICA: AN OVERVIEW		37
3.1	INTRODUCTION.....	37
3.2	THE GLOBAL EVOLUTION OF CO-OPERATIVES	38
3.3	THE CO-OPERATIVE MOVEMENT IN SOUTH AFRICA.....	40
3.3.1	Co-operatives in colonial and apartheid regimes (1892-1981).....	40
3.3.2	The historical developments of financial co-operatives (1981-1994)	42
3.3.3	Post-apartheid regimes (1994-2004).....	44
3.3.4	The co-operative reform period (2004 to date).....	46
3.3.5	Regulatory reforms in the Co-operative Finance sector	49
3.3.6	National Association of CFIs in South Africa (NACFISA)	50
3.4	CFIs GROWTH PATTERNS AND TRENDS (2004 TO DATE)	50
3.4.1	The state of South African CFIs compared to African peers.....	51
3.4.2	The growth trend post-CBDA regulation	54
3.4.3	The composition of CFI categories to overall sector	54
3.5	IMPLICATIONS OF PAST AND CURRENT TRENDS ON SUSTAINABILITY	56
3.5.1	How CFIs can attain sustainability in the provision of inclusive finance.....	57
3.5.2	How sustainable financing promotes socio-economic development	57
3.6	OVERVIEW OF FINANCIAL INCLUSION IN SOUTH AFRICA	58
3.6.1	The structure implications of the banking sector on financial inclusion	58
3.6.2	The significance of the informal financial market in South Africa	59

3.7	CONCLUSION	60
3.8	REFERENCES.....	61
CHAPTER FOUR.....		66
FINANCIAL SUSTAINABILITY OF CO-OPERATIVE FINANCE INSTITUTIONS IN SOUTH AFRICA.....		66
4.1	INTRODUCTION.....	66
4.2	CONTEXTUAL BACKGROUND.....	68
4.3	THEORETICAL FRAMEWORK AND LITERATURE REVIEW	71
4.3.1	Theoretical framework on the role of CFIs.....	71
4.3.2	Financial sustainability concept of microfinance	72
4.3.3	Empirical literature on financial sustainability of microfinance programs	75
4.4	DATA SOURCES AND METHODOLOGY	76
4.4.1	Data and empirical approach	76
4.4.2	Estimation techniques	77
4.4.3	Determinants of sustainability	78
4.5	RESULTS AND DISCUSSION	81
4.5.1	Descriptive statistics results.....	81
4.5.2	Correlation coefficient matrix.....	84
4.5.3	Regression model results	87
4.5.4	Analysis according to legal status.....	90
4.6	SUMMARY AND CONCLUSIONS	91
4.7	REFERENCES.....	93
CHAPTER FIVE		102
SOCIAL AND FINANCIAL EFFICIENCY OF CO-OPERATIVE FINANCIAL INSTITUTIONS IN SOUTH AFRICA.....		102
5.1	INTRODUCTION.....	102
5.2	CONTEXT OF THE STUDY AND CFIs IN SOUTH AFRICA	104
5.2.1	CFIs and double bottom-line objectives	106

5.3	LITERATURE VIEW	107
5.3.1	Theoretical motivation	107
5.3.2	Empirical evidence.....	108
5.3.3	Measurement of efficiency in CFIs.....	115
5.3.4	Data envelopment analysis	115
5.4	RESEARCH METHODOLOGY	116
5.4.1	First stage: Estimation of DEA efficiency scores	116
5.4.2	Second stage: Bootstrap truncated regression.....	118
5.4.3	Research data sources	119
5.4.4	DEA input – output selection.....	119
5.4.5	Explanatory variables.....	122
5.5	EMPIRICAL RESULTS	124
5.5.1	First-stage results: Social and financial efficiency measures	125
5.5.2	Second-stage results: Determinants of social and financial efficiency.....	128
5.6	CONCLUSIONS AND IMPLICATIONS	130
5.6.1	Conclusions.....	130
5.6.2	Managerial and policy implications.....	131
5.6.3	Limitation and areas of further research	132
5.7	REFERENCES.....	133
CHAPTER SIX		141
PRODUCTIVITY CHANGE OF SOUTH AFRICAN CO-OPERATIVE FINANCIAL INSTITUTIONS.....		141
6.1	INTRODUCTION.....	141
6.2	BANKING SECTOR OVERVIEW AND FINANCIAL INCLUSION	144
6.2.1	South African CFIs and their role in financial inclusion	145
6.3	EMPIRICAL LITERATURE REVIEW	146
6.4	METHODOLOGY.....	150

6.4.1	The Malmquist productivity index.....	150
6.4.2	Bootstrapping Malmquist indices	153
6.4.3	Data sources	154
6.4.4	Selection of inputs and outputs	155
6.5	EMPIRICAL RESULTS	156
6.5.1	Descriptive statistics	156
6.5.2	Productivity changes of South African CFIs	158
6.5.3	Productivity growth by CFI	159
6.5.4	Productivity growth by CFI type	161
6.5.5	Productivity change on 15 CFIs based on balanced panel (2010-2017).....	163
6.5.6	Productivity change comparison of unbalanced and balanced panels	164
6.5.7	Second-stage: bootstrap truncated regression analysis	164
6.5.8	Second-stage results: Double bootstrap truncated regression.....	166
6.6	CONCLUSIONS	167
6.7	REFERENCES	168
CHAPTER SEVEN.....		176
DRIVERS, INHIBITORS AND THE FUTURE OF CO-OPERATIVE FINANCIAL INSTITUTIONS IN SOUTH AFRICA.....		176
7.1	INTRODUCTION.....	176
7.2	FINANCIAL INCLUSION IN SOUTH AFRICA AND THE ROLE OF CFIs.....	178
7.3	LITERATURE REVIEW: PERFORMANCE DRIVERS AND INHIBITORS ...	179
7.4	RESEARCH METHODOLOGY	183
7.4.1	The Delphi method: an overview.....	183
7.4.2	The process of assembling expert panel	185
7.4.3	Data collection procedures.....	187
7.5	DATA ANALYSIS	189
7.6	RESULTS AND DISCUSSION	192

7.6.1	Drivers of CFIs' performance	193
7.6.2	Inhibitors of CFIs' performance	195
7.6.3	Future developments to drive CFIs' performance over the next 10 years	198
7.6.4	Strategy development for CFIs' high-performance by 2030	200
7.7	SUMMARY AND CONCLUSIONS	202
7.8	REFERENCES	205
CHAPTER EIGHT		213
SUMMARY, CONCLUSION AND IMPLICATIONS OF KEY FINDINGS		213
8.1	INTRODUCTION.....	213
8.2	SUMMARY OF KEY FINDINGS	213
8.2.1	Global overview of CFIs and the South African perspective	214
8.2.2	Financial sustainability of CFIs in South Africa.....	215
8.2.3	Social and financial efficiency of CFIs.....	216
8.2.4	Productivity change in CFI performance	216
8.2.5	Qualitative performance drivers, inhibitors and the future of CFIs.....	217
8.2.6	Synthesis, implication of the findings and recommendations	218
8.2.7	Contribution and limitations of the study	220
8.2.8	Area for future research	222
8.3	REFERENCES	222

LIST OF TABLES

Table 1.1 Growth trend of CFIs 2009/10 to 2016/17.....	4
Table 2.1 Worldwide Distribution of Credit Unions in 2016	21
Table 2.2 Stages and growth strategies of CFI development.....	23
Table 2.3 Regional location of CFIs and their growth phase (2016).....	24
Table 3.1 A historical perspective on South African co-operatives	41
Table 3.2 The state of CFIs in Africa (2016).....	53
Table 3.3 The trend in the numbers of CFIs from 2010 to 2017 (amounts in Rands).....	54
Table 3.4 The contribution of CFIs categories to the sector in 2017 (amounts in Rands)	55
Table 3.5 The trend of number of players in the banking sector in South Africa	59
Table 4.1 Variables description and supporting literature	80
Table 4.2 Descriptive statistics	82
Table 4.3 Descriptive statistics by legal status	84
Table 4.4 Correlation analysis between variables.....	85
Table 4.5 Results of the regression model	87
Table 4.6 Regression results by legal status	90
Table 5.1 Information on South Africa CFIs (2010 – 2017)	105
Table 5.2 Summary of empirical literature on social and financial efficiency	112
Table 5.3 Summary and justification of DEA input and output variables.....	121
Table 5.4 DEA model variables.....	122
Table 5.5 Descriptive statistics	124
Table 5.6 Correlation coefficient between the efficiency determinants	125
Table 5.7 Social and financial efficiency scores.....	126
Table 5.8 Social and financial efficiency estimates (2010-2017).....	127
Table 5.9 Determinants of financial and social efficiency	129
Table 6.1 Trend in the South African CFIs industry 2010-2017 (in Rand).....	146

Table 6.2 Summary of empirical literature on MFIs and CFIs productivity	148
Table 6.3 Summary statistics of input and output variables (Figures in Rand).....	157
Table 6.4 Productivity change on unbalanced panel (Geometric means).....	158
Table 6.5 Productivity growth by CFI and rankings based on TFPCH.....	160
Table 6.6 Productivity by CFI type (unbalanced panel)	162
Table 6.7 Productivity change on balanced panel (Geometric means).....	164
Table 6.8 Descriptive statistics and correlation matrix of model constructs	166
Table 6.9 Truncated bootstrap regression (2000 iterations)	166
Table 7.1 Comparison of Delphi types	185
Table 7.2a Wilcoxon Ranked Pairs Signed-Rank Test: Rounds III and IV – Strengths	190
Table 7.2b Wilcoxon Ranked Pairs Signed-Rank Test: Rounds III and IV –Opportunities .	190
Table 7.2c Wilcoxon Ranked Pairs Signed-Rank Test: Rounds III and IV – Weaknesses...	191
Table 7.2d Wilcoxon Ranked Pairs Signed-Rank Test: Rounds III and IV – Threats	191
Table 7.2e Wilcoxon Ranked Pairs Signed-Rank Test: Rounds III and IV – Future Developments	192
Table 7.3a Mean rank of Rounds III and IV final ranking – Strengths	194
Table 7.3b Mean rank of Rounds III and IV final ranking – Opportunities.....	194
Table 7.3c Mean rank of Rounds III and IV final ranking – Weaknesses.....	196
Table 7.3d Mean rank of Rounds III and IV final ranking – Threats.....	197
Table 7.3e Mean rank of Rounds III and IV final ranking – Future developments.....	199
Table 7.4 Strategic focus for the next 10 years.....	201

LIST OF FIGURES

Figure 2.1 CFIs theoretical solutions to credit market imperfect information	17
Figure 3.1 Trend in numbers of co-operatives in South Africa	48
Figure 3.2 Distribution of CFIs in South Africa	51
Figure 4.1 The sustainability ecosystem	73
Figure 5.1 Scatter plot of social and financial performance	128
Figure 7.1 Forces that drive and inhibit CFI performance.....	182
Figure 7.2 Procedure for selecting experts	186
Figure 7.3 Process flow of the Delphi study followed.....	188
Figure 7.4 CFI performance ecosystem with arrow width indicating level of importance ...	202

LIST OF ACRONYMS

ACCOSCA	African Confederation of Co-operative Savings and Credit Associations
AFRACA	African Rural and Agricultural Credit Association
BAAC	Bank for Agriculture and Agricultural Cooperatives (Thailand)
BRI	Bank Rakyat Indonesia
BRICS	Brazil, Russia, India, China and South Africa
CAR	Capital Adequacy Ratio
CBDA	Co-operative Banks Development Agency
CBs	Co-operative Banks
CCUL	Cape Credit Union League
CFI	Co-operative Financial Institution
CFSI	Centre for Financial Services Innovation in America
CIPC	Corporate and Intellectual Property Commission
CIR	Cost-to-Income Ratio
CIS	Co-operative Incentive Scheme
CMFIs	Conventional MFIs
CPM	Costs Per Member
CRS	Constant Returns to Scale
DEA	Data Envelopment Analysis
DGRV	German Co-operative Confederation
DMU	Decision Making Unit
DTI	Department of Trade and Industry
EAP	Europe Asia Pacific
ERSA	Economic Research Southern Africa
ESSA	Economic Society of South Africa
FINASOL	Financial Solutions
FSA	Financial Services Authority
FSC	Financial Services Co-operative
FSS	Financial Self-Sufficiency
FWB	Financial Well-Being
GDP	Gross Domestic Product
GLP	Gross Loan Portfolio
GNI	Gross National Income

ICA	International Co-operative Alliance
ICT	Information Communication Technology
IEP	Institute for Economics and Peace
IFAD	International Fund for Agricultural Development
IMFIs	Islamic MFIs
ITA	Investments-to-Assets Ratio
KRNW	Knowledge Resource Nomination Worksheet
LTA	Loans-to-Assets Ratio
M&A	Mergers and Acquisitions
MCI	Microcredit Institutions
MENA	Middle East and North Africa
MFIs	Microfinance Institutions
MIX	Microfinance Information eXchange
MPI	Malmquist Productivity Index
NACFISA	National Association of CFIs in South Africa
NASASA	National Stokvel Association of South Africa
NBFIs	Non-Banking Financial Institutions
NGO	Non-Governmental Organisation
NMFIs	NGO-MFIs
NPLs	Non-Performing Loans
NUM	National Union of Mineworkers
NUMSA	The National Union of Metal Workers of South Africa
OSS	Operational Self-Sufficiency
PAR	Portfolio at Risk
PTECH	Pure Technical Efficiency Change
ROA	Return on Assets
ROE	Return on Equity
ROSCAs	Rotating Savings and Credit Associations
SACCO	Savings and Credit Co-operative
SACCOL	Savings and Credit Co-operative League
SAMAF	South African Microfinance Apex Fund
SARB	South African Reserve Bank
SCB	Secondary Cooperative Bank

SDGs	Sustainable Development Goals
SECH	Scale Efficiency Change
SEFA	Small Enterprise Finance Agency
SFA	Stochastic Frontier Analysis
SMEs	Small to Medium Enterprises
SWOT	Strengths, Weakness, Opportunities and Threats
TCH	Technological Change
TECH	Technical Efficiency Change
TFP	Total Factor Productivity
TFPCH	Total Factor Productivity Change
UN	United Nations
VIF	Variance Inflation Factor
VRS	Variable Returns to Scale
WEF	World Economic Forum
WOCCU	World Council of Credit Unions

CHAPTER ONE

INTRODUCTION¹

1.1 INTRODUCTION

Low productivity is widely acknowledged as the major cause of poverty in economically active poor people (especially women) who fail to fully participate in meaningful economic activities due to lack of access to financial services. By stimulating financial inclusion there is potential to bolster shared economic growth while alleviating poverty. Given that financial inclusion provides access to savings, credit and payments, protects against crises and mobilizes resources essential for investment and consumption, it improves the social and financial well-being of marginalized communities (see Koku, 2015).

It is not surprising that greater access to financial services is recognized as a key enabler for the achievement of most of the United Nations' Sustainable Development Goals by 2030 for the realization of the shared economic development. Even if that is the case, financial exclusion still remains a challenge in most economies as two billion people globally are estimated to lack access to appropriate financial services to help them escape from poverty (Klapper et al., 2016). Over the past decades microfinance, which is the provision of microcredit, micro-savings, micro-leasing, micro-insurance and payment systems, has been celebrated as one of the effective instruments for poverty alleviation after the success of the Grameen Bank model in Bangladesh. The focus was aligned with influential economic theory that linked productive inefficiencies to credit market failure and pinned the problem on inappropriate traditional lending approaches to information asymmetries (see Stiglitz and Weiss, 1981)

In recognition of the role of microfinance in fighting global poverty, the United Nations declared the year 2005 as the International Year of Microcredit, with Grameen Bank and its founder Muhammad Yunus winning a joint Nobel Peace Prize the following year (Armendáriz de Aghion and Morduch, 2005; Bateman, 2010; Nayak, 2015). However, over the past years microfinance has come under heavy criticism from both practitioners and academics over its focus on high profits in the new wave of commercialization of microfinance, resulting in a mission drift from its social goal of poverty reduction (Bateman, 2010, 2011; Sinclair, 2012;

¹ An updated article based on this chapter, "*Can Financial Co-operatives improve South Africans' Societal and Financial Well-Being?*" is under review by the *International Journal of Bank Marketing* for a special issue on *Exploring Financial Well-Being*.

An earlier draft of the chapter was presented at the Economic Research Southern Africa (ERSA) Financial Economics workshop, Pretoria, South Africa, 25 November 2015 titled "*The role of financial co-operatives in South Africa: How efficient and sustainable are they?*".

Hulme and Maitrot, 2014). Some nasty evidence is the suicides of borrowers in Andhra Pradesh in India in 2010 due to coercive loan recovery practices (see CGAP, 2010; Mader, 2013). However, most observers today see microfinance as a useful financial service but not a transformative social and economic intervention (Mossman, 2015). Even sympathetic observers worry that microfinance has lost its moral compass by focusing more on profitability than on the poverty reduction (Hulme and Maitrot, 2014). Recently, Cull and Morduch (2017) seem to reinforce the thinking that microfinance does have modest impact on the socio-economic well-being of the poor despite its growing scale. However, they still believe that “microfinance is far from dead, but it needs fresh thinking” (Cull and Morduch, 2017: 36).

These criticisms motivate the reconsideration of the original microfinance model of Grameen Bank (co-operative microfinance) owned by and serving its members-borrowers where motives for profit maximization are replaced by service and value maximization for members in a sustainable way. David Korten, in his foreword to Hugh Sinclair’s *Confessions of a Microfinance Heretic*, recommended that “instead of commercializing microfinance institutions (MFIs), the goal should be to restructure them as co-operative banks owned by their local borrowers” (Sinclair, 2012: xiii). Korten’s concern is that the poor are dependent on financial institutions over which they have no control. This is different from co-operative financial institutions (CFIs) which build strong social capital as they are owned by member savers and borrowers, rooted in and accountable to the communities they serve, where surplus and interest is recycled locally to support productive local economic activities (Sinclair, 2012).

Similar views are shared by Bateman (2010) who analyzed the success of the bottom-up approach of co-operative banking models in Spain, Italy, Taiwan, South Korea and China, and made a strong recommendation for CFIs as an alternative to conventional microfinance. CFIs foster local development as they fulfil the needs of the society (environment), people and profits since they are owned by the people they serve. This differs from the commercialized MFI model owned and governed by private investors who are motivated by high returns. Since CFIs are member-owned and democratically controlled organizations where each member has equal voting rights regardless of the number of shares, they serve the interests of the majority rather than the needs of a handful of individuals as is the case with commercialized MFIs and traditional banks (McKillop and Wilson, 2015). Given their ownership and governance structure and their focus on understanding and serving local communities, they are better positioned to improve the socio-economic well-being of its members without exploitative motives. This enables vulnerable communities to escape from the poverty trap and over-

indebtedness being reinforced by some MFIs due to high interest rates that seem hard to justify from a development perspective (see CGAP, 2010; Mader, 2013).

There are however concerns about the ability of CFIs to mobilize meaningful savings from their members for onlending since most of them seem to be from disadvantaged groups. Armendáriz de Aghion and Morduch (2005) and Collins, Morduch, Rutherford and Ruthven (2009) posit that savings facilities are more in demand among the poor than credit, and in the absence of proper and accessible savings facilities the poor save their wealth in physical goods, making CFIs better placed to contribute to local economic development. Moreover, CFIs are not just a bank for poor people but for the entire community, comprising the economically active poor, the working class, the middle class and the affluent segment, so that savings of the rich will finance the credit needs of the poor. Therefore, it is not surprising that CFIs are also found in developed economies such as Germany, the United Kingdom (UK), the United States (US), Australia, Canada, New Zealand, France, Spain and Italy, making a huge contribution to the population's socio-economic well-being. Recently co-operatives did a remarkable job of withstanding the financial crisis that started in 2008 (Battilani and Schröter, 2012). This makes financial co-operatives more relevant in countries still battling with poverty, inequality and low entrepreneurial activities such as South Africa. However, understanding their efficiency and sustainability is of paramount importance to ensure appropriate measures are taken for them to continue providing inclusive financial solutions for the economic and social well-being of their members and communities.

1.2 STATEMENT AND SIGNIFICANCE OF THE RESEARCH PROBLEM

For years the government of South Africa has been trying to broaden the appeal of CFIs to address credit market failure and financial exclusion gap (Genesis Analytics, 2014). The economic thinking was that by addressing this gap in a financially sustainable manner, CFIs can become active in the formal financial system of the country by appealing better to the economically active poor, rural households and marginalized communities. When the Co-operative Act of 2005, the Co-operatives Banks Act of 2007 and the subsequent formation of the Co-operative Banks Development Agency (CBDA) in 2009, hopes were very high that the financially excluded groups would enjoy improved financial empowerment at the community level. Therefore, improving their productivity and lift themselves from the circle of poverty through improved income and resilience to life shocks. The government in the mid-2000s envisaged the promotion of CFIs as a way of community empowerment which would address some of the credit market failures in the country and encourage the use of formal financial

services. Government views CFIs as having an important role in the provision of affordable credit and accessible savings facilities among those sharing a common bond.

Despite high expectations on CFIs in economic and social development, the industry's performance has been disappointing due to alarming failure rates and a decreasing outreach (Genesis Analytics, 2014) which calls for a systematic investigation into their efficiency and sustainability practices. It is a survival requirement for CFIs to operate efficiently to fulfil the dual mission of serving the economically active poor and being financially sustainable. The low CFI penetration rate² of 0.06% (WOCCU, 2016) and the high failure rate could be due to inefficiency and unsustainable practices which require a systematic investigation into their operations to understand the causes and make evidenced-based recommendations to management, decision and policy makers to build a vibrant industry. The number of CFIs dropped significantly by 46% and members by 18% from the year 2010 to 2017 although saving, loans and total assets show a good growth record as shown in Table 1.1.

Table 1.1: Growth trend of CFIs 2009/10 to 2016/17

Period	No. CFIs	Members	Savings (ZAR)	Loans (ZAR)	Assets (ZAR)
2010	56	36 434	124,365,000	93,651,000	142,069,000
2011	121	59,394	175,265,000	116,577,000	195,213,000
2012	106	53,240	196,230,000	132,227,000	217,506,000
2013	35	38,084	200,841,000	142,310,000	220,800,000
2014	26	33,391	198,624,948	140,463,755	231,367,670
2015	26	24,721	201,101,522	152,143,102	236,533,481
2016	30	29,752	233,763,289	179,338,526	279,624,000
2017	30	29,818	228,216,993	202,160,606	293,493,697
% 2010-2017	-46.4	-18.2	83.5	53.7	51.6
% 2011-2017	-75.2	-49.8	30.2	42.3	50.3

Source: Author's own compilation based on CBDA and SARB Annual Reports

The CBDA in its annual report advise that “this drop was primarily because of their failure to meet the minimum requirements of R100,000 in capital and 200 members, and *because of insolvency*” (CBDA, 2014: 44). This trend is different from the global picture presented by the World Council of Credit Unions (WOCCU), a global trade association for CFIs, which showed their numbers reaching 68,882, with total assets of \$1,8 trillion and serving 236 million members in 2016, up from 49,134, \$1,2 trillion and 177 million respectively in 2007 despite the impact of the global financial crisis (WOCCU, 2016). South Africa has the lowest CFI

² Penetration rate is calculated by dividing the total number of reported co-operative financial institutions (CFIs) members by the economically active population age 15–64 years old.

penetration rate in the world at 0.06% compared to Kenya (13.3%), Rwanda (13.8%), Togo (26.7%), Korea (11.5%), Nepal (17.2%), the Caribbean region (56%), Australia (17.6%), Canada (46.7%), the US (52.6%), Ireland (74.5%) and the worldwide average of 13.5% (WOCCU, 2016). This makes performance evaluation of these member-owned financial institutions important to provide evidenced-based recommendations to assist in setting benchmarking goals that are measurable, attainable and actionable

To the knowledge of the researcher, no study has made an attempt to evaluate the performance of CFIs in South Africa. The present study is the first attempt to empirically study the performance of the CFIs in South Africa, so as to identify the best and worst practices associated with high and low performers. Understanding the efficiencies and sustainability of CFIs is a major stepping stone in identifying strategies to implement to have a robust industry. The study is important for South Africa where 8.5 million are still excluded from the formal banking system according to the FinMark Trust (2015). In addition, the study will make a contribution to the growing empirical literature on efficiency and sustainability of CFIs. The contributions of co-operatives to their members and communities are many provided they operate efficiently and sustainably.

South Africa is the most unequal country in the world, with a Gini coefficient of 63.4% in 2011 from 59.3% in 1993 (World Bank, 2018). According to a FinMark Trust (2015) survey, about 8.5 million adults are still financially excluded, despite the country having a well-developed and stable financial services sector by international standards. Data from the National Credit Regulator reveals that 40% of credit-active consumers have impaired status, which means they have in some way failed to meet their obligations. This is unsurprising as the country came last in a poll of 30 countries drawn globally when measuring consumer financial knowledge (OECD, 2016). On the other hand, the social fabric seems to be weakened by the high crime rate, racism and xenophobic attacks that have become associated with South Africa. It not surprising that the Global Peace Index of the Institute for Economics and Peace (IEP) ranks South Africa among the most dangerous countries in the world at position 123 out of 163 countries. These levels of violence and insecurity have a massive impact on the economy, with IEP measuring the cost of violence in South Africa at 22.3% of GDP, or US\$144.2 billion (R1.92 trillion) (IEP, 2017). Unemployment, especially among the youths and women, is currently estimated at 27.7% and is also one of the social challenges the country is faced with (SARB, 2017: 24).

In recognition of the importance of broadening access to financial services to reduce low productivity and poverty, the South African government has tried many initiatives since 1990. These attempts include exemption from the Usury Act of loans below R6,000 in 1992 which was intended to open up access to micro-loans for emerging entrepreneurs by scrapping the interest ceiling and the launching of the low-cost Mzansi basic bank account in October 2004 for the previously unbanked. These initiatives have had some successes and some drawbacks. Under the Usury Act consumers were being charged exploitative rates pushing the financially illiterate borrowers into a debt-trap, whilst the Mzansi account managed to assist the poor to have basic transaction and savings accounts but they lacked access to credit facilities, resulting in more than 42% of the six million accounts becoming dormant by the end of 2008. This initiative stopped as the big banks evaluate the account as not profitable since customers were not graduating to more mainstream banking services with a higher earning potential which could result in the cross-subsidization of the Mzansi account as only 12% had graduated to mainstream accounts (see Schoombee, 2009 for a detailed study).

CFIs have a great potential to contribute to the socio-economic progress to South Africans as social ties (common bond) seem to be strong for co-operative finance to be embraced as an instrument to improve access to financial services. A survey done by Old Mutual (2017), reveals that nearly three-quarters of working South Africans use informal savings as their savings and investment vehicles, with 53% of them using stokvels, while 32% and 16% are using burial societies and grocery schemes respectively. 50% of respondents indicated that they had borrowed at least once an average of R4,660 in the past year to smooth household consumption and accumulate assets. In the same survey, 14% indicated that personal borrowings are from financial institutions (22% in 2016), while 13% borrow from families and friends, and 6% from a microlender.

Co-operatives have the ability to contribute to community development in various ways, through enhancing social capital and trust, rebuilding the social fabric, bringing sustained economic development to the grassroots through improved access to financial services. In addition, the circulation of money within communities is believed to enhance the local economy and better economic returns. The study of the performance of CFIs to contribute to their growth is not only beneficial to the members and local communities but to the whole economy and beyond in empowering the poor to help themselves.

1.3 RESEARCH QUESTIONS

Based on the research problem discussed above, the research questions answered by this research are:

1. How financially sustainable are co-operative financial institutions in South Africa in providing financial services to their members and communities, and what are the major determinants?
2. What are the social and financial efficiency levels for CFIs in South Africa, and their determinants?
3. What is the productivity change of CFIs' performance over time in South Africa?
4. What are the qualitative performance drivers, inhibitors and future growth strategies for CFIs in South Africa?

1.4 RESEARCH OBJECTIVES

The major objective of this research study was to conduct an empirical investigation on the efficiency and sustainability of CFIs in South Africa and its determining factors. To make the study more manageable the main objective was sub-divided into the following specific objectives:

1. To empirically investigate the level of financial sustainability of CFIs in South Africa and the factors that contribute to such performance.
2. To benchmark the level of social and financial efficiency of CFIs in South Africa and the determining factors in achieving their dual mission.
3. To analyse productivity changes and their drivers over time in South African CFIs.
4. To understand the qualitative drivers and inhibitors of CFI performance and suggest growth strategies that will drive high performance in the future.

1.5 MOTIVATION: WHY THE STUDY OF PERFORMANCE IS IMPORTANT

Efficiency in production theory refers to the conversion of inputs into outputs. It is concerned with optimal combination of inputs to produce maximum outputs or producing given outputs with the least possible quantity of inputs, hence minimizing waste (Widiarto and Emrouznejad, 2015; Banker and Cummins, 2010; Brown and O'Connor, 1995). Despite the importance of efficiency and sustainability measurements, performance monitoring and improvement, there is a dearth of research in Africa on the measurement of CFI efficiency. Paradi and Zhu (2013) and Coelli et al. (2005) acknowledge that efficiency and productivity measurements are of great

importance in building a robust industry. In CFIs it means that efficient and sustainable institutions will continue to serve the financially excluded poor in a sustainable way.

When a CFI pursues efficiency, it needs to concentrate on activities that yield better performance at minimum cost to the units and to members. Hence, attention will be given to good segment targeting, an effective and ethical marketing strategy, the designing of member-centric product lines and the gradual removal of bottlenecks in the provision of financial solutions. In so doing, the CFI will be contributing not only to enhanced performance but also to the improved social and economic well-being of their members. Early research highlighted that credit union movements in most economies were characterized by increasing returns to scale. This provides a motivation for growth-led strategies by credit unions (either internally generated or via mergers and acquisitions) and for regulation permitting expansion of the common bond.

Desrochers and Lamberte (2003) utilized parametric approaches to investigate the efficiency of co-operative rural banks in the Philippines, and found that co-operative rural banks with good leadership structures were more efficient than their bad governance practicing counterparts. Labie and Périlleux (2008) identified the sources of bad corporate governance in CFIs which affect performance as “moral hazard” conflict between “net borrowers” and “net savers”, conflict between owners and managers, conflict between the members and their elected board of directors, and conflict between (paid) employees and volunteers. Social capital, peer monitoring, and a culture closely linked to the mission and the co-operative spirit are essential to counter some of the challenges. Whilst, effective leadership and organizational restructuring are required to remove some of the governance inefficiencies for better performance.

Haq et al. (2009) studied a sample of 39 microfinance programs in developing economies across Latin America, Asia and Africa, and found that Asia has the most efficient microfinance programs due to large population densities and low staff wages. Other factors, such as strong outreach and low operating expenses, have also helped Asian MFIs to be efficient. However, South Asian MFIs are relatively more efficient than their counterparts in East Asia. These differences in efficiency may be the result of various lending methodologies applied by the Asian MFIs. Many Indian MFIs, for example, reduce their staffing costs by lending to self-help groups rather than to individual borrowers. CFIs have cost advantages over other

microfinance programs through the use of volunteers, low transaction and monitoring costs. These low-cost advantages are expected to translate to value maximizations for member.

Co-operatives have a huge role to play in addressing allocative inefficiencies which result in market failures in an economy. Being voluntary member-owned and democratically controlled organizations, they pull their members' resources together to solve a common problem by building social capital, reducing information asymmetry, enhancing members' economic activities, improving productivity and eventually the financial well-being of their members and their communities (Battilani and Schröter, 2012). CFIs have proved in many ways that they are better placed to improve society's financial well-being. They help members navigate financial challenges through an array of services, mainly making savings in times of surplus thereby building a financial record which they will use to take out insurance or borrow to cope with foreseen or unforeseen events.

1.6 THE MAIN CONTRIBUTION OF THE STUDY

The investigation and analysis undertaken in this thesis makes some major contributions to the empirical literature on CFIs in the following ways. It includes the survey of the published and publishable academic articles in the field of CFIs sustainability, efficiency and productivity. Therefore, the thesis extends the empirical literature focused on performance of member-owned community financial institutions. To the best of the author's knowledge, this thesis presents the first comprehensive assessment and evaluation of the co-operative finance industry in South Africa. The thesis is first to analyse performance of CFIs with bootstrapped data envelopment analysis.

The thesis also makes an important methodological contribution in terms of illustrating how a hybrid Delphi-SWOT technique can be used to solicit expert opinion to generate useful insights into a research agenda. The participation of the industry practitioners in the survey increases the chances of the recommendations being implemented as they take ownership rather than it being seen as "*another academic research*" which will end up on the shelf and not on the tables of decision makers. Finally, it provides the thesis legitimacy as a policy document that can serve as a reference in policy making process in strengthening the sector to better respond to the needs of the low-income groups of the society.

1.7 THE STRUCTURE OF THE THESIS

The thesis comprises eight chapters. Following the introductory chapter, Chapters 2 and 3 give an overview of the co-operatives movement globally and South Africa respectively. The four

main objectives of the thesis are addressed and organized in article form in Chapters 4, 5, 6 and 7. Since the chapters are organized in publishable papers there is some repetition, mostly in the introduction and overview sections of each of the empirical papers. Since each empirical paper looked into different themes each, there are different literature reviews in these chapters.

Chapter 2 presents a global overview of the co-operative movement narrowing down to co-operative financial institutions (CFIs) looking at their economic theory, the role in the world economy, development patterns across the world, growth strategies and how they are evolving into global players through mergers, acquisitions and demutualization. The chapter also looks at CFI performance post restructuring or strategic alliance. This chapter gives a perspective on where Africa stands in relation to the overall movement, showing that although the continent contributes a third of total global CFIs, its contribution to total membership and total assets is just 9.86% and 0.52% respectively.

Chapter 3 provides an overview of the co-operative movement in South Africa since 1892 and how the government facilitated or hindered their growth through the historical periods. Government policies and actions are analysed, as is the growth trend of the industry from 2003/2004 to date. South African CFIs are compared to their African peers which revealed that the country had the lowest penetration rate in Africa at 0.06%. The growth pattern of CFIs is also discussed, their growth opportunities, financial inclusion levels and how the banking structure contributes to financial exclusion and the opportunities for CFIs. The overview also analyses the contribution of the sub-CFI groupings to the overall position, setting the stage for an empirical study on financial sustainability.

Chapter 4 investigates the level of financial sustainability in the South African CFI industry through an FSS index built from CFIs financial statements. Results show that the industry is not financially sustainable, which might affect its social impact. Factors that are contributing to such performance were identified, with high cost structure, donation and credit risk contributing to the unsustainable performance level. Investment of the poor's savings in financial instruments is criticized, and how financial sustainability will have an impact on social and environmental performance is discussed. A sub-sample study reveals that some factors affect them differently and the co-operative banks sub-sample was found to be financially sustainable whilst Savings and Credit Co-operatives (SACCOs) and Financial Services Co-operatives (FSCs) are not.

Chapter 5 examines the efficiency of CFIs in meeting their social and financial objectives: our bootstrapped data envelopment analysis (DEA) results show their inefficiency in both. Social inefficiency is very high as CFIs are not reaching out to more members, and financial investments take a substantial portion of assets meant for lending to members. This proves that to achieve social performance, CFIs need to achieve their economic goals first. Contributing factors are analysed.

Chapter 6 analyses the productivity of the industry over the period 2010 to 2017 using DEA Malmquist Productivity Index and the results explain that industry is completely stagnant in its performance. This means there is no innovation taking place in the industry to improve its efficiency or improvement in managerial acumen to restructure so that there is optimum utilization of inputs or reduction of intermediation wastage to improve output or impact to members. The same also applies to the scale. Analysis by sub-samples reveal that FSCs which are mainly rural-based experienced an average productivity regress of 2.8% per annum over the 8-year period.

Chapter 7 looks at a survey using a hybrid SWOT-Delphi approach by engaging CFI experts. A diversify number of performance drivers and inhibitors were identified. Appropriate strategies are suggested to contribute to the growth agenda of the industry. Mainly, CFIs need to innovate and adopt the technology diffusion in their operations, address negative perceptions about the industry, strengthen their corporate governance and revamp their outreach strategy.

Chapter 8 presents the overall conclusion of the thesis. The summary and policy implications of the study are first presented and discussed. Managerial recommendations emanating from the research are also presented. The chapter concludes with the contribution of the study, its limitations, as well as suggestions for future research.

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CHAPTER TWO

CO-OPERATIVE FINANCIAL INSTITUTIONS PERFORMANCE EVALUATION OVERVIEW³

2.1 INTRODUCTION

There is overwhelming empirical evidence revealing that access to financial services can reduce households' vulnerability, increase productivity and incomes and stimulate entrepreneurial activities (King and Levine, 1993; King and Levine, 1993a; Levine, 2004; Merton and Bodie, 2004; Seidman, 2005; Armendáriz de Aghion and Morduch, 2010; Nayak, 2015). The development of inclusive financial services has been recognized by policy makers the world over as an important issue on their economic and political agendas to stimulate much needed inclusive economic growth and poverty reduction (see Beck and Demirgüç-Kunt, 2008; Du, 2017; Périlleux, 2013).

CFIs or credit unions are being recognized as an effective development finance instrument to collectively mobilize members' financial contributions for onward lending to the same members who share a common bond as opposed to reliance on outside funding. The common bond prerequisite is predominantly vital. It is a common interest that the members share and is there to confirm that the CFI committee making credit decisions has information of the character and personal history of the member seeking a loan and can make a quick decision based on an applicant's standing and savings profile, rather than on income and collateral (McKillop et al., 2007). CFIs are a grassroots innovation from the same population segment, which benefits from the innovation through collaborative efforts to achieve sustainable development. Inclusive innovations are concerned with the missing institutions as the benefits of mainstream innovations fail to reach the bottom of the socio-economic pyramid.

The United Nations (UN) reaffirmed the importance of cooperatives by declaring year 2012 as the International Year of Cooperatives in recognition of their role in advancing inclusive growth and social integration. In addition, the International Summit of Cooperatives, a biennial gathering, is being held in Quebec starting from 2012 to discuss how cooperatives can be used

³ An article based on this chapter, "*Co-operative Financial Institutions Performance Evaluation (Formation, Transition and Consolidation): An Overview*" is under review by the journal *Strategic Change: Briefings in Entrepreneurial Finance* for a special issue on *Collaborative Methods of Development*.

An earlier draft of the chapter was presented at Imbizo Research Network, University of Stellenbosch Business School, Cape Town, South Africa, 14 September 2017 titled "*The global co-operative movement: A reflection of the challenges and opportunities for financial co-operatives*".

as an instrument to attain some of the Sustainable Development Goals (SDGs) by encouraging grassroot collaborative efforts. Their image was further enhanced by their resilience to the global financial crisis compared to investor-owned banks which are more profit-oriented (see Birchall, 2013; Becchetti et al., 2016). The ultimate goal of a CFI is to maximize members' benefits through continuous performance improvement by quickly reaching the mature phase through economies of scale to have a competitive advantage. In search for enhanced efficiency and sustainability in the mature stage, CFIs face growth challenges with restructuring through mergers, acquisitions and demutualization becoming some of the available growth strategies. One will ask, what is the impact of CFIs as a collaborative method in enhancing members' welfare along their life cycle?

The objective of this exploratory study is to provide a performance evaluation of CFIs along the developmental stages on their ability to maximize benefits to members and society using a collection of previous empirical literature. This conceptual and empirical study will set the stage for empirical studies on CFIs' performance evaluation in a country-specific context.

The chapter is arranged as follows: Section 2.2 highlights the importance of CFIs in addressing financial markets failures, Section 2.3 discusses the economic theory of financial cooperatives, Section 2.4 covers the growth and distribution of CFIs with their performance evaluation in enhancing members' welfare, while Section 2.5 discusses the impact of mergers, acquisitions and other growth strategies on performance and Section 2.6 concludes the chapter.

2.2 THE IMPORTANCE OF CFIs IN REDUCING CREDIT MARKET FAILURE

The exceptional feature of CFIs is that they assist in reducing the transactional costs and information opacity that is rampant in the credit markets. Information asymmetry in the credit market leads to adverse selection problems where less creditworthy individuals/firms are considered for credit which will lead to defaults or moral hazard. To circumvent these challenges, mainstream banks do credit rationing by limiting credit (Stiglitz and Weiss, 1981). CFIs have an information superiority over banks for a certain category of borrowers; this position them to break the information problem that results in credit rationing in mainstream banking, thus promoting a "functional financial system"⁴ in the words of Merton and Bodie (2004). This unique advantage enables them to provide appropriate financial services, especially loans, where other financial institutions are facing lack of tangible collateral in

⁴ A functional financial system is regarded as the most efficient intermediation of surplus and deficit units being that information regarding parties involved is freely or less costly available in the credit market.

intermediating for such low-income clients. These attributes in theory refer to “complete” appreciation of the local community which allows them to carefully select potential members, thus effortlessly and swiftly detecting possible bad debtors, hence lowering transaction costs from decreased selection and monitoring costs (Black and Duggar, 1981; Brown and O’Connor, 1995; Ward and McKillop, 2005). Low-cost information acquisition makes financial cooperatives an effective instrument in fighting financial exclusion through collaborative efforts of members.

Seidman (2005) identifies two advantages that emanate from circumventing capital market imperfections. The first is improved economic efficiency and productivity as the previously credit-rationed firms/individuals can access and use capital more productively. Secondly, socio-economic advantages are generated from providing capital to enterprises (activities) which yield favourable results which private capital does not sufficiently value (for example reduced redundancy or environmental protection). Figure 2.1 below highlights possible lending challenges in the credit market and the hypothetical safeguards that financial cooperatives (group lending methodology) use to circumvent the imperfect information problems prevalent in credit markets (Simtowe and Zeller, 2006; Armendáriz de Aghion and Morduch, 2010; Périlleux, 2013).

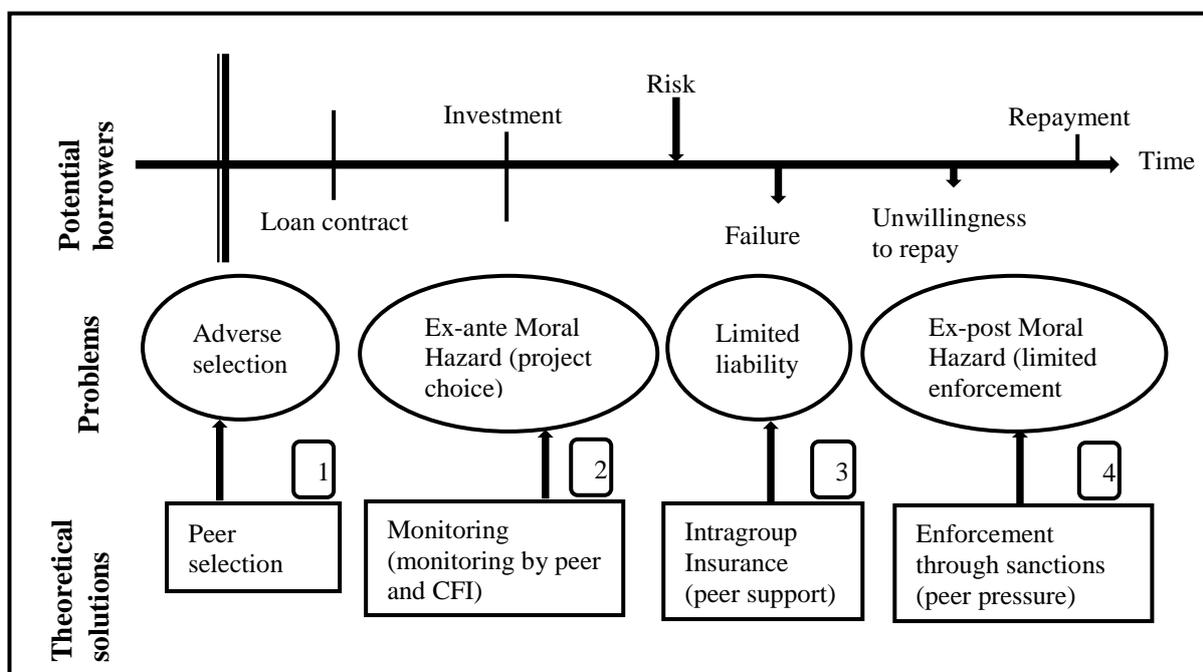


Figure 2.1: CFIs' theoretical solutions to credit market imperfect information

Source: modified from Simtowe and Zeller (2006)

In the cooperative model the adverse selection problem prevalent in the credit market is reduced through peer selection of members who are known to be creditworthy or trustworthy. Peer monitoring in CFIs is a solution to the challenges of *ex-ante moral hazards* to ensure that the business a borrowing member chooses and invests in is less risky or can be well managed to achieve expected results. Again, the theoretical solution through peer pressure in CFIs assists to manage the *ex-post moral hazards* where a member will not be willing to repay loans after the business has been successful (*strategic default*). CFIs in theory are anticipated to be more effective owing to information acquisition advantage, peer selection and peer monitoring as members know each other's habits given the social capital in the shared common bond. However due to their small size of operation, they may fail to realize the economies of scale and suffer from high operating costs. This concern has been raised in some empirical literature which demonstrated that in some instances they are inefficient (Brown and O'Connor, 1995; Desrochers and Fischer, 2005; McKillop et al., 2005). This motivates the interest to understand their performance levels in the accomplishment of their poverty alleviation and financial sustainability objectives.

2.3 THE ECONOMIC THEORY OF FINANCIAL COOPERATIVES

CFI owners are both the providers of finance and consumers of credit and surplus income hence CFIs may not be regarded as having the definite objective of shareholders wealth maximization as in the typical neoclassical theory of the firm (Power et al., 2014; Marwa and Aziakpono, 2015; Davis, 1997). Credit unions, being collaborative self-help organizations, are positioned towards achieving social and economic goals of members and the broader society (Seidman, 2005; McKillop and Wilson, 2011). Naturally, nearly all CFI customers are its members who generally share a common bond of association founded on workplace (industrial CFIs), religion (parish CFIs) or residential location (community CFIs). Sharing of the common bond has the benefit of lowering transaction costs, *ex-ante* and *ex-post moral hazards* which are usually dominant in the financial markets.

Financial cooperatives are different from mainstream banking in the sense that investor-owned banks focus mainly on shareholder wealth maximization through achieving high profits at the expense of customers' welfare, yet there is an incidence of ownership and consumption in CFIs. However, McKillop and Wilson (2011) advise that credit unions continue to experience a possible conflicting interest among saving members (who require a high rate of funds invested) and borrowing members (who require access to low-priced loans). It is vital to appreciate the extent of conflicting interests as it has an effect on the performance and sustainability of their

operations. Taylor (1971) studied three CFI situations: (i) the saver-dominated CFI (where the preferences of savers take priority); (ii) the borrower-dominated CFI (where the preferences of borrowers are superior); and (iii) the neutral CFI (where neither savers' nor borrowers' interests lead). The CFI structure needs to place high importance on how an equilibrium in sharing of returns between their saving and borrowing membership can be achieved, and how overdominance behaviours can interrupt this balance. Propositions from theoretical analysis are that neutral CFIs are much more effective as neutrality is unlikely to generate motives for CFIs to demoralize possible members joining and hence assists to preserve the strength of the organization (Smith, 1986; Brown et al., 1999). Overall, the neutral CFI seeks to maximize the total net gains to the borrowing and saving members without bias between them in terms of optimal borrowing and savings rates (Taylor, 1971).

Policymakers in most mature CFI movements in Canada, Australia and the US emphasize the need to achieve open commercial-based CFIs (Davis, 1997; Ward and McKillop, 2005; Malikov et al., 2017). The deregulation that occurred in the mature economies resulted in CFIs becoming more commercially focused to compete with the mainstream banks through mergers and acquisitions. Various studies tried to understand better the competitive behaviour provided by CFIs in local financial markets (Jackson, 2006; McKillop and Wilson, 2011; Dopico and Wilcox, 2010). In the US, Togle and Togle (2000) found that CFI interest rate movements had a bearing on certificate of deposit rates provided by conventional banks. Feinberg's (2001) theoretical framework shows that CFIs' consumer credit rates moderate the level of market power by banks, whereas the Granger-causality tests by Feinberg and Rahman (2001) established that both CFIs and bank loan rates influence the other. Hannan (2003) evaluated the competitive impact of CFIs by probing the deposit pricing culture of banks in local markets with CFIs presence. He established that banks give better deposit rates in communities where there is substantial establishment of CFIs.

On the pricing approaches of deposits and advances, Jackson (2006) found that CFIs and banks change deposit rates paid and interest on credit as market circumstances change, but the degree of adjustment varies between the two market participants. For deposits, banks and CFIs reduce rates in reaction to a reduction in market rates faster than they increase rates in reaction to an increase. For advances, banks respond similarly to trends in market rates. In contrast, CFIs usually reduce rates considerable faster when market rates are tumbling than they increase loan interest when market rates are rising. In summary, banks alter rates on deposits and loans in an approach as to maximize returns, while CFIs adjust rates in an approach to maintain an equal

margin between average lending rates and average deposit rates. “Credit unions have a very different goal orientation to banks; they are people-centred rather than profit-driven and this is reflected in their lending systems” (Power et al., 2014: 59). In addition, CFIs are far less exposed to business cycle variations and are much better at weathering macro-economic shocks as they unusually engage in speculative transactions (Smith and Woodbury, 2010; Becchetti et al., 2016; Birchall, 2013). However, the level of competition they give to mainstream banking, financial services and growth strategies depends on their developmental typology. Issues facing mature movements may not be same as those from less well-developed movements.

2.4 THE GROWTH AND DISTRIBUTION OF CFIs WORLDWIDE

CFIs have gained their reputation as important global instrument in the provision of responsible collaborative social finance. Table 2.1 presents descriptive statistics on CFIs by geographical region as at the end of 2016. There were 68,882 CFIs operating in 109 countries, with a total membership of 235.8 million translating to a population penetration rate of 13.55% (which is the total reported number of CFI members divided by the economically active population). They have US\$1.76 trillion assets under their management. As a measure of capital strength, the average reserve to asset ratio across all regions is 9.6%. Asia and Oceania are below the average at 3% and 8.3% respectively, Africa is slightly above at 9.7% whilst the remainder are above 10%. Africa and the Caribbean have the lowest reserves of below US\$1 billion, revealing under-capitalization. A comparison with 2009 shows an industry growth since the global financial crisis from 49,330 CFIs in 98 countries, 184 million members, 7.6% penetration rate and US\$1.35 trillion in total assets to current (WOCCU, 2009).

North America, which consists of Canada and the United States, has a high penetration rate of 52% contributing 82.7% of worldwide credit unions total assets although it has only 9.12% share of total CFIs. The second region is Asia with 7.89% share of global CFIs’ total assets but the highest number of credit unions amounting to 35,957 (52.2%). Although Africa contributes nearly a third of CFIs (31.5%), it has on average the lowest total assets per CFI of US\$421,604 compared to the global average of US\$25.6 million. The second lowest region is Asia with average total assets of US\$3.87 million per CFI. Africa’s credit union industry is very small in size (assets); however, the region is embracing the concept given the number of countries within the region with CFIs (25) and number of institutions. The CFI movement, through the support of the WOCCU is active in promoting CFIs in the developing economies of Africa and Asia to fight poverty (Ferguson and McKillop, 2000), hence these two regions have many CFIs.

Table 2.1: Worldwide distribution of credit unions in 2016

Geographical Region (Number of Countries)	No. of Credit Unions	Membership	Savings (US\$)	Loans (US\$)	Assets (US\$)	Reserves (US\$)	Reserves/ Assets (%)	Penetration (%)
Total for Africa (25)	21,724	23,248,774	5,847,680,494	6,901,215,612	9,158,929,819	886,385,958	9.7	8
Total for Asia (21)	35,957	50,820,792	116,038,966,593	100,792,790,606	139,330,789,242	4,251,288,278	3.0	8
Total for Caribbean (17)	299	2,258,204	5,255,347,702	3,500,290,383	6,354,508,021	641,107,856	10.1	56
Total for Europe (14)	2,033	8,386,913	20,194,572,627	8,003,492,515	22,971,650,629	3,121,751,024	13.6	4
Total for Latin America (17)	2,391	27,907,558	15,833,481,781	26,382,308,694	50,271,775,901	8,257,827,478	16.4	9
Total for North America (2)	6,280	118,460,459	1,237,389,073,542	1,010,049,394,657	1,459,880,660,866	146,688,460,939	10.0	52
Total for Oceania (13)	198	4,679,376	65,232,975,558	61,708,501,580	76,714,135,525	6,348,671,560	8.3	15
Worldwide Credit Unions (109)	68,882	235,762,076	1,465,792,098,298	1,217,337,994,047	1,764,682,450,003	170,195,493,093	9.6	13.55

Source: World Council of Credit Unions (2016)

2.4.1 Stages of CFI development and market classifications

CFIs are becoming a source of responsible finance with their financial services differing with their developmental stage in each country or region. According to the life cycle theory CFIs advance through three different stages: the nascent (formative) stage, the transition stage and the mature (consolidation) stage (Greiner, 1972; Quinn and Cameron, 1983; Sibbald et al., 2002; McKillop and Wilson, 2011). The precise characteristics which illustrate CFIs in each stage were discussed by Sibbald et al. (2002) and Ferguson and McKillop (1997, 2000). CFIs placed within each of these developmental stages can be categorized by several financial and organizational characteristics. Table 2.2 classifies the three distinct CFI phases of development as well as their growth strategies as guided by Ferguson and McKillop (1997, 2000).

According to Ferguson and McKillop (2000) and McKillop and Wilson (2011), at the nascent stage, CFIs are usually characterized by a tight common bond making them small in size (assets), with strict regulation, over reliant on voluntary labour, high growth, and providing limited basic financial services, mainly savings and loans. In nascent industries, economic development is seen as inseparable from the empowerment of individuals and the emergence of democratic institutions. CFIs in this phase normally face governance challenges resulting in a high mortality rate. During the transitional phase CFIs have large asset size, evolving regulatory and supervisory frameworks, less common bond restrictions, higher product diversification, development of professional trade associations, less reliance on volunteers, development of central services and a greater emphasis on growth and efficiency.

Finally, mature movements have large asset and member size, have undergone structural and conduct deregulation accompanied by increased prudential regulation, a loose common bond, diversified product portfolio, professional management, centralized services, diffusion of innovative technologies and a deposit insurance scheme. CFIs at this stage are more commercially focused, driving their further growth and efficiency through restructuring exercises such as mergers, acquisitions, demutualization or entering foreign markets. Table 2.2 below gives a summary of the characteristics and growth strategies of CFIs each developmental typology.

The mature markets have quite a number of growth options ranging from internally-generated growth, new members outreach in extended common bond, diversification of income streams, mergers and acquisitions (M&A) and finally changing organizational form to corporate through demutualization.

Table 2.2: Stages and growth strategies of CFI development

	Nascent	Transition	Mature
Characteristics	Small asset and member size	Large asset and member size	Large asset and member size
	Highly regulated	Shifts in regulatory framework	Deregulation
	Tight common bond	Adjustments to common bond	Loose common bond
	Strong emphasis on voluntarism	Shifts towards greater product diversification	Competitive environment
	Serve weak sections of society	Emphasis on growth and efficiency	Electronic technology environment
	Single savings and loans product	Weakening of reliance on voluntarism	Well organized, progressive trade bodies
	Requires sponsorship from wider credit union movement to take root	Need for greater effectiveness and professionalism of trade bodies	Professionalization of management
	High commitment to traditional self-help ideals	Development of central services	Well-developed central services Diversification of products and services Financial services based on market rates Emphasis on economic viability and long-term sustainability Rigorous financial management operations Well-functioning deposit insurance
Growth strategies	Internally-generated (retained income) Aggressive outreach (members acquisition)	Internally-generated Membership acquisition in extended common bond Diversification of financial services Mergers and acquisitions	Internally-generated Membership acquisition in extended common bond Diversification of income streams – non-funded income (member-centric growth) Mergers and acquisitions Demutualization

Source: Sibbald et al. (2002)

According to Ferguson and McKillop (1997, 2000) and McKillop and Wilson (2011), nascent industries are presently located mainly in the developing economies of Asia, Africa and the former Soviet bloc. In these countries/regions, they are usually viewed as poverty reduction interventions in the overall microfinance program as opposed to a total banking solution for

all. Kenya is the only African country in the transitional phase with a 13.28% penetration rate. Table 2.3 below gives a summary of the regional location of CFIs and their growth phase.

Table 2.3: Regional location of CFIs and their growth phase (2016)

Country/Region	No. of CFIs	Membership	Assets (US\$)	Savings (US\$)	Penetration (%)
Mature CFIs					
United States	5,996	108,320,375	1,309,142,008,442	1,107,120,425,959	52.61
Canada	284	10,140,084	150,738,652,424	130,268,647,583	46.71
Australia	82	4,200,000	75,687,765,000	64,453,425,000	17.65
France ⁵	3	26,000,000	4,276,836	1,804,886	52.00
Korea	904	5,801,000	61,095,869,987	58,121,117,241	11.47
Transition CFIs					
Kenya	6,468	6,272,077	6,324,267,668	4,200,055,451	13.28
Hong Kong	41	88,540	1,825,000,000	1,753,000,000.	1.22
Taiwan ROC	340	220,242	859,000,000	750,000,000	0.94
Sri Lanka	8,423	1,039,458	83,000,000	54,000,000	5.02
Singapore	22	103,444	671,000,000	549,000,000	1.87
Thailand	2,285	4,078,311	62,954,000,000	46,079,000,000	5.94
Ireland	390	3,500,000	17,007,597,281	14,130,732,159	74.47
Great Britain	312	1,263,131	1,768,939,855	2,440,176,058	1.93
Poland	40	1,934,482	2,806,756,987	2,614,080,432	5.01
Fiji	16	12,477	10,415,607	NA	1.38
New Zealand	11	170,841	689,097,406	779,550,558	3.53
Caribbean	299	2,258,204	6,354,508,021	5,255,347,702	56.0
Latin America	2,391	27,907,558	50,271,775,901	15,833,481,781	9.0
Nascent CFIs					
Africa ⁶	15,256	16,976,697	2,834,662,151	1,647,625,043	5.4
Asia ⁷	23,942	39,489,797	11,842,919,255	8,732,849,352	2.4
Russia	257	347,268	382,768,798	212,511,968	0.2
Ukraine	462	900,074	75,287,144	47,710,263	2.0

Source: World Council of Credit Unions (2016)

However, there is still debate on the classification of Ireland (with a 77% penetration rate) in transition stage as it is sometimes considered to be in the mature phase. Table 2.3 reveals that there are only five countries where the credit union can truly be said to have achieved a mature status. The US, Canada, Australia, France and Korea could be viewed as having a mature financial cooperative industry with penetration rate averaging 40%. In each of these markets

⁵ These amounts are for 2016 and are consolidated figures for BPCE, Credit Mutuel and Credit Agricole. Source: European Association of Co-operative Banks (2016).

⁶ Africa region does not incorporate Kenya which is now classified in the transitional stage.

⁷ Asia region does not incorporate Korea, which is categorized as a mature CFI country or Thailand, Singapore, Hong Kong, Sri Lanka and Taiwan ROC which are classified as transition CFI countries.

the CFI movement is a dominating force in the provision of financial services and has achieved substantial penetration of the economic active population.

Although it is necessary to become familiar with the main attributes of each stage of development, it is of more importance to appreciate the interaction of issues which drives or hinders progress between the different developmental stages. Five factors have been acknowledged as core in hindering the progression of CFIs from one stage to another: the quality of leadership, the sophistication of trade associations, management professionalization, nature of legislative support for change and innovation, and technological progression (Sibbald et al., 2002). According to Cabo and Rebelo (2005), management quality is of prime importance as it can drive performance, and trigger consolidation of CFIs and even failure.

2.4.2 CFIs growth strategies along the developmental stages

Based on the exceptional attributes of each growth stage as stated by the life cycle theory, it is projected that CFIs in different typologies face differing challenges, although some of the performance problems might be similar in all the phases, such as the role of effective leadership. There are also unique specific challenges depending on the stage of development of an individual organization. The formative phase usually experiences high scope for growth, undercapitalization and growing heterogeneity amongst members which might result in an upsurge in transaction costs which affects performance (McKillop and Wilson, 2011; Marwa and Aziakpono, 2015).

As CFIs progress from the nascent stage to the transition stage, they begin to appreciate the problems which might call for a strategic change to realize further growth. Strategic turnaround decisions might result in re-inventing the ownership structure, product diversification, adoption of information technology to improve member value proposition and perceptions or exit. At the mature stage CFIs face further challenges of growth, and therefore the need to compete with mainstream banks. If CFIs are to compete with mainstream financial services providers and achieve efficiency of operations, then restructuring may be inevitable (Power et al., 2014). To maintain the cooperative values, M&A has been the most population source of growth for CFIs at the mature stage. The same is being witnessed in the corporate world with different degrees of success and failure (see Gomes et al., 2016; Gomes et al., 2011).

“However, there is nothing, in theory, to avoid an additional stage after the mature phase which involves the conversion of CFIs beyond their present co-operative form into a completely new type of organization through demutualization” (Sibbald et al., 2002:401). This study will

review some empirical studies to understand the impact of these collaborative practices on CFI performance and members' welfare.

2.5 EMPIRICAL REVIEW OF CFIs PERFORMANCE POST RESTRUCTURING

CFI activities in most economies are focused on increasing returns to scale. As explained by McKillop and Wilson (2011), increasing returns to scale can result in better earnings for saving members and reduced loan interests for borrowing members. This explains growth strategies followed by financial cooperatives (either internally generated or via mergers and acquisitions) given the regulation allowing common bond expansion in some markets. Using a 1994-2011 study period in the US, Malikov et al. (2013) predicted that the CFI industry will continue to witness consolidations due to product diversification demands as well as organization level scale efficiencies.

Goddard et al. (2009) investigated the determining factor of acquisition for US CFIs during the period 2001 to 2006 and found that:

- (i) CFIs that are growth-constrained are less likely to be attractive acquisition targets;
- (ii) Highly liquid credit unions appear to be attractive acquisition targets, because they have a tendency not to realize an adequate return on their assets;
- (iii) Low capitalized CFIs are at greater risk of acquisition, this could be because they have been inefficiently managed, and offer acquirers scope for introducing efficiency gains; and
- (iv) Those without a website were at the highest risk of acquisition, followed by those with informational, interactive and transactional websites. In other words, the risk of acquisition decreased as the level of website sophistication and capability increased. Probably, the acquiring managers who have the technological capability perceive that they can earn higher returns from the target CFIs' assets.

In recent years, growth patterns via M&A were witnessed, therefore it is necessary to understand their impact on CFIs' performance and members' welfare. For a more detailed guidance on critical success factors for improved performance pre- and post-M&A also applicable to CFIs, see Gomes et al. (2013).

2.5.1 The impact of mergers on CFI performance and members welfare

Restructuring via mergers and acquisitions has resulted in a massive reduction in the number of financial institutions in many economies (Berger et al., 1999; Goddard et al., 2009; McKillop

and Wilson, 2015; McKee and Kagan, 2016). Overall, the empirical evidence on bank mergers suggests that there is often little improvement in the efficiency or performance of the merged entity. Historically, mergers have been widespread in mature CFI movements in Australia, Canada and the US as well as in some isolated transition markets in the UK and New Zealand. Findings on the reasons for CFI mergers are scant but a few country-specific researches provide some insights (McKillop and Wilson, 2011).

McKee and Kagan (2016) studied the trend of the US credit unions and find that they dropped from almost 24,000 organizations in 1969 to roughly 7,240 in 2012, and 6,100 in 2015 (WOCCU, 2015), a decline of over 74% since 1969. The overall consequence of deregulation brought changes in the patterns of growth across different types of credit unions (Goddard et al., 2009). Larger credit unions in the UK tended to expand quicker than their smaller counterparts. Externally generated growth also took place via mergers and acquisitions, where larger, well-capitalized and technologically-advanced CFIs took over smaller, less capitalized entities that did not implement banking technologies. Between 2003 and 2013, the number of credit unions reduced by approximately 3% per year. In 1994, there were 7,848 credit unions with assets over US\$10 million; by the end of 2012 this figure had dropped to 2,489, a 68% decline (McKee and Kagan, 2016). Consequently, there has been a rapid growth in credit union asset size. In 2013 the average credit union had US\$160.9 million assets compared to US\$65.6 million in 2003 (McKillop and Wilson, 2015). However, Goddard et al. (2009) found other growth sources through diversification into non-funded income activities, although this did not result in higher earnings for members in the UK.

In a similar move, in the US, the 1998 Credit Union Membership Access Act effectively dissolved the common bond requirement. As an outcome, CFIs extended their membership classes and, in the process, their financial performance was weakened by mergers. Dopico and Wilcox (2010) investigated CFI mergers between 1984 and 2009, the results show that merged CFIs achieved financial performance progress in favour of the smaller merging partner. When measured as operating gains expressed as non-interest expense per assets (NIEXP) over five years, smaller merger partners experienced large reductions in NIEXP (-0.79%) and in loan rates (interest income fell by 0.51%) and increases in rates paid on deposits (interest expense rose by 0.08%). In contrast, these impacts are very small (0.00%, -0.04%, and -0.01%, respectively) for members of the larger merger partner (i.e. the acquirer). Acquiring CFIs are usually significantly larger than the target (on average their assets are 20 times larger). The

improvements credited to the merger of the small CFIs (the target) and the larger CFIs (the acquirer) benefit the small CFIs.

Ralston et al. (2001) conducted a post-merger empirical investigation on the attempt by credit unions in Australia and the United States to increase efficiency through mergers using a data envelopment analysis (DEA) methodology. The post-merger improvements in technical and scale efficiency realized by 31 Australian CFI mergers in 1993/1994 and 1994/1995, relative to non-merging CFIs, suggests that mergers do not necessarily result in efficiency improvements better than those realized through internally-generated growth.

In a similar study covering a longer period from 1995 to 2003 on 1,569 mergers using the Bauer (2008) event study method on US credit unions, Bauer et al. (2009) found that although the post-merger gains on CFI performance are to some extent non-existent compared to mergers in commercial bank industry, CFI members gain utility via the rates offered for loans and deposits. Members of the target CFI gain more (as financial stability of the merged firm recovers remarkably) but not the acquiring firm. Regulators also gain utility as mergers remove risky entities from the industry. Their finding supports the thesis that most mergers are instigated by regulators to avoid using insurance funds to bail out failing institutions. Dopico and Wilcox (2010) recap that mergers within the CFI sector in the US improve overall CFI cost efficiency due to reduced operating costs, particularly when a large entity consolidated with a much smaller CFI. These benefits are enjoyed more by members of the target entity.

Mcalevey et al. (2010) found mixed results in New Zealand using two cross-sectional datasets for the years 1996 and 2001. After employing DEA, they found that credit unions have become more efficient over the period, notably in 14 entities that undertook mergers as opposed to the 42 that remained unchanged (i.e. those that were not acquired and survived as a single entity). The Malmquist index indicates significant technological progress over the period but a slight regression in efficiency. Thus, contrary to previous empirical evidence, involvement in acquiring other credit unions is shown to lead to some efficiency improvements. Given that New Zealand industry is still in the transition phase this might provide some insights that mergers in the transition stage enhance efficiency as there is still scope to increase membership outreach compared to the mature stage. However, the initial motivation for mergers in New Zealand was not the common cause of trying to improve performance for competitive objectives but was rather forced government-initiated mergers.

Similarly, Fried et al. (1999) found that in the US, acquiring CFIs benefited more when they and the target CFIs had different profitability levels and different numbers of select employee groups, and when one of them had a community charter. On average, members of the acquiring CFI experienced no deterioration in service provision post-merger, while members of the acquired CFI experienced improvements of at least three years' duration.

Using qualitative data obtained through interviews with members of community-based credit unions in Ireland, Power et al. (2014) concluded that in the context of mergers, there is a need to guard against the erosion of the movement's unique and community-embedded competitive advantage. They cautioned that excessive emphasis on mergers would increase the spatial distance and, consequently, the psychological distance, between members and decision-makers. The resulting 'disembedding' effect is likely to erode members' attachment to their CFIs and thereby undermine competitive advantage. The same was also observed from a case study by Gomes et al. (2011) on the impact of misaligned culture on strategic alliance between two African organizations.

2.5.2 The impact of internal growth on performance

Besides the pursuit of growth through consolidations, Malikov et al. (2017) found internal growth (retaining net income) in the US retail credit union sector through economies of diversification in financial services (by becoming member-centric) brought good performance. The study found that as many as 27-91% of diversified CFIs enjoy substantial economies of diversification, the cost of most remaining CFIs is invariant to the scope of services. They also found strong evidence of increasing returns to scale in the industry.

The drop in CFI organizations in mature economies continues to change the interaction between members, CFIs, financial services competition, financial partners and industry structure. The outcome of consolidation may result in a CFI industry less differentiated from commercial banks, and financial services that may be less attractive to underserved members, as well as a migration from the central basic ideologies of CFIs. With the continuation of the CFI industry consolidations, the uniqueness of CFIs may no longer be clear and member-driven in a struggle to survive the continuing scale issues tempting CFIs to move beyond the cooperative form.

2.5.3 Beyond cooperative: demutualization and the privatization of credit unions

Jain, Keneley, and Thomson (2015) studied the reasons why credit unions convert to customer-owned banks (mutual banks) in Australia using semi-structured interviews with seven credit

union CEOs. They found that the conversions are being necessitated by the need to change customer perceptions, ensure future growth, and facilitate access to external capital by attaining a good credit rating. Despite this change, mutual banks retain the core principles of mutuality. However, beyond customer-owned banks there is also demutualization happening to completely move from a mutual structure to shareholder-owned entities.

One major motivation for demutualization is the access to external capital to finance growth, however, the process is believed to have an impact of members' wealth transfer to outsiders and social costs for the society as a whole. There were just 91 credit unions in Australia in 2015, down from over 700 in the 1960s, but the penetration rate remained strong. According to Davis (2016), since 2012 some of the larger credit unions have taken advantage of a regulatory change enabling them to use the term 'mutual bank', with apparent connotations in the public mind of greater safety and a wider range of banking services. As a result of losing their tax exemption status in the early 1990s, credit unions had difficulties sustaining their overall share of the retail loan and deposit markets. However, over recent decades the sector has been able to generate sufficient surpluses to grow capital at a rate more than sufficient to meet regulatory requirements arising from larger scale.

Three Australian credit unions (Goldfields Credit Union, Gateway Credit Union and MyState Financial Credit Union) decided to demutualize as there were good performers in a sector not in terminal decline, but one facing ongoing competitive challenges limiting growth. So demutualization was seen as strategy motivated by the need to acceralate further growth or wealth expropriation incentives by converting from a co-operative enterprise to a corporate form where members are issued with shares and external investors invited to aquire a stake (see Davis, 2016). Despite the increase in demutualization, the commitment to co-operative ideology has been maintained in certain countries and markets. However, it might be premature to conclude that the future of the credit union movement is secure.

2.6 CONCLUSION

The importance of CFIs has captured the attention of researchers, the international development community and policymakers as a responsible intervention to assist marginalized communities from the financial markets to collectively address lack of access to financial services. Such a collaborative method of mobilizing financial resources from members who share the common bond helps to circumvent information opacity which leads to credit rationing, adverse selection and moral hazard prevalent problems in the credit markets. As democratically member-

controlled organizations based on the principle of one member one vote, CFIs serve the collective interests of their members in achieving their social and economic objectives.

The recognition of cooperatives by the UN in 2012 and bi-annual summits on cooperatives being held in Quebec to plan and track progress on how cooperatives are helping in attaining SDGs is a re-affirmation of how they are helping people to help themselves. The resilience of CFIs to the global economic crisis put them squarely back on political and economic agendas as a source of responsible finance for sustainable development. The global credit union membership and total assets trends are showing a strong performance supported by rapid formation of CFIs in the nascent markets of Asia and Africa. Large CFIs by asset value are in the mature markets of North America. The growth patterns being witnessed in the nascent, transition and mature markets differ depending on the industry development phase. CFIs in nascent and some in transition markets are driving their growth internally through increased member outreach and diversification of financial services to appeal to many.

Mergers have been an ongoing process of the CFI movement globally, particularly in the transition and mature markets, resulting in a marked drop in CFIs. The post-merger evaluations reveal overwhelming evidence that small target CFIs gain enhanced performance through reduced costs, lower interest rates on loans, better rates on deposits and better financial services diversification. In addition, regulators save on the deposit insurance fund which is supposed to bail out failing CFIs which are taken over by healthy and large players. The findings from New Zealand suggest mixed results with technological progress but a slight regression in efficiency in the post-merger period.

Other findings from Australia reveal better CFI performance coming from internal growth than through mergers, whilst other studies in US point to better performance realized by becoming member-centric through diversifying financial services and non-funded income. Fee income in financial cooperatives is becoming progressively vital as also in conventional banks. Some studies caution the emphasis on mergers as it weakens the competitive advantage of CFIs because some members feel disempowered resulting in many members no longer exercising their ownership rights as they no longer see themselves as owners. Eventually, members who feel disempowered either withdraw or end up in wilful loan defaults.

Another strategic change is the demutualization of CFIs into investor-owned banks to enable mobilization of external funding. Although this restructuring strategy reinvigorates the organizational performance, it works against cooperative principles and values by

disempowering the community to collaborate effectively and equally. The following chapter will focus on the South African co-operative movement to understand the movement's history and why they have the lowest penetration rate in the world.

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CHAPTER THREE

THE CO-OPERATIVE MOVEMENT IN SOUTH AFRICA: AN OVERVIEW⁸

3.1 INTRODUCTION

There are quite a number of concerns that are raised when it comes to the study of co-operatives as a form of business enterprise, such as: how vital are co-operatives in our communities and the entire economy? Are co-operatives a disappearing form of business, important only in developing economies and imperfect markets? Or are they a sustainable business venture that equals stockholder-owned entities? How sustainable are financial co-operatives in South Africa?

All these concerns appear to be answered by the declaration of the year 2012 as the “International Year of Co-operatives” by the United Nations. This was a notable development, putting co-operatives squarely back on the political, economic and social agenda to empower ordinary citizens. This was followed by International Summits of Co-operatives hosted by the International Co-operative Alliance (ICA), and held in Quebec City, Canada every two years starting from 2012. It celebrates co-operatives as one of the global interventions for the attainment of some of the United Nations’ Sustainable Development Goals by 2030. The co-operative sector is large, with the world’s largest 300 co-operatives having US\$2.53 trillion of annual turnover in 2014 (ICA, 2016), which is nearly equal to Italy’s gross national product. Mayo (2012) did a statistical comparison of co-operative and usual business ownership globally, and found that there are a billion people who are member-owners of co-operative businesses compared to 328 million people who own shares. These statistics show that co-operatives play a significant role in the global economy to stimulate entrepreneurship, which is sometimes the only way to survive and try to get out of poverty (Attuel-Mendès et al., 2014). Thus, we believe, it is worthwhile to pay attention to this distinct form of enterprise.

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Although economic conditions look challenging for markets in Africa, agriculture and financial co-operatives play an important role in addressing market failures, and have a track record of resilience in tough times. However, the growth pattern of co-operative industry in the continent has demonstrated a rise and fall which questions the overall effectiveness of these enterprises in improving the economic welfare of their members. Trying to understand industry dynamics in a country-specific context is useful in coming up with better informed policy recommendations and managerial decisions. The objective of this exploratory study is twofold: first, to understand the historical co-operative development in South Africa; second, to identify the challenges and opportunities for financial co-operatives in addressing some of the financial market failures. This background study for CFIs in South Africa sets the stage for empirical studies that will follow.

The chapter is arranged as follows: Section 3.2 presents the overview of the global co-operative movement, Section 3.3 discusses the co-operative movement in South Africa from 1892 to date, Section 3.4 covers the financial co-operatives' growth patterns in South Africa, Section 3.5 highlights historical and emerging issues impacting sustainable financing in CFIs, Section 3.6 discusses financial inclusion in South Africa, highlighting opportunities for CFIs, and Section 3.7 will conclude.

3.2 THE GLOBAL EVOLUTION OF CO-OPERATIVES

Co-operatives are a very old idea, in existence since the advent of civilization, however the modern movement began mainly as a response to market failures of industrial capitalism. To address this challenge, those concerned about the problems created by capitalism searched for innovative grassroot solutions to mitigate market distortions created by prevailing economic changes. Being private enterprises, co-operatives have the dual mission of making money and attaining social goals, while addressing market failures. Being a grassroots innovation, co-operatives are membership-driven, often exclusively serving their members, who contribute agreed minimum capital and obtain a voting right. In contrast to investor-owned businesses, a larger contribution does not translate into increased voting rights, as all members have equal voting rights, irrespective of the amount of capital contribution. This position co-operatives to serve the majority.

Co-operatives exist in diverse sectors of economic activity, including financial services, retailing, public utilities, agriculture, and housing. One of the most influential acknowledged co-operative was the Rochdale customer co-operative started in England in 1844. Its members

were a group of Rochdale weavers who opened a co-operative shop for their families members to buy quality, reasonably priced foodstuffs as a way to combat low wages, high prices and poor quality food. Rochdale's long-term achievement was anchored on its written and religiously followed principles which currently provide the fundamental principles of all co-operatives globally (Balnave and Patmore, 2012). From the UK, consumer co-operatives entered Switzerland (its first consumer co-operative opened in 1851), Germany (1852), Italy (1854), Japan (1879), Brazil (1887), South Africa (1892), and so on. Germany was the starting-place for credit co-operatives, when Friedrich Wilhelm Raiffeisen and Hermann Schulze-Delitzsch, independent of each other, started co-operatives to provide small loans to their members. A shoemaker, Schulze-Delitzsch created a co-operative for a group of shoemakers to pool their finances and buy leather in bulk, while Raiffeisen, a burgomaster, built a credit co-operative to support small farmers (Kuhlengisa, 2011).

The success of these pioneers in co-operative development followed a bottom-up approach which was opposite to what colonial rulers tried unsuccessfully in India, and in most African countries mainly in the 1960s, the period when most African nations gained their independence. Commonly, the governments of the decolonized nations reinforced the top-down approach of the past colonial rulers, and firmly linked co-operatives to specific government institutions. In some instances, co-operatives were nationalized, as was the case in Tanzania in the 1970s (Maghimbi, 2010). These developments mainly explain why even presently co-operatives are unequally spread over the world. The political thinking that did not appreciate the future survival of co-operatives assumed that they were a short- or medium-term intervention in what in the long run a government should do, that is, to effectively manage the economy; whereas other politicians maintained them as a short- and medium-term intervention to influence what in the future the perfect markets must do (but had failed to achieve). The outcome has been a variety of explanations and enthusiasms in the cause of developing co-operatives worldwide to address entrenched imperfect markets.

After the disruption of many co-operatives, in the 1990s many old co-operatives were re-organized, the governments' controls were lessened, and the ICA co-operative principles emerged as guiding-points for a new generation of co-operative laws. Regardless of all that, today the diffusion of co-operatives in Africa is moderately wide, and some African countries exceed Europe in figures. However, these co-operatives tend to be smaller and include a smaller percentage of the population (Battilani and Schröter, 2012). To give context we shall focus more on South Africa.

3.3 THE CO-OPERATIVE MOVEMENT IN SOUTH AFRICA

Our major focus will be on financial co-operatives, though notable events with impact on all co-operative types are discussed. Table 3.1 below summarizes the key events and legislative changes since 1892 in South Africa that have contributed towards the co-operative movement we see today.

3.3.1 Co-operatives in colonial and apartheid regimes (1892-1981)

The history of the co-operative in South Africa is long, with its historical developments constantly intertwined with the state's. Its history as an economic vehicle can be tracked from the early 19th century in South Africa, beginning with white farmers' agricultural co-operatives focused on building a more vibrant white-owned agricultural community with financial support from the government. The Pietermaritzburg consumer co-operative, founded in 1892, was the first registered co-operative. However, the increase in the consolidation and market power of big chain stores made the consumer co-operatives fail, with only agricultural co-operatives being successful. However, it was not until 1908 that South Africa's first co-operative regulation (the Co-operative Societies Act of 1908) was passed in the Transvaal, now Limpopo and Mpumalanga provinces (Genesis Analytics, 2014; Okem, 2016). In 1922 the Co-operative Society Act became law, and regulated co-operatives in the country. At first the co-operative development was focused on trading and agricultural co-operatives. The Department of Agriculture was responsible for their development with favourable agricultural policies being put in place for their advancement. During the colonial and apartheid regimes, co-operatives were economic vehicles to enrich white South Africans, especially those in the agricultural sector (Okem, 2016).

The state's desire to promote white-owned co-operatives is evident in the passage of various legislations and the establishment of co-operative support institutions (such as the Co-operative Societies Act enacted in 1908, the Land and Agricultural Bank [the Land Bank], the Co-operatives Societies Act [Act 28 of 1922], the Co-operative Societies Amendment Act [Act 38 of 1925], the Marketing Act of 1937 [later amended as Act 59 of 1968], and the Co-operatives Act [Act 91 of 1981]) (DTI, 2012: 31).

Effectively, co-operatives were used as an instrument for syphoning public funds as well as creating white monopoly in the agricultural sector.

Table 3.1: A historical perspective on South African co-operatives and co-operative financial institutions

Period	Notable Event/Legislation	Objective
1892	1 st co-operative formed in South Africa	The first formally registered co-operative a consumer co-operative was formed in Pietermaritzburg
1908	1 st Co-operative Societies Act passed	This enabled other colonies to register co-operatives under the Co-operative Societies Act (Transvaal)
1922	The Co-operative Societies Act of 1908 became law, amended in 1922 and 1925	This enabled full controlling of co-operatives across South Africa, then became Co-operative Societies Amendment Act of 1925
1939	Catholic church in Natal advocate for farmers credit co-operatives	The Catholic church, encouraged the establishment of credit co-operative for black farmers as an approach of encouraging economic activities and financial discipline
1981	Co-operatives Act of 1981	The law legally acknowledged CFIs as an enterprise type to be registered as trading co-operatives but denied deposit acceptance. It also opened up for blacked-owned agricultural co-operatives registration.
1981	Cape Credit Union League (CCUL) established	The establishment of CCUL by the Catholic Church as a representative body of credit unions, which later converted to the Savings and Credit Co-operative League (SACCOL)
1993	CCUL transformed to SACCOL	SACCOL was to specifically focus on the registration, education and capacity building, training and setting up of systems for SACCOs
1994	1 st exemption from the Banks Act	The SARB sought to formalize informal financial sector, based on the “common bond” principle
1994	1 st FSC established	The first village Financial Services Co-operative (FSC) was established in the North West province
1998	2 nd exemption notice from the Banks Act	Providing for the establishment and regulation of FSCs, through Financial Services Authority (FSA)
1999	3 rd exemption notice from the Banks Act	Financial Solutions (FinaSol) mandated to regulate FSCs which were part of its franchise system
2002	FSA and FinaSol operations seized	FSA and FinaSol had to seize their operations after grants from government and private donors and government to undertake their financial regulation and support functions were suspended
2004	1 st Co-operative Development Policy	The policy laid the foundation for the development of co-operative legislation, strategy and support instruments for the development of co-operatives in all sectors of the economy
2004	Co-operative Development Strategy (2004-2014)	To increase competitiveness of co-operatives and their contribution to national economy by enhancing their ability to participate in all markets by reducing market failures faced by co-operative enterprises
2005	Co-operative Act of 2005	To provide for registration, formation and regulation of co-operatives
2007	Exemption Notice No. 887 of 2008	The regulatory responsibilities for FSCs on an interim basis was mandated The South African Microfinance Apex Fund (SAMAF)
2007	Co-operative banks Act of 2007	Paved way for Co-operative banks Development Agency (CBDA) formation and the appointment of Supervisors for Co-operative banks to register, regulate and supervise co-operative banks
2009	Establishment of the CBDA	In 2012 the CBDA start the registration, regulation, supervision and capacity building to the CFI sector.
2010	Co-operative Incentive Scheme (CIS) launched	The objective of the 100% grant with a limit of R350,000 is to improve the viability and competitiveness of co-operative enterprises by reducing their operational costs
2012	Integrated Strategy on the Development and Promotion of Co-operatives (2012-2022)	To ensure that co-operatives are given recognition and allowed to flourish in all sectors of the economy through financial and non-financial support

2012	First Co-operative banks registered	Ditsobotla and Orania (OSK) were registered with SARB as Co-operative Banks
2013	Co-operative Amendment Act of 2013	Introducing the national apex body, a Co-operative Development Agency to provide financial support, a Co-operative Tribunal for conflict resolution and Co-operatives Advisory Council for policy research.
2013	The formation of NACFISA	An advocacy apex body for CFIs after closure of SACCOL and merge of SAMAF and SEFA in 2012

Source: Author's compilation of notable events

In 1939, a Catholic church in Natal, South Africa, advocated the formation of credit co-operatives for African farmers as a means of promoting economic participation and financial discipline. This early determination had minimum achievement owing to the presence of brutal political forces in African politics as well as almost non-existence backing from local government institutions at the time (Kuhlengisa, 2011). Although the apartheid regime proactively tried to deny the growth of co-operatives among the African population, there were strong informal financial co-operatives emerging built around strong social capital in the form of rotating savings and credit associations (ROSCAs) popularly known as *stokvels* (DTI, 2012). Despite the *stokvels*' limited success, majority of them remained weak and underdeveloped owing to the regime's resistance, with most of them finally collapsing. It was only through the Co-operatives Act of 1981 that financial co-operatives were legally recognized as a form of enterprise that could be registered as trading co-operatives. However, the Act did not allow for the acceptance of members' deposits as expected for financial co-operatives.

From the preceding, it can be settled that the pre-1994 co-operative movement emerged along two different paths. The first led to the creation of strong white-owned co-operatives operating in the first-class economy. The second route was characterized by the stifling of African-owned co-operatives, resulting in black-owned co-operatives operating largely in the informal economy. In addition, white-owned co-operatives in pre-democratic South Africa were extremely connected to the state, and their successes were largely dependent on extended state funding (Okem, 2016). Against this background, the co-operative sector was not being managed in line with the universally accepted co-operative movement principles and values. What with the absence of state support, and the monopoly of marketing boards, many agricultural co-operatives demutualized in the late 1980s and early 1990s (Van Wyk, 2014).

3.3.2 The historical developments of financial co-operatives (1981-1994)

In the early 1980s, civil society began to recognize and accept co-operatives as a mechanism for reducing economic and social deprivation among the economically active poor. For

example, trade unions started creating savings and credit co-operatives (SACCOs) as an instrument to address retrenched and redundant workers' economic needs. The National Union of Metal Workers of South Africa (NUMSA) created the Sarmcol Workers Co-operative (SAWCO), which later collapsed owing to insufficient skills in co-operative governance and management. Emulating NUMSA, the National Union of Mineworkers (NUM) also tried to start co-operatives in the late 1980s to alleviate the redundancy of mineworkers, but unfortunately this ended in failure. Community organizations and churches also provided funding independently for worker co-operatives in response to unemployment and retrenchments during the same period (DTI, 2009; DTI, 2012).

In the 1980s financial co-operatives faced many challenges, including lack of members willing to take up leadership positions, and high demand for loans, but limited savings and share capital. In the 1980s, the Catholic Church established the Cape Credit Union League (CCUL), which in 1993 turned into the Savings and Credit Co-operative League (SACCOL). SACCOL was formally registered in 1998 as a second-tier co-operative representing SACCOs (Schoeman et al., 2003; DTI, 2012). It was credit union membership-owned and controlled, with members exercising proportionate voting rights according to their membership size, making it a self-regulating body. SACCOL was offering registration, education and training, assistance with management training and setting up of systems services to its member institutions.

SACCOL's major source of funding was the Canadian Co-operative Association in the period 1981 to 1994. The funding had the primary social mission of providing low-cost financial service to members (credit at 1% per month) through a variety of products. Donor policies and objectives were given priority over sustainability, and while control was limited over SACCOs, which negatively affected their viability. Schoeman et al. (2003) summarized that this type of assistance resulted in overdependence on donor funding killing the self-help ethos of a co-operative, which entails active membership contributions (savings) and borrowing. A viability assessment done by the World Council of Credit Unions (WOCCU) in 1991 revealed that only three of the prevailing 47 SACCOs were viable (Genesis Analytics, 2014). This led the movement to adopt a more business-oriented approach focused on nurturing strong and sound SACCOs with the long-term economic interests of members in mind, rather than short-term social missions gains.

3.3.3 Post-apartheid regimes (1994-2004)

In the era 1994 to 2001, SACCOL was given a USAID grant of US\$1,3 million. and implemented a new strategy focused on achieving self-sufficiency, with the emphasis on establishing workplace- or employer-based SACCOs, and the consolidation and merger of non-viable co-operatives. This resulted in the employee-based entities emerging as some of the more successful SACCOs in the country today. The movement achieved a 2% self-sufficiency at the end of the period. Without further external funding a new strategy was adopted which demanded that the growth of the movement start from the bottom up. In pursuit of that strategy, most SACCOLs' staff were deployed in SACCO structures, leaving SACCOL with just six staff members. In February 2002, SACCOL attained an 80% self-sufficiency ratio with four staff members. Increased membership fees and consolidation of smaller SACCOs into fewer larger institutions grew their income base. As a result of consolidations the movement's capacity for further growth was being affected, as no new entities were being formed. The organization is one of the co-operative-related entities that succeeded in surviving for some time before closing in 2011, even after donor funding dried up (Schoeman et al., 2003).

The South African Reserve Bank (SARB) has long recognized the need for and benefits of an informal tier to the banking system. In its recognition of the importance of the informal financial sector, the first exemption to the Banks Act (No. 94 of 1990) was made just before the post-apartheid era began in 1994 to permit common bond entities to mobilize deposits under certain conditions for on-lending to their members. The conditions included being a member of a recognized self-regulatory apex body, such as the SACCOL for SACCOs, or the National Stokvel Association of South Africa (NASASA) for stokvels (Schoeman et al., 2003). The first exemption to the Banks Act also paved way for the formation of Village Banks, commonly known as Financial Services Co-operatives (FSCs).

The FSCs idea was presented as a project for South Africa financed by the International Fund for Agricultural Development (IFAD) and the African Rural and Agricultural Credit Association (AFRACA) in 1994 in the North-West province (Schoeman et al., 2003; Genesis Analytics, 2014; Mashigo and Kabir, 2016). The first two phases of the project saw the establishment of three Village banks from 1994 to 1996, with many organizations showing interest in the project, resulting in the formation of a consultative group with representatives from FNB, ABSA and Development Bank of South Africa, among others. The FSCs project came in response to the failure of the private banking sector to offer affordable inclusive financial services in rural communities (Genesis Analytics, 2014). The failure was equally a

function of high transaction costs and high information asymmetry. The idea of a Village Bank was perceived to create semi-formal financial institutions that would reduce transaction costs of financial intermediation, increase the circulation of money in the communities, lower informational costs, provide loans and thus reinvest funds in the communities they were mobilized (Schoeman et al., 2003). Also see Jayashankar et al. (2015) for a similar concept on slow money. These financial innovations thrive on strong social capital embodied in stokvels, labour and community groups, burial societies and a myriad other collective action establishments in rural communities. The Village Bank was envisaged as a mechanism with which communities would be able to access an inclusive range of financial services, and could interrelate with the broader financial sector at reduced transaction costs. The FSCs concept was not only innovative for the rural people involved, but also for the commercial banks and government institutions collaborating in the scheme.

During the pilot project the need for a dedicated support structure became important to ensure sustainability after IFAD and AFRACA ended their involvement with the project. This resulted in the Financial Services Authority (FSA) being formed by the existing FSCs through the second exemption from the Banks Act in 1998. This led to the formal recognition of FSA as a self-regulating body for its member FSCs by the Registrar of Banks. As an apex body for Village banks, the core duties of the FSA were to encourage and support them through training and direct financial provision for the development of new Village banks; to design new financial services; and to advocate for members' interests at different forums. According to Schoeman et al. (2003) and Genesis Analytics (2014), in 1999 the national Department of Welfare approved a R7 million FSC project grant for the formation of 70 FSCs in seven provinces. This funding made it possible to formalize the activities of the FSA. Over the funding period of 30 months, 29 FSCs were established in communities. Further funding applications were made to the Department of Social Development for an extension of the project. However, the Department commissioned a project review which exposed lack of proper management and poorly trained staff without experience in microfinance, among other things. Resultantly, the funding application was declined, and the FSA closed operations in 2002, leaving behind 32 registered FSCs (Genesis Analytics, 2014).

Another non-profit organization called Financial Solutions (FINASOL) had been registered in January 1999 with its model based on a franchising system which provided start-up assistance to Village banks. FINASOL under a third exemption notice from the Banks Act, was appointed to regulate FSCs when the FSA was facing difficult operational challenges. USAID, DFID,

DGRV, the Swedish Co-operative Centre and FNB made FINASOL's operations easier through financial support. However, management shortcomings resulted in poor performance, FNB pulling out of the consortium, and DFID's £1 million funding (through the Financial Deepening Challenge Fund) not being used, ending with FINASOL closing down in late 2002, leaving behind 30 registered FSCs. Village banks that were using the FINASOL centrally managed banking platform had to revert to manual ways of managing their financial records, resulting in burdensome administrative challenges (Schoeman et al., 2003; Genesis Analytics, 2014).

In 2003, the Ministry of Finance started a process of closing down non-viable FSCs by making R5.3 million available to refund the savings of FSC members that had run into liquidity challenges and had lost members' savings. Only 13 out of 62 registered FSCs officially agreed to close operations, while the rest continued operating. The remainder were then regulated by the South African Microfinance Apex Fund (SAMAF) under an Exemption Notice No. 887 of 2008 (Genesis Analytics, 2014).

SAMAF was initially established to improve access to financial services and support capital mobilization on a wholesale basis for onlending to co-operatives and other intermediaries as delivery mechanisms for its services to economically active poor. It also invests in intermediaries' technical assistance to improve their efficiency. SAMAF was later merged into the Small Enterprise Finance Agency (SEFA), which later redefined its role as a wholesale funding institution for co-operatives and other enterprises.

3.3.4 The co-operative reform period (2004 to date)

Given that the CFI sector had remained fragile with fragmented regulations, the government had to come up with its first explicit Co-operative Policy in 2004. The Co-operative Policy followed the realization that the sector need to operate according to the universally accepted principles and values of the co-operative movement. The policy also forms the basis for Co-operative Strategy (2004-2014), the new Co-operative Act of 2005 and the Department of Trade and Industry's (DTI) Corporate and Intellectual Property Commission (CIPC) as frameworks for implementation of the policy. The Registrar of Co-operatives' office in DTI was mandated with the responsibility for the legislative framework, policy and strategy, coordination and administration of the co-operative sector.

In order to accelerate the formation of co-operatives the DTI launched in 2010 the Co-operative Incentive Scheme (CIS), which is a 100% grant for registered primary co-operatives. The

objective was to improve the viability and competitiveness of co-operative enterprises by reducing their operating costs, with a maximum limit of R350,000. According to the DTI (2014), in the 2012/2013 financial year, a total of 1,527 co-operatives were supported under the CIS to the tune of R152.7 million. Towards the end of the Co-operative Strategy (2004-2014) lifespan, the government came up with a more comprehensive strategy titled “Integrated Strategy on the Development and Promotion of Co-operatives (2012-2022)”. The four pillars for support of co-operatives are (a) increasing the supply of non-financial support services to co-operatives; (b) creating demand for co-operative enterprises products and services; (c) improving the sustainability of co-operatives; and (d) increasing the supply of financial support services to co-operatives (DTI, 2012).

The new Co-operatives Act (No. 14 of 2005) came into force providing for “the formation and registration of co-operatives; the establishment of a Co-operatives Advisory Board; the winding up of co-operatives; the repeal of Act 91 of 1981; and matters connected therewith” (Republic of South Africa, 2005:2). Furthermore, the Co-operatives Act spelt out the duties and responsibilities of government towards the co-operative movement. The duties include the registration of co-operatives; the dissemination of information about co-operatives; and the provision of support to co-operatives through its departments, ministries and agencies. Moreover, the Co-operative Act aimed to promote the formation of sustainable black-owned co-operatives, particularly among rural and underdeveloped communities. An immediate positive effect of the formal legislative framework was an upsurge of newly established black-owned co-operatives, as shown in Figure 3.1 below. The number of co-operatives registered between 1922 and 1994 were about 4,000 on average (DTI, 2012). From 2004 onwards, after the Co-operatives Act of 2005 was in place, the country witnessed an increase in the number of newly registered co-operatives. In 2014, the CIPC highlighted that it was receiving huge number of new registration applications.

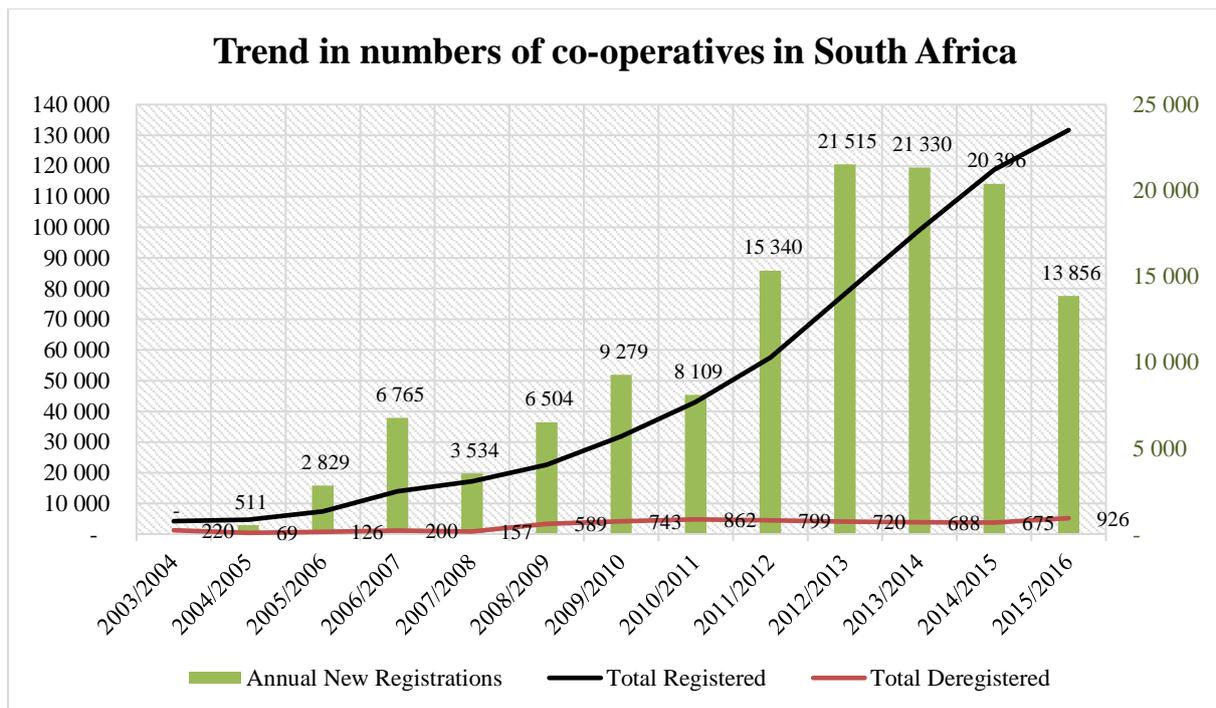


Figure 3.1: Trend in numbers of co-operatives in South Africa

Source: Author's compilation using secondary data from the DTI and CIPC

The CIPC attributed this increase to “government departments promoting the registration of co-operatives as a vehicle for poverty alleviation, and assisting rural communities to grow economically” (CIPC, 2014:105). By the 2015/2016 financial year, it was estimated that nearly 132,000 co-operatives were registered in South Africa based on the CIPC's statistics on new registrations over the years (CIPC, 2006-2016). Although the country has witnessed a rapid increase in the number of co-operatives, this growth has not correlated with the strengthening of the co-operative sector. The focus of government tends to be on the number of registered co-operatives rather than the extent to which existing co-operatives sustain themselves without government intervention.

Braverman et al. (1991) argued that measuring success of the co-operatives sector by noting the number of co-operatives does not add any meaningful information, given that the number of co-operatives is not an indicator of the strength of the co-operative sector. In fact, some co-operatives could exist merely on paper, but provide no specific goods or services. Similarly, such co-operatives might be established merely in order to access government resources, which is the case in South Africa. According to the DTI (2009:39) baseline study,

only 2,644 of the 22,030 could be confirmed to be operational, representing a mere 12% survival rate, indicating a mortality rate of 88%. This might reveal that most co-operatives in South Africa have not been formed on a genuine basis. They tend to be established for the purpose of accessing free money, instead of genuinely building a co-operatives movement that addresses some economic and social ills. Testimony to this are ongoing conflicts among co-operative members over issues of money and the usage and ownership of assets, coupled with poor management and co-operation.

However, an effective board is crucial to improve performance of co-operatives by monitoring senior management and providing guidance for strategy (Allemand et al., 2013).

3.3.5 Regulatory reforms in the Co-operative Finance sector

Before the promulgation of the Co-operative banks Act of 2007, all financial co-operatives operated under the regulatory guideline of the Co-operatives Act of 2005. The Co-operative banks Act is intended to improve access to financial services by providing a legislative framework allowing co-operative banks to develop and provide financial services to their members. The Act enabled the establishment of the Co-operative banks Development Agency (CBDA) in 2009, which took over the CFIs, once supervised by SACCOL and SAMAF, that comply with registration requirements of R100,000 in share capital and 200 members in April 2012. The CBDA is responsible for regulating and supervising primary financial co-operatives that hold deposits of between R1 million and R20 million, and have a membership of at least 200 members. The same Act mandates the SARB to regulate and supervise all primary co-operative banks holding deposits of over R20 million (Republic of South Africa, 2007).

This model encourages the development of financial co-operatives into co-operative banks, and collectively they are referred to as co-operative financial institutions (CFIs). It is important to note that the CBDA and SARB are under the Ministry of Finance (Treasury), and from 2010 to 2014 they used to come up with combined annual reports of supervisors even though the first two co-operative banks were registered in 2011. The CBDA is also mandated to provide CFIs with capacity building, training and technical assistance programmes (Republic of South Africa, 2007). The CBDA is putting more emphasis on ensuring that CFIs achieve financial sustainability through enforcing some prudential limits such as (i) external credit limit may not exceed 15% of total assets, and (ii) there should be no more than 5% investment in non-earning and fixed assets to total assets. The business of a CFI is deposit-taking and issuing loans,

therefore it need to maintain enough liquidity to meet withdrawals (CBDA, 2016a). In this regard, Périlleux (2013) recommended the need for adequate supervision and good governance, as maturity mismatch can be fatal for CFIs, and can generate dramatic social consequences, such as the destruction of poor people's savings.

3.3.6 National Association of CFIs in South Africa (NACFISA)

Since the closure of SACCOL in 2011 and the merge of SAMAF and SEFA in 2012, the sector was left without an apex and advocacy body. Given the different development history of SACCOs and FSCs, the two had been in separate camps. The National Association of Co-operative Financial Institutions in South Africa (NACFISA) was formed in 2013 as an umbrella body for SACCOs, FSCs and co-operative banks to represent and provide second-tier support to CFIs. Currently NACFISA is financially weak and is being housed and supported by the German Co-operative Confederation (DGRV), an organization representing the German co-operative banking sector (NACFISA, 2013). The expected role of NACFISA is to work with the CBDA to provide capacity building, training and technical assistance programmes to CFIs, with the long-term view of taking over this role completely, leaving the CBDA as a purely regulatory and supervisory body. Many stakeholders are of the view that its formation and rolling out of operations has been slow owing due to loss of key staff and limited resources (Genesis Analytics, 2014). NACFISA has membership to the African Confederation of Co-operative Savings and Credit Associations (ACCOSCA) and the WOCCU.

3.4 CFIs GROWTH PATTERNS AND TRENDS (2004 TO DATE)

Given the different development history of CFIs in South Africa, where SACCOL was focusing on the formation of employment- or association-based SACCOs in towns, while FSCs started in rural areas with the assistance of IFAD and AFRACA, their distribution across the country represents that historical development. From Figure 3.2 below it can be noticed that most SACCOs are concentrated in major town provinces, that is, Gauteng and the Western Cape, whilst FSCs are mostly in rural and peri-urban provinces, that is, Limpopo, Kwazulu-Natal and North-West, where the IFAD and AFRACA project focused. However, it is surprising that there are few CFIs in Mpumalanga despite the province being another focus for the IFAD and AFRACA village banks project.

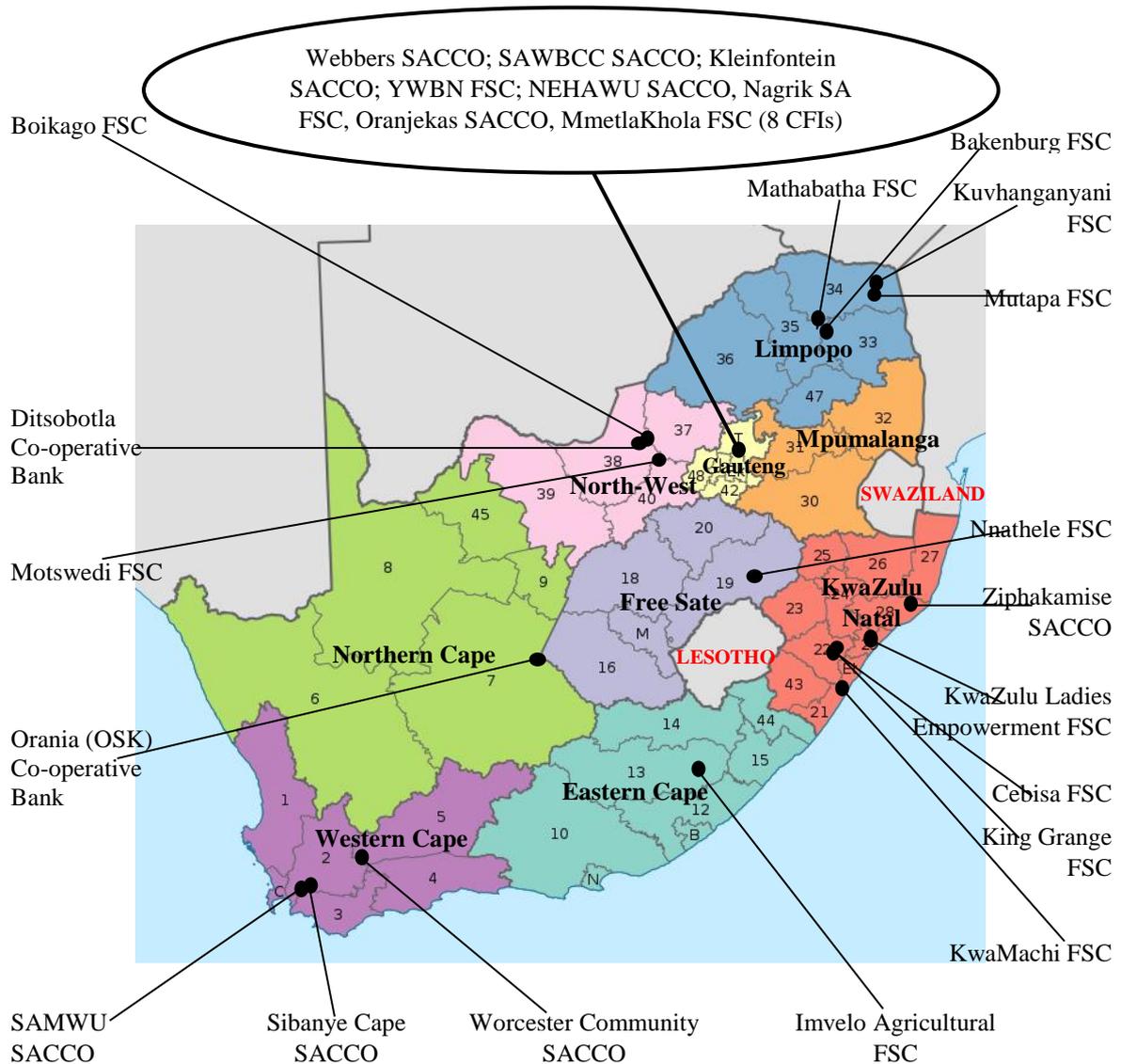


Figure 3.2: Distribution of CFIs in South Africa

3.4.1 The state of South African CFIs compared to African peers

Despite government efforts in policy formulation, regulatory reforms, capacity building and financial support, there seems to be nothing much to show for it. The country has the lowest financial co-operative penetration rate compared to other African countries, as well as a low number of CFIs and assets. This is despite the importance placed on CFIs to address financial market failures in South Africa through increasing alternative inclusive financial mechanisms. As shown in Table 3.2 below, South African CFIs are still an insignificant industry with a lowest penetration rate at 0.06% compared to Africa’s average of 8%, Kenya (13.3%) Togo (26.7%), Senegal (15%) and Mauritius (5.2%). South Africa also lags behind mature countries:

Australia (17.6%), Canada (46.7%), United States (52.6%) and Ireland (74.5%) (WOCCU, 2016).

Before the global financial crisis in 2007, credit unions had 177.4 million members and total assets of US\$1.2 trillion. By the end of 2015 these figures jumped to 235.8 million members and US\$1.76 trillion in total assets. The resilience of CFIs to the global financial crisis had attracted the interest of many people to be members (WOCCU, 2016).

Table 3.2: The state of CFIs in Africa (2016)

Country	No. of CFIs	Members	Savings (USD)	Loans (USD)	Reserves (USD)	Assets (USD)	Penetration
Benin	36	1,830,428	145,189	186,805	19,611,893	153,253,629	0.17%
Burkina Faso	67	1,632,773	286,709	222,764	74,479,551	427,328,715	0.09%
Cameroon	220	457,539	236,239,892	197,857,175	21,769,196	306,655,892	2.00%
Ethiopia	5,5	1,112,195	38,283,824	23,927,287	NA	NA	1.11%
Gambia	71	69,296	19,828,542	15,240,417	NA	NA	3.50%
Ghana	476	571,479	155,051,340	89,168,440	20,292,378	185,452,491	2.07%
Guinea-Bissau	6	9,905	311,511	126,604	39,98	386,474	0.56%
Ivory Coast	64	1,171,212	325,811	303,015	NA	NA	5.07%
Kenya	6468	6,272,077	4,200,055,451	5,177,292,286	548,520,106	6,324,267,668	13.28%
Lesotho	90	76,000	NA	NA	NA	7,300,000	3.49%
Liberia	45	3,459	726,295	571,596	NA	NA	0.08%
Malawi	32	80,807	10,550,877	9,259,759	2,246,736	14,414,511	0.46%
Mali	70	1,042,995	74,716,100	76,043,772	20,444,812	116,520,267	5.97%
Mauritius	138	66,000	NA	NA	NA	35,000,000	5.24%
Niger	44	262,465	15,980,370	20,827,954	13,378,333	26,361,863	1.32%
Rwanda	416	1,607,560	101,831,680	46,295,264	27,803,247	137,199,202	13.82%
Senegal	214	2,247,473	315,954,216	334,423,346	136,443,672	523,410,834	15.01%
Seychelles	1	14,889	19,980,575	5,023,271	1,351,965	22,918,963	15.84%
South Africa	26	33,400	NA	NA	NA	23,000,000	0.06%
Swaziland	73	40,582	NA	NA	NA	100,400,000	3.08%
Tanzania	5,559	1,153,248	283,000,000	545,000,000	NA	599,500,000	2.14%
Togo	82	1,979,208	206,458,781	164,842,853	NA	NA	26.68%
Uganda	1,94	1,325,517	163,178,721	168,903,123	NA	136,570,652	3.30%
Zambia	11	20,767	4,761,899	15,695,323	NA	18,969,316	0.13%
Zimbabwe	75	167,500	12,711	4,559	4,090	19,342	1.06%
TOTAL for Africa	21,724	23,248,774	5,847,680,494	6,901,215,612	886,385,958	9,158,929,819	8%

Source: WOCCU (2016) Statistical Report

3.4.2 The growth trend post-CBDA regulation

Over the recent years, there has been a decrease in South African CFIs and membership from 121 and 59,394 in 2011 to 30 and 29,818 in 2017 respectively (CBDA, 2015 and 2017), as shown in Table 3.3 below. The decrease can be partly explained by the setting of the minimum number of members and share capital contribution at 200 and R100,000 respectively by the CBDA. The implementation of the regulation could have been harsh to small but growing CFIs, forcing some out of the regulatory environment or pushing out the rent-seeking ones formed to benefit from government financial support. This puts to question whether the South Africa sector has reached the crossroads despite the global financial co-operative movement coming out of the global financial crisis stronger and unscratched; or does it still have a future?

Table 3.3: The trend in the numbers of CFIs from 2010 to 2017 (amounts in Rands)

	No. CFIs	Members	Savings (ZAR)	Loans (ZAR)	Assets (ZAR)
2010	56	36,434	124,365,000	93,651,000	142,069,000
2011	121	59,394	175,265,000	116,577,000	195,213,000
2012	106	53,240	196,230,000	132,227,000	217,506,000
2013	35	38,084	200,841,000	142,310,000	220,800,000
2014	26	33,391	198,624,948	140,463,755	231,367,670
2015	26	24,721	201,101,522	152,143,102	236,533,481
2016	30	29,752	233,763,289	179,338,526	279,624,000
2017	30	29,818	228,216,993	202,160,606	293,493,697
% 2010-2017	-46.4	-18.2	83.5	53.7	51.6
% 2011-2017	-75.2	-49.8	30.2	42.3	50.3

Source: Authors' own compilation based on CBDA and SARB Annual Reports

However, it seems the remaining CFIs, though with fewer members, are gaining the confidence of their members, given an increase in savings, loans and total assets over the years.

3.4.3 The composition of CFI categories to overall sector

The CFI sector in South Africa as discussed is currently small, though it could play a more significant role given a huge potential market to improve the quality of financial inclusion. Currently there are only two registered co-operative banks (Ditsobotla and Orania), nine SACCOs and 15 FSCs. Co-operative banks are community based, whilst SACCOs are more concentrated in towns and cities (mainly in Gauteng and the Western Cape), given their historical focus on employees and associations. FSCs are more present in rural communities and townships.

According to Table 3.4 below, in terms of size, on average Co-operative Banks (CBs) are the largest, with average total assets of R56.8 million compared to SACCOs (R13.7 million) and FSCs (R2.5 million). CBs also lead in terms of savings, loans and investments, which is not surprising as they are required to have a minimum deposit of R20 million compared to R1 million for SACCOs and FSCs. However, with regard to membership mobilization and member share capital contribution, SACCOs are doing well compared to CBs and FSCs. SACCOs are proving to be aggressive in lending as 74% of their total assets are loans compared to CBs (71%) and FSCs (38%).

Table 3.4: The contribution of CFIs categories to the sector in 2017 (amounts in Rands)

	Co-operative banks	SACCOs	FSCs	Totals
No. of CFIs	2	11	16	29
Members	2,392	18,308	12,387	33,087
Member Share Capital	777,577	21,414,190	6,371,068	28,562,835
Savings Deposits	103,973,004	112,933,809	28,719,760	245,626,573
Loans	80,780,917	111,866,694	15,424,678	208,072,289
Investments	29,279,936	28,052,149	21,514,808	78,846,893
Total Assets	113,674,620	150,290,221	40,603,985	304,568,826
Average Members	1,196	1,664	774	1,141
Average Member Share Capital	388,789	1,946,745	398,192	984,925
Average Savings Deposits	51,986,502	10,266,710	1,794,985	8,469,882
Average Loans	40,390,459	10,169,699	964,042	7,174,907
Loans to Total Assets	0.71	0.74	0.38	0.68
Investments to Total Assets	0.26	0.19	0.53	0.26

Source: Author compilation using CBDA and SARB Annual Reports

FSCs are not lending much to their members as they are investing most of their mobilized savings, as 53% of their total assets are in fixed investments, especially with banks and the RSA Financial Co-operative Retail Bonds. The CBDA, in its 2015/2016 annual report, reported that the amount invested by CFIs had reached the R6 million mark, with over R217,000 earned in interest. This translates to an average annual return of just 3.62%. This looks like a bad strategy as CFIs need to lend back to their members so that they can engage in more productive economic activities that will help them break the circle of poverty caused by lack of access to finance and low productivity. Unsurprisingly, FSCs have low membership, averaging just 800 because members might not see the real economic benefits of making savings while access to credit facilities is being restricted. Jayashankar et al. (2015) and Du (2017) recommend that rural savings mobilized by financial institutions must be invested back in rural areas to promote

local entrepreneurship and community projects that foster development. CFIs need to achieve sustainability in their operations.

3.5 IMPLICATIONS OF PAST AND CURRENT TRENDS ON SUSTAINABILITY

The South African CFIs are being confronted by challenges which have destabilized their success despite the intensive sector support especially after the Apartheid government. For South Africa CFIs to become truly sustainable, they must radically apply the principles and values of the cooperative movement. This requires elimination of dependence on the state and ensuring that cooperatives address socio-economic issues which they are formed to resolve. In addition, there is a need to promote the organic growth of cooperatives as opposed to government facilitating a false growth through unsustainable financial and non-financial incentives. If properly harnessed cooperatives can be an instrument for addressing social ills such as crime, racism and xenophobia that have become associated with South Africa. Rwanda has demonstrated the important role of cooperatives in societal integration through reconciliation and building of social capital after the 1994 genocide (Okem, 2016). Rwanda has now a CFI penetration rate of nearly 23%, third only to Togo and Senegal (WOCCU, 2015).

From a macro-economic perspective, CFIs are able to help create middle-classes in societies as they provide an entry to the formal financial system. In a study of the emerging middle-class in Africa, Resnick (2015) and Mattes (2015) found that the existence of a broad middle-class greatly contributes to political and economic stability which is so fundamental for sustainable economic development and social transformation. CFIs are able to improve the ‘financial literacy’ of the biggest number of the population, especially in South Africa, where financial literacy is low. CFIs institutionalize the relationship between the saving members and the borrowing members. The results are committed savers who understand what their CFI is using their money for (improve livelihoods, promote fair trade, and respect of the environment), and borrowers who feel having a societal debt. To enable CFIs to attain sustainability there is need to continuously improve their efficiencies by reducing unnecessary waste through improved managerial capabilities, technology, effective marketing, risk management, market-based rates and being member-centric. The term ‘sustainability’ has broad dimensions, including impact sustainability, environmental sustainability, mission sustainability, market sustainability, institutional sustainability, programme sustainability, and financial sustainability (see Marwa and Aziakpono, 2015).

3.5.1 How CFIs can attain sustainability in the provision of inclusive finance

CFIs have become a global reality that can no longer be ignored. Universally they are showing how to run banking in a less speculative, more reality-oriented manner in order to reduce the financial exclusion gap and avoid future crises. Although CFIs in number and size are still relatively small factors within the international financial business, their importance is growing, especially in Africa and Asia, where financial inclusion rates are still very low. For example, in Kenya, CFIs are playing a significant role serving more than five million adults, and managing assets in excess of US\$5 billion, mostly loans (WOCCU, 2015). South Africa could learn from the Kenyan experience particularly given the reality of little growth and development through the current state-led approach to the cooperatives development. In Kenya, it was only after the state reduced its active role in the running of cooperatives that saw them flourishing in mobilizing people socially and economically through the adoption of cooperative principles and values (Okem, 2016). There also is need for South African cooperatives to appeal to the middle-class society to attract valuable financial capital which is a key challenge in the South African cooperative sector.

3.5.2 How sustainable financing promotes socio-economic development

CFIs have been proven in so many ways as a source of ethical finance which balances the triple bottom line (people, planet and profit) through applying the principles of social responsibility, transparency, and sustainability. According to Benedikter (2011), during the global financial crisis of 2007-2010, not only did they not lose any money, but they made the highest gains in their history, increasing their assets with growth rates of about 20-25% per year during 2006-2008 alone. In 2009, at the peak of the crisis, their average growth rate was about 30%. The answer is easy: during the crisis, many customers gained insight into the “mainstream” banking and moved their investments to CFIs. However, without any doubt, CFIs must undertake constant, periodically renewed reforms to remain competitive in the fast-changing financial sector environment as they cannot take their outstanding success, particularly during the crisis years, for granted. Cooperatives are an effective instrument to attain nearly all the United Nations’ Sustainable Development Goals by empowering communities through improved access to financial services. However, understanding the financial inclusion gaps and structure of the banking sector will help identify sustainable growth opportunities for CFIs.

3.6 OVERVIEW OF FINANCIAL INCLUSION IN SOUTH AFRICA

Of the 39 million adult population in South Africa, 77% have bank accounts, but usage is low. If the social grant beneficiaries are excluded, only 58% are banked. Most of the social grant beneficiaries just have access to a transactional bank account to receive monthly government payouts, but they lack access to the much-needed credit facilities from banks (i.e. quality of financial inclusion). According to FinMark Trust (2015), 27% of people withdraw their money immediately from their accounts given no real return on savings owing to high bank fees. This makes South Africa's savings rate one of the lowest in the world at 16.3% compared to its peers in middle-income and emerging economies at above 20% (SARB, 2017a). On the other hand, banks are not a major source of credit for many South Africans as just 14% are borrowing from banks, 46% from non-banking financial institutions (NBFIs), and 51% from various sources (FinMark Trust, 2015). High credit rationing may be due to the structure of the banking sector.

3.6.1 The structure implications of the banking sector on financial inclusion

Over the years the number of registered banks has been decreasing, from 30 in 2002 to 17 in 2016, a situation which increases the dominance of some banks in the market, as shown in Table 3.5 below. Minsky (1993) found that with bank concentration big banks become concerned with big deals, making some households and small businesses credit rationed. This is in line with the structure-conduct-performance theory of market structure and bank behavior. South Africa's banking sector is dominated by five big banks⁹, which collectively held 90.7% of the total banking-sector assets as at 31 December 2016 (31 December 2015: 89.2%). The local branches of foreign banks accounted for 5.8% of the total banking-sector assets at the end of December 2016 (December 2015: 7.3%), while the remaining banks operating in South Africa represented 3.5% at the end of both December 2015 and December 2016 (SARB, 2016). This level of domination is much higher than China's five large commercial banks at 44%, which Wahed (2017) thinks is high.

This oligopoly structure has resulted in lack of competition in the banking system owing to barriers to entry which have a negative impact in the reduction of the related banking transaction costs. As a result, nearly 8.5 million are excluded from the formal banking system, according to FinMark Trust (2015). The coming into the market of foreign banks and branches

⁹ Standard Bank, FirstRand Bank, ABSA Bank, Nedbank and Investec Bank.

of international banks failed to dilute the dominance of the big banks as new entrants decided to focus on the niche markets not dominated by the corporate banking divisions of the big five. This credit market failure presents an opportunity for CFIs and ROSCAs (stokvels) to play a crucial role in the provision of social banking services in local communities.

Table 3.5: The trend of number of players in the banking sector in South Africa

	2002	2004	2006	2008	2010	2012	2014	2016
Commercial banks	30	20	19	19	17	17	17	17
Branches of foreign banks	14	15	14	14	13	14	15	15
Mutual banks	2	2	2	2	2	3	3	3
Co-operative banks	0	0	0	0	0	2	2	2
Representative offices	52	43	43	43	41	41	40	36
TOTAL	98	80	78	78	73	77	77	73

Source: Author compilation from SARB Annual Reports

3.6.2 The significance of the informal financial market in South Africa

According to the DTI (2012), there are at least 800,000 active stokvels with nearly 10 million members. Stokvels occupy a vital position in the South African economy regardless of functioning largely in the informal market. The stokvel economy is estimated by various sources to be between R25 billion to R49 billion (Schoeman et al., 2003; DTI, 2012; Coetzer, 2014). The financial aspect of these associations is undoubtedly significant, which presents a huge potential market for CFIs. A survey done by Old Mutual (2017), reveals that nearly three-quarters of working South Africans use informal savings as their savings and investment vehicles, with 53% of them using stokvels, while 32% and 16% are using burial societies and grocery schemes respectively. 50% of respondents indicated that they had borrowed at least once an average of R4,660 in the past year to smooth household consumption and accumulate assets. In the same survey, 14% indicated that personal borrowings are from financial institutions (22% in 2016), while 13% borrow from families and friends, and 6% from a microlender.

The two surveys (FinMark Trust and Old Mutual) are giving a clear indication that banks are not a major source of saving and borrowing for most South Africans, who prefer the informal financial arrangements connected to social ties. Even though there are more formal alternative sources of saving and borrowing in the country, given its developed financial system, social networks are strong ties that binds when it comes to finances. Given that CFIs make use of the social capital at the grassroots, they are well positioned to play an important financial intermediation role in local communities. The insignificant role currently being played by CFIs,

despite over eight million adults being financially excluded, and informal financial services (stokvels) dominating, is a strong call to evaluate their efficiency and sustainability. The findings will assist in coming up with better informed, evidence-based managerial and policy recommendations to improve their performance and outreach to the poor and working class with appropriate innovative financial services.

3.7 CONCLUSION

The co-operative movement in South Africa has come a long way since 1892 with necessary enabling and at the same time restrictive regulations to facilitate or hinder performance along racial lines. The government's support and incentives failed to enable the growth of the sector even after the apartheid era. Most co-operatives are being formed for the wrong reasons just to benefit from government grants. The high mortality at 88% is of grave concern to policymakers who expected the sector to be playing a significant role in economic development. The government's top-bottom approach is proving to be a failure as it is destroying the self-help echoes of the co-operative movement. Besides, the sector is also being affected by lack of critical skills in management at the board of directors' level to provide strategic direction.

CFIs seem to be performing below their potential, as they are small and weak. The coming in of the CBDA seems to have unsettled the sector, as witnessed by the sudden drop of players from 121 in 2010/11 to just 26 in 2014/15. However, the provision of capacity building, limitation of external borrowing and investment in fixed assets, and the agency's emphasis on financial sustainability encourage organic growth of the sector through active outreach strategies as opposed to the top-down approach. The market for CFIs seems to be ripe as the majority of the poor and working class are shunning banks as sources of savings and credit, preferring the informal arrangements based on strong social capital. More people are generally spending more time in social networks, which increasingly form part of consumer purchase processes for new products and services, which positions CFIs to effectively provide social banking.

In addition, education on CFIs' value proposition is necessary to attract more membership from the working class, the rural population, stokvels and other organized groups. However, policymakers need to implement policies that encourage sustainable development of the sector through active members' contribution and participation at the grassroots; that is, encourage the bottom-up approach. On the other hand, CFI management needs to address the critical skills shortage in the sector by taking advantage of the free technical assistance from the CBDA,

among other providers. If the above measures are properly implemented, financial co-operatives can become sustainable enterprises.

The area of further research would need to empirically investigate how financially sustainable CFIs are and what determines their sustainability so that more empirically driven recommendations could be made.

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CHAPTER FOUR

FINANCIAL SUSTAINABILITY OF CO-OPERATIVE FINANCE INSTITUTIONS IN SOUTH AFRICA¹⁰

4.1 INTRODUCTION

In recognition of the importance of co-operatives in promoting global equity and sustainable development, the United Nations declared the year 2012 as the “International Year of Co-operatives.” This remarkable development puts co-operatives back on the global political and economic agenda of policymakers, a position which had already been reaffirmed by their resilience during the global financial crisis (Battilani and Schröter, 2012; Birchall, 2013 (Martínez-Campillo et al., 2016; Gogilo and Alexopoulos, 2016). These events seem to be sufficient to justify an assessment of their role and sustainability in the world economy. Co-operative Financial Institutions (CFIs) are one type of such social enterprises that pool members’ financial resources for onward lending to the same members based on collective governance (Scheidel and Farrell, 2015). This social intermediation enables members to enter into a social contract involving reciprocal obligations that foster community development (Bennett and Cuevas, 1996). As providers of sustainable finance, CFIs are faced with a challenge of how to balance the interaction between their financial, social and environmental concerns.

CFIs are increasingly becoming important players within the financial sector capable of addressing social and economic imbalances in local communities experiencing financial markets failure (Brown et al., 1999; Battilani and Schröter, 2012; Gogilo and Alexopoulos, 2016). Being grass-root innovations and member-driven enterprises deeply rooted in local communities, CFIs are theorized to be better positioned to reduce information asymmetry and high transaction costs which result in market imperfections and credit rationing (Stiglitz and Weiss, 1981; Paxton and Cuevas, 1998; Giagnocavo and Gerez, 2012). By creating strong social capital among their members, they are able to improve access to financial services for low-income households excluded from mainstream banking (Manetti and Bagnoli, 2013; Ojong, 2014). As social enterprises they cannot usually be said to have the profit maximization

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goal but the goal of maximizing benefits provided to members. However, to effectively achieve a fair balance on the economic, social and ecological well-being aspects, first and foremost CFIs must be sustainable, just like micro-angel investors who are concerned with how their investment can contribute to the triple-bottom-line (Etapé-Dubreuil et al., 2016).

Costanza and Patten (1995: 193-194) define the broad term of sustainability as a “system which survives or persists”, whilst “economically, it means avoiding major disruptions and collapses, hedging against instabilities and discontinuities.” Sala et al. (2015) advise that the goal of sustainability assessment is to help pursue plans and activities that make an optimal contribution to sustainable development. In the microfinance context, Sa-Dhan (2004) highlighted that the term ‘sustainability’ has broad dimensions including financial sustainability, institutional sustainability, mission sustainability, programme sustainability, human resource sustainability, market sustainability, environmental sustainability, and impact sustainability. However, McKillop and Wilson (2003) argued that if CFIs are to effectively achieve their social and environmental missions they must achieve their economic missions first. The same logical thinking is supported by Hannam and Ashta (2017) who argued that the maximization of social impacts is impossible without long-term financial sustainability through reinvesting surpluses into the business and also remaining vigilant about cost-control. Rhyne (1998) rightly suggests that “sustainability is not an end in itself but rather a means to the end of improved social welfare.” The concern for financial viability stems from the need to generate sufficient resources to support the social mission rather than from a desire to maximize profits (Santos et al., 2015; Martínez-Campillo et al., 2016). The current study is an attempt to understand financial sustainability of CFIs in South Africa and their quest to contribute to sustainable community development. It also attempts to suggest managerial recommendations to improve their performance in poverty reduction.

South Africa is an interesting case to study CFIs. The industry has been on a declining trend since 2011 in terms of number of players and membership despite the global movement emerging stronger from the global financial crisis. This poses the question, how financially sustainable are South African CFIs in their attempt to contribute to local development? Understanding financial sustainability of CFIs is crucial for three reasons: firstly, to safeguard or enhance their performance for continued provision of financial solutions to the marginalized communities. Secondly, as discussed by Marwa and Aziakpono (2015), it acts as a barometer to inform interested stakeholders how to guide the industry in the desired direction to attain its triple bottom-line goals. Lastly, it makes a distinct contribution to the sustainability discourse.

We estimate the financial self-sufficiency (FSS) scores and explore factors which explain the variations in sustainability scores and suggest measures to improve it.

This chapter presents the contextual background and role of CFIs in community development (Section 4.2), the theoretical and empirical literature on microfinance sustainability (Section 4.3). Data and methodology (Section 4.4), followed by results and discussion (Section 4.5), and concludes with recommendations followed by directions for future research (Section 4.6).

4.2 CONTEXTUAL BACKGROUND

In order to examine the financial sustainability of CFIs, a brief description of the context in which they operate is useful. South Africa is an interesting case to study CFIs performance to in order to accelerate their contribution to the socio-economic well-being of low-income and marginalized communities. Although the country is classified as an emerging economy and a member of BRICS (the association of five major emerging national economies: Brazil, Russia, India, China and South Africa), the country has the highest income inequality in the world with a Gini coefficient of 62.8% in 2017 up from 59.3% in 1993, with 18.6% of its population in extreme poverty and an unemployment rate of 27.7% (World Bank, 2018). About 8.5 million of its adult population are financially excluded despite having a well-regulated and developed financial service sector by international standards (FinMark Trust, 2015). The World Bank (2018) estimated its unbanked adult population at 33%, with the majority being thinly served with savings facilities only.

South Africa's banking sector is highly dominated by the five big banks, which collectively hold 90.7% of the total banking sector assets as at 31 December 2016, up from 89.2% in 2015 (Mushonga et al., 2018). Minsky (1993) posits that in an oligopolistic market, big banks are interested with big deals, making households and small businesses in need for small credit facilities being credit-rationed due to high information asymmetry and transaction costs. Recent empirical findings by Seven and Coskun (2016) suggest that although financial development promotes economic growth, neither banks nor stock market development play a significant role in poverty reduction in emerging countries. Sarkar and Pansera (2017) discovered that, while the grassroot poor micro-entrepreneurs live and work in resource-constrained environments they strive to create economic value by combining social and environmental goals to shape their future. To circumvent these challenges CFIs have been encouraged in South Africa as an instrument for socio-economic empowerment (see Genesis Analytics, 2014). According to Mushonga et al. (2018) South Africa has a long and rich history

of community-based financial institutions designed to assist the poor which dates back to the early 1890s. This history includes stokvels, Rotating Savings and Credit Associations (ROSCAs), and financial co-operatives which were set up and grant funded by the government, development agencies and the wider communities. However, the sustainability of these early attempts outside grants was questionable.

The growth pattern of the CFI sector has not been encouraging as the country has the lowest penetration rate in the world of 0.06% (WOCCU, 2016) despite consensus among policy makers of their importance to attain the 2030 Agenda for Sustainable Development. Despite the global CFI movement coming out of the recent global financial crisis stronger with an impressive growth in numbers and membership, South Africa is on an opposite trajectory. In a comparable period between 2011 and 2016, the global CFI industry grew 20% in membership to 235.7 million, 35% in their numbers to 68,882 CFIs, 14% in total assets to US\$1.56 trillion and a penetration rate up from 7.80% to 13.55% (WOCCU, 2011 and 2016). However, the number of CFIs in South Africa and their membership has decreased from 121 and 59,394 in 2011 to 30 and 29,818 in 2017.

The negative growth can be partly explained by changes in regulatory requirements and because of insolvency. In 2011 the Co-operative Banks Development Agency (CBDA) fixed the minimum membership at 200 and share capital contribution at R100,000 pushing small CFIs out of the regulatory environment (CBDA, 2014). In other economies CFIs are significant players. In 2015 Austria's two CFIs, Raiffeisenbanks and Volksbanks, together hold more than one third of the total banking assets, in Italy the SMEs market share in 2014 was 19.7%, in Germany they control 14% of the banking market (Karafolas, 2016), and Desjardins, the largest cooperative bank in Canada, serves more than seven million clients (Périlleux and Nyssens, 2017).

Previous attempts by the South African government to improve access to financial services using the market-driven microcredit approach resulted in unintended consequences. The Usury Act exemption of 1992 scrapped the interest ceiling on loans below R6,000 with a repayment period of less than 36 months, therefore promoting the mushrooming of microcredit institutions (MCIs) which was initially widely seen as one of the solutions to fund small businesses and therefore reduce high unemployment, inequality and poverty that prevailed in the black South African community. The end result was further impoverishing of far more black South Africans

than it was actually helping to escape from poverty by exploitative rates pushing financially illiterate borrowers into overindebtedness (see Schoombee, 2009).

One of the most devastating manifestations of the problems brought about by market-driven MCIs was in relation to the events of August 16th, 2012, when 34 striking miners were shot dead by police in the Marikana mining area in Rustenberg. The genesis of this disturbing incident lies in the fact that many MCIs saw mineworkers at the Marikana mine as ideal clients for consumer credit, with many miners being financially illiterate. The widespread use of the garnishee order system by MCIs ensure timely collection and reduced repayment risk. By 2012, a very large percentage of miners in Marikana were in serious debt with some receiving only 30-40% of their monthly salary with the rest going to repay microloan instalments, forcing them to sign up for subsequent larger loans. Miners were in a debt trap. Eventually the miners' anger turned to frustration and rage, and then to job action which resulted in the worst episode of state violence to date in post-apartheid South Africa.

In addition to numerous payday lenders and traditional loan sharks, a total of 81 formal MCI branches were providing financial services to a population of around 250,000 people in Rustenburg alone. It is agreed that greedy profit-driven MCIs were to blame for the single-minded way that they 'pushed' large amounts of expensive debt on to these vulnerable individuals (see Bateman, 2015 for a detailed study). This raises the question as to whether microcredit policies are part of the solution, or in fact part of the problem given the increase in the over-indebtedness of the poor (Guérin, et al., 2014; Khachatryan and Avetisyan, 2017). This makes CFIs important not only in giving members an opportunity to pool their savings and access fairly priced credit but an opportunity to strengthen the social fabric and their financial well-being.

Being self-help enterprises with triple-bottom-line outcomes, CFIs are better positioned to finance economic activities with greater benefits not only to society but to the environment, such as the financing of smallholder farming activities (see Scheidel and Farrell, 2015 for a case study in Cambodia). In Nepal, Paudel (2018) found that households in community-managed forests for firewood are more participatory and spend significantly more on food consumption than those relying on government forests. Similarly, Brites and Morsello (2018) found that fostering community co-operation may outcompete financial benefits. Bateman (2007) found CFIs at the centre of economic, social, and ecological transformation in Emilia Romagna (Italy) and Basque (Spain). Despite these regions being extreme casualties of World

War II, CFIs were active in mobilizing local savings and investing them locally. Finance was directed to member small-growing co-operative businesses, with potential to local development impact on quality employment creation, ability to feed into the local manufacturing value chains and a contribution to the environmental protection. While once poor and under-developed, Emilia Romagna became the second richest region in Italy and the tenth richest region in the EU. CFIs were active in ensuring locally mobilized savings circulated and developed the local economy, sometimes better known as slow money (see Jayashankar et al, 2015) contributing to the green environment. This is similar to what Goldstein (2001) advocated for in Costa Rica to encourage financial markets to incorporate long-term environmental sustainability.

In order to improve environmental and social well-being, recent research has started making strong arguments for the restructuring of investor-owned MFIs to cooperative banks, where profits and ownership belong to customers and the community (Bateman, 2010, 2011; Bateman and Chang, 2012; Sinclair, 2012; Hannam and Ashta, 2017). This will reduce community capital outflow and assure community liquidity (Scheidel and Farrell, 2015). On the other hand, CFIs attract grants or subsidized funding from the government and developmental agencies interested in community development. Although these funds are may be important in accelerating the achievement of their missions, they pose a sustainability challenge as they are more volatile and fragile and less focused. History has shown that grants weaken the community's self-help ethos on which co-operatives are founded (Mushonga et al., 2018).

4.3 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

4.3.1 Theoretical framework on the role of CFIs

CFIs have an informational advantage over the mainstream banks since they are community-based which allows them to efficiently screen prospective members, and more easily and quickly identify potential defaulters, therefore reduce screening, monitoring and evaluation costs (Ward and McKillop, 2005; Black and Duggar, 1985; Brown and O'Connor, 1995). In theory, such low-cost information and the use of social collateral to impose inexpensive but effective sanctions on defaulters makes CFIs a potential tool in the fight against financial exclusion, low productivity and poverty. These features permit CFIs to tailor loan terms more closely to borrowers' needs and lend to individuals whom banks would reject (Guinnane, 2001). However, the CFI organizational structure comes with additional drawbacks. Since co-operatives are joined by members who share a common bond, that might expose the institution to excessive systematic risk due to members' homogeneity. Additionally, the common bond

may be a stumbling block towards further growth and may negatively affect the gains from economies of scale and their ability to garner a significant talent pool for management and effective institution oversight (Marwa and Aziakpono, 2015).

There are conflicting views on whether credit unions should be “saver-dominated” or “borrower-dominated” and what effects either model may have on the distribution of benefits. The borrowing members want access to low-cost credit and saving members want a high rate of funds invested (McKillop and Wilson, 2011). This area of conflict is important to understand as it has a bearing on the CFI’s sustainability. The CFI model should place strong emphasis on how a balance in the distribution of benefits between their borrowing and saving members can be realized. Theoretically neutral CFIs are considered more efficient as neutrality is unlikely to create incentives for CFIs to discourage potential members from joining and therefore helps to maintain the strength of the institution (Smith, 1986; McKillop, Ward and Wilson, 2007; Brown et al., 1999). Neutrality maximizes the total net gains to the borrowing and saving members without bias between them in terms of optimal borrowing and savings rates (Taylor, 1971).

As a unique business model, CFIs have their own strengths and weaknesses. The advantages emanate from the share of the common bond and common interests through shared values, aspirations and social ties which bind members together to feel like real owners of the enterprise. Using the identity economics theory, Akerlof and Kranton (2000) found that when people feel they belong and partly own the organization, as “insiders” they behave differently from “outsiders”. They further posit that behavioural economics predict that “insiders” are more likely to put extra and dedicated effort to protect, advance the vision and patronize the interest of the organization. *Ceteris paribus*, the expectation is a better performing CFI compared to the investor-owned enterprise. This makes CFIs less exposed to speculative transactions and business cycles. However, CFIs operate in an institutional context which is less favourable than investor-owned MFIs in terms of size, client segments, transaction size, location and operating systems, which may impose extra costs and jeopardize their performance and sustainability.

4.3.2 Financial sustainability concept of microfinance

Sustainability has become an area of attention within the academic circle, practitioners, and policy makers after the Brundtland report of 1987. The Brundtland report foresaw sustainable development as uncompromising needs of present and future generations’ economic, social,

and environmental aspects of life (Brundtland, 1987). Sustainability measurement promotes sustainability in various ways: (i) the explicit definition of goals, (ii) changing of goals, (iii) exposing of priorities, (iv) practical ways to attain goals, and (v) proving what can be done (Schreiner, 2002). This is consistent with Sala et al. (2015) who explicitly say that sustainability assessment is conducted to support decision-making and policy in a broad environmental, economic and social context. In the context of microfinance Schreiner (2000) said that sustainable microfinance organizations must meet their goals now without harming their ability to meet their goals later.

Figure 4.1 depicts the interconnectedness of the triple-based outcomes of sustainability as an ecosystem. To achieving total sustainability requires that institutions serving the poor and marginalized must first achieve financial (economic) sustainability. Financial sustainability has a strong influence in achieving social impact to bring about an equitable society and viable interaction with the environment. The achievement of an equitable society promotes a livable ecosystem with society living in harmony with nature. CFIs need to attain financial viability for continuous provision of financial services to members who are mainly women and the poor to help them escape from the environment of low productivity and poverty.

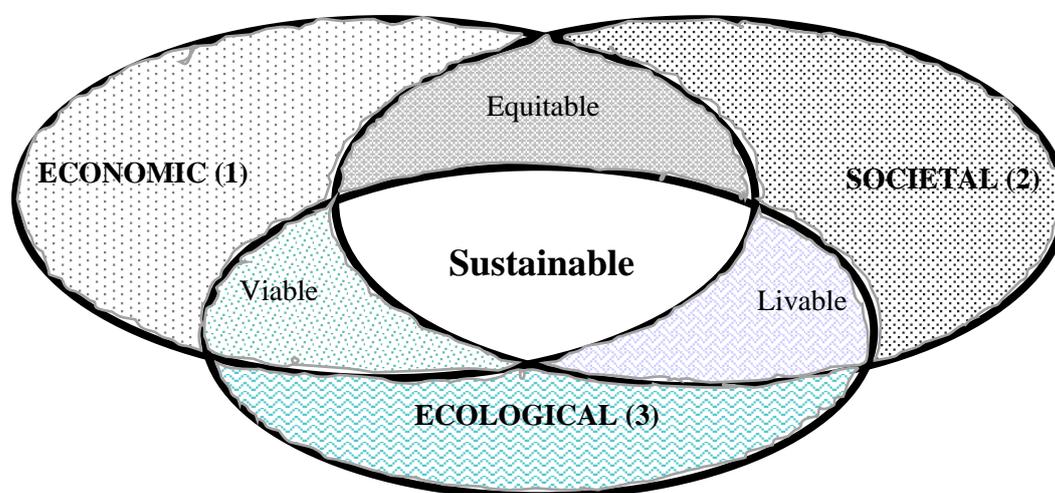


Figure 4.1: The sustainability ecosystem

Morduch (2000) acknowledged the presence of “schism” in the ideology behind microfinance. This has resulted in sustainability having bi-directional perspectives in microfinance. He urged that sustainability depends on the approach being pursued, either the poverty lending approach (welfarists) or the financial systems approach (institutionalist). Institutional scholars are concerned with the long-term viability and survival of the institutions via financial sufficiency

through profits, market-based rates and cost reduction as the future home of microfinance (Cull et al., 2007; Marwa and Aziakpono, 2015). However, researchers and practitioners with a strong focus on social impact influenced the emergence of a welfarist school of thought to increase outreach through donor and government involvement (Hashemi and Rosenberg, 2006; Woller et al., 1999; Schicks, 2007). The proponents of this approach argue that the poor cannot afford higher lending rates; therefore, aiming at financial sustainability eventually goes against the goal of serving large groups of poor borrowers. Hermes and Lensink (2011) challenge this view by stressing that sustained outreach is not guaranteed when institutions meant to serve the poor are not financially sustainable through charging market-based or cost-recovery rates. The argument is that these institutions will be able to serve more poor people than can be served by programs supported by grants (Morduch, 2000).

The welfarists push for the agenda that if focus is on financial sustainability it may lead to a trade-off on depth of outreach by serving the richest of the poor and charging of high interest rates that the poor cannot afford. They strongly believe that the social mission should be prioritized and if there are losses, the government, social investors and the donor community should cover the shortfall (Woller et al., 1999). Therefore, financial sustainability is not regarded as the immediate goal. Whilst critics of this camp forward the argument that donations have become very volatile, not building financially viable institutions might erode capital, thus putting the availability of service to the poor in jeopardy. Schreiner (2000: 425) put it clearly when he said, “Unsustainable microfinance might help the poor now, but they will not help the poor in the future because they will be gone”, whilst Adams et al. (1984) observed that unsustainable microfinance might not even help the poor now. Institutionalists believe that the objective of microfinance is to create a functional and sustainable financial intermediation, as the poor are not so worried about affordability as about accessibility to financial services. Mersland (2009) signalled that donations can affect managerial decisions by giving donors the power to influence/control the organization whilst the unsubsidized set their agenda independently.

The current study follows the institutionalist approach that microfinance programs need to levy market-based rates, control their costs and be financially sustainable to achieve social and ecological goals. More importantly, CFIs being self-help enterprises where the members are the providers of capital and also consumers of the services, the motive for profit maximization from themselves is limited compared to investor-owned MFIs. Unlike MFIs, membership is voluntary by buying shares and making savings before accessing credit. As Doherty et al.

(2014) observed, the scholarly interest in social enterprises has progressed beyond the early focus of definitions and context to investigate their management and performance.

4.3.3 Empirical literature on financial sustainability of microfinance programs

Due to data limitation there is little empirical literature on the financial sustainability of credit CFIs due to data unavailability from the Microfinance Information eXchange (MIX) database. However, the empirical findings on financial sustainability of microfinance programs is mixed. The importance of achieving financial sufficiency was strengthened by the findings of Morduch (1999a) which revealed that for Grameen Bank to become completely subsidy-independent, it would have needed to increase its lending rates by 75% in the period 1985-1996. Armendáriz de Aghion and Morduch (2005) also found that, in the period 1985-1996, Grameen received US\$175 million in subsidies, and its profits were influenced by whether or not it has received grants as part of its revenue. If Grameen was to cover expenses from its own generated revenue, then the bank had been making unsustainable losses since 1987.

In a similar comparison study between three credit unions and two non-governmental MFIs (NGO-MFIs) in Latin America, Paxton and Cuevas (1998) found that credit unions tend to have higher financial sustainability and reach more poor clients with bigger loan sizes than poverty-oriented NGO-MFIs. NGO-MFIs were highly subsidized with CARE Guatemala having an extreme Subsidy Dependence Index (SDI) of 4.77 compared to a range of -0.03 to 0.12 for credit unions. However, NGO-MFIs tend to have a greater depth of outreach than credit unions although they offer short-term loans. Whilst credit unions had FSS index averaging 1.14, CARE Guatemala NGO-MFI had zero as it is 100% grant funded. Surprisingly, the real effective interest rates for NGO-MFIs were higher at 38.25% and 55% compared to the range of 11.04% to 19.51% in credit unions. In addition, NGO-MFIs had a higher arrears rate, therefore carrying riskier assets hindering their sustainability which proves the assertion by Morduch (2000) correct that subsidized credit programs are inefficient and ultimately bound to fail.

On a sample of 1,074 MFIs using 2010 MIX dataset, D'Espallier et al. (2013) found that 23% of the world's MFIs manage without subsidies. However, unsubsidized MFIs have a lower share of female borrowers and reach fewer poor borrowers than subsidized counterparts. Financial performance and interest rates do not seem to vary with subsidization, although unsubsidized had a higher return on equity (ROE) and operational self-sufficiency (OSS) at 8.60% and 1.13 compared to 7.19% and 1.11 respectively for subsidized MFIs. A similar global

study by Hudon and Traca (2011) found that although subsidized MFIs are more efficient, beyond a certain threshold the marginal effect on efficiency is negative. As such 26% highly subsidized MFIs would require a marginal cut on subsidy intensity to increase their efficiency.

In an attempt to understand the impact of external funding on savings and credit co-operatives (SACCOs) in Tanzania, Ndiege et al. (2014) found that the higher the level of financial linkage the more the SACCO becomes unsustainable. Implying that, for SACCOs to be sustainable they should be cautious or try to keep away from using external funds in their loan portfolio. Temu and Ishengoma (2010) found that an increase in financial linkages between SACCOs and commercial banks or pension funds reduces the members' savings motives because there are always enough funds to borrow from.

In Uganda Fiorillo (2006) found that external funding weakens members' savings incentive, which eventually endangers the loan recovery rate. To minimize commercial lenders' interest rate risk on unutilized facilities, funds are disbursed under pressure as they are received, therefore weakening the credit evaluation process. Moreover, financial risk for members increases as external funds are expensive. Nyamsogoro (2010) found 77.9% of Tanzanian SACCOs to be financially sustainable with an average FSS index of 1.56. This is higher than what Marwa and Aziakpono (2015) found using a 2011 dataset as 51% of Tanzanian SACCOs were operationally and financially sustainable with an FSS index of 1.27.

4.4 DATA SOURCES AND METHODOLOGY

4.4.1 Data and empirical approach

Empirical progress on understanding the sustainability of CFIs has been held back by the unavailability of CFIs' annual financial information from the MIX database. MIX is a not-for-profit private organization dedicated to promote information exchange in the microfinance industry. Whenever CFIs are included in empirical studies, they are included among investor-owned MFIs, NGO-MFIs and non-bank financial institutions (NBFIs), which differ from CFIs in terms of ownership, sources of capital and profit motives. Few studies have looked into the financial sustainability of CFIs separately (see Marwa and Aziakpono, 2015 in Tanzania using 2011 data; Piot-Lepetit and Nzongang, 2014 in Cameroon using 2009 data; Amersdorffer et al., 2015) in Bulgaria using 2000-2009 data; Nyamsogoro, 2010 using 2008 data collected through questionnaires; Hartarska et al., 2012 in 41 countries globally using 2003-2010 data; Ayayi and Sene, 2010 in 101 countries using 1998-2006 data). None of these studies included South African CFIs. Our study utilizes up-to-date data from audited financial statements.

The data covering the period 2010-2017 was obtained from the CBDA and some from individual CFIs. The selected period is due to the availability of data but more importantly, it covers a period of regress in the CFI sector growth which is of interest to investigate. We used unbalanced panel data with 206 observations after excluding some CFIs where information on variables required in our study was unavailable. The number of CFIs in our study ranges from 21 to 31 per annum. Although the data set was not a total representation of all CFIs in South Africa under the regulation of the CBDA, our sample collectively represents approximately 99% of CFI members and a similar proportion of total assets. An interesting feature of our data is its disaggregate of income streams, expenses (interest expense, finance costs and operating expenses), decomposition of savings (fixed, regular, youths and special), decomposition of assets (loans, investments, current and fixed assets), number of members and the legal status/category of CFIs (FSC, SACCO or co-operative bank) (see Mushonga et al., 2018 for categorization). The dataset enabled us to offer a more complete analysis of sustainability by legal status which is important to draw specific recommendations.

The current study differ from previous studies in several ways. We use the most recent data, our database comprises only CFIs, which makes comparison easy, it is country-specific to avoid heterogeneity challenges, and its panel allows assessment of performance over time. Although Hartarska et al. (2012) employed more recent data, in the area of further research they said, “Our results suggest that there is a significant heterogeneity in cooperative MFIs and that future work may need to focus on a less aggregate level of analysis, in cooperative MFIs and their networks within a country” (Hartarska et al., 2012: 70). This makes our study suitable to address some of the previous research shortcomings.

4.4.2 Estimation techniques

The most commonly used (and preferred) measures of self-sufficiency are operational self-sufficiency (OSS) and financial self-sufficiency (FSS) indices (Barres, 2006). OSS measures the CFI’s ability to cover its costs from its operating revenues. Technically, it is the index of operating revenue over its expenses which can also be expressed as a percentage. An OSS index above 110% indicates that a CFI will continue operating at the present scale without requiring additional subsidies, meaning it is “self-sufficient” (Armendáriz and Morduch, 2010). It is however recommended that financial expenses and loan loss provision expenses be included in its calculation as they are normal and significant operating costs (CGAP, 2009) as expressed equation 4.1.

$$OSS = \frac{\text{Operating Revenue}}{(\text{fin costs} + \text{loan loss provision expense} + \text{Op expenses})} \times 100\% \quad \dots (4.1)$$

FSS measures how well a microfinance program could cover its costs if it was not subsidized and funding was being obtained at “market” rate, meaning that both revenue and expenses need to be adjusted. Any ratio below 100% indicates that a CFI will not be able to survive without subsidized funding (Armendáriz de Aghion and Morduch, 2010; CGAP, 2009; Marwa and Aziakpono, 2015). The FSS ratio is preferable to other financial sustainability measures because the data is adjusted to offer a more complete summary of inputs and outputs than standard financial ratios (Cull et al., 2007). In this study we adjusted grants by removing them from revenue as well as finding the cost of the grant and adding it to financial costs. See equation 4.2 on its calculation. We used the commercial banks’ average prevailing lending rates from the South Africa Reserve Bank (SARB) for each year to arrive at an estimated cost on grants. FSS is intended to show how self-reliant the CFI is in covering its costs when all funding is being accessed on market-based rates without putting reliance of grants or donations. However, there are several factors that influence financial sustainability, making it vital to understand them for managerial recommendations.

$$FSS = \frac{\text{Operating revenue} - \text{Grants revenue}}{\text{Adj}(\text{fin costs} + \text{loan loss provision} + \text{Op expenses} + \text{Op adjustments})} \times 100\% \quad \dots (4.2)$$

4.4.3 Determinants of sustainability

The key dependent variable in our analysis is the FSS index. In an attempt to explain differences in performance of CFIs or microfinance programs, many studies include independent variables to see how they influence FSS. According to Schreiner (2000), sustainability is linked to profitability and loan repayments as losses and loan defaults are the symptoms of an unhealthy microfinance program, which weakens the enterprise to death. One of the fundamental sustainability questions is whether financial services can be delivered to clients at an affordable cost. Answering this question requires looking carefully at the cost structure and delivery channels of financial solutions to clients (Rhyne, 1998). Minimization of expenses is therefore vital for MFI sustainability. Nyamsogoro (2010) used portfolio at risk (PAR) <30 days when trying to understand the financial sustainability of Tanzanian MFIs to reflect the efficiency of the MFIs in recovering loans. Ayayi and Sene (2010) found a high quality credit portfolio, coupled with a positive interest rate/portfolio yield and sound management, instrumental to explain the financial sustainability of MFIs.

The financial performance of microfinance programs is often studied by the gross loan portfolio (GLP) which indicates the scale of operations of the MFI in terms of all outstanding loan principals due for all borrowers (Rai and Rai, 2012). Jorgensen (2011) found a positive relation between GLP and MFI profitability, as a large loan portfolio tends to generate more income when charging real interest rates combined with low credit risk. Others have used loans but calculated as loans-to-assets to cater for how much of the total assets are in earning assets (Nurmakhanova et al., 2015). Tehulu (2013) considered deposits as one of the determining factors in a study of 23 MFIs. Hulme and Mosley (1996) and Groeneveld (2012) observed that, if members are not willing to put savings in their financial institutions, it will fail or just lead a marginal existence, they also recommended charging real interest rates. The life-cycle theory posits that an organization's performance improves with experience and age. It is unsurprising that age has been used as an important explanatory variable in a number of studies (Morduch, 1999; Cull et al., 2007; Marwa and Aziakpono, 2015; Nurmakhanova et al., 2015). Similarly, age was found to have a positive but smaller impact on financial sustainability (Ayayi and Sene, 2010). However Ayayi and Wijesiri (2017) found that new and younger NGO-MFIs (NMFIs) perform better than mature ones.

Ndiege et al. (2016) recommended that SACCOs should minimize the allocation of assets in other investments which are different from credit to members as it leads to no expansion in SACCOs as members will be denied loans. In addition, empirical literature shows institutional characteristics, business strategy/lending approach, agency cost, environment and governance as other factors that influence sustainability (Labie and Périlleux, 2008; Ghatak, 2000; Allet and Hudon, 2013; Halouani and Boujelbène, 2015; Marwa and Aziakpono, 2015). Pascal et al. (2017) found empirical evidence that suggest that MFIs with CEOs who have a business education perform significantly better, financially and socially, than those managed by CEOs with other types of educational backgrounds. Zeller and Meyer (2002) found a group lending approach instrumental in attaining good loan repayment rates of around 98% in Grameen Bank, BRI and BAAC. This is because the costly job of screening, monitoring and repayments enforcement is transferred largely from the MFI to group members.

Table 4.1 below details the choice of independent variables based on the review of existing literature as well as their description along with their expected sign of relation with the sustainability scores (the dependent variable). The independent variables have been judiciously selected so that there is minimum correlation amongst the variables. The correlation amongst the final chosen independent variables is given in Table 4.3 below.

Table 4.1: Variables description and supporting literature

Variable Name	Definition/measurement	Indicative of	Variable code	Expected relation	Supporting Literature
Financial self-sufficiency	Adjusted operating revenue / Adjusted (financial cost + loan loss provision expense + operating expense + operating adjustments)	Sustainability	FSS	n/a	MicroBanking Bulletin (2005); Cull et al. (2007); Marwa and Aziakpono (2015); Daher & Le Saout (2013)
Operational self-sufficiency	Operating revenue / (financial costs + loan loss provision expense + operating expenses)	Sustainability	FSS	n/a	MicroBanking Bulletin (2005); Cull et al. (2007); Daher & Le Saout (2013)
Return on assets	Net operating income / Average total assets	Profitability	ROA	n/a	Schreiner (2000); Tucker and Miles (2004); Jorgensen (2011)
Age	Age of the CFI in years	Experience	Age	+/-	Marwa and Aziakpono (2015); Ayayi & Wijesiri (2017)
Loan loss provision	Loan loss provision amounts / Gross loan portfolio	Credit risk	Risk	-	Nyamsogoro (2010); Godquin (2004)
Portfolio yield	Financial revenue from loan portfolio / Average gross loan portfolio	Lending Interest rate	PortYield	+	Hulme & Mosley (1996); Ayayi & Sene (2010); Daher & Le Saout (2013)
Investment yield	Investment revenue/Total investments	Investment return	InvestYield	+/-	Jorgensen (2011); Ayayi & Sene (2010)
Interest on savings	Interest expense + rebates or dividend to members/Saving and member share capital	Savings interest	Interest	+/-	Groeneveld (2012)
Grants-to-Income ratio	Grants/Gross income	Grant dependency	Grants	-	Schreiner (2000)
Loans-to-Assets ratio	Gross loan portfolio / Total assets	Lending	LTA	+	Nurmakhanova et al. (2015); Ndiege et al. (2016)
Investments-to-Assets	Total fixed income investment / Gross loan portfolio	Non-lending	ITA	-	Daher & Le Saout (2013)
Costs-to-income	Total costs / Gross income	Efficiency	CIR	-	Rhyne (1998); CGAP (2009)
Deposit mobilization	Total deposit / total gross loan portfolio	Savings accumulation	Deposit	+	Hulme and Mosley (1996); Groeneveld (2012); Tehulu (2013)
Number of members	Total CFI membership	Outreach	Members	+	Groeneveld (2012)
Investments	Total investments	Non-loans	Investments	+/-	Ndiege et al. (2016)
Loans	Total gross loans outstanding	Scale of operation	Loans	+	Rai & Rai (2012); Jorgensen (2011)
Size	Total value of assets	Size	Assets	+/-	Allet & Hudon (2013)

4.5 RESULTS AND DISCUSSION

This section discusses the results of the financial sustainability of the sector and its determinants at aggregate and disaggregate levels. Firstly, we examine the characteristics of our variables and the financial sustainability scores (indices) as well as their behaviour. Following a similar approach by Ayayi and Sene (2010) potential variables are analyzed at aggregate and disaggregate levels. The variables were checked for outliers and normality assumptions using the Shapiro Wilk test, resulting in four observations being dropped after checking for their overall distortion on the results. Following Marwa and Aziakpono (2015) the variance inflation factor (VIF) test was employed to determine the presence of multicollinearity in our variables. Although the standard cutoff point is 10, our VIF values were below 3. In addition, we conducted the Cook-Weisberg test for heteroskedasticity and our results were in acceptable range of above 0.05.

4.5.1 Descriptive statistics results

The key descriptive statistics are presented in Table 4.2 below based on 202 observations after 4 outliers have been removed. The FSS index averages 0.913 which is below the benchmark of 1.00, whilst the OSS index is 1.027 is below the minimum of 1.10, proving that our sample comprised financially unsustainable CFIs. The difference between FSS and OSS indicates that the industry might be receiving substantial grants, therefore needs to improve its performance in several aspects to be self-sufficient. The low FSS index can be partly explained by a -7.1% ROA although there are some extreme performers. The industry is not profitable and is performing below 3% which is the least expected ROA for microfinance programs (Marwa and Aziakpono, 2015). Only 35% of CFIs are financially sustainable with an FSS index of 1 and above despite the industry being fairly mature with an average experience of 9.5 years. The low FSS scores and profitability limit CFIs' ability to attain their social and ecological goals. Over the years the FSS score has been on the increase from 0.83 in 2010 to 1.04 in 2017, an indication that the industry is becoming financially sustainable over time with the reduction in grants.

The industry cannot be said to be over-dependent on grants as only 7.9% of total income is grants, but some players are heavily grant-reliant as shown by the maximum of 89%. However, grants have decreased from R2.6 million in 2011 to R833,915 in 2017 in line with the regulator's strategic thrust to eliminate false fuelled industry growth. The cost-to-income ratio (CIR) of 143% will erode the pooled financial resources and affect the going concern of the

industry. This position is reinforced by the high cost-per-member ratio averaging R1,617 with the maximum close to R15,000. The loan portfolio yield of 33.4%, which is a proxy for loan interest rate, is far below the annualized rates charged by moneylenders and microfinance institutions in South Africa which range from 74% to 120% per annum. The levying of interest rates below moneylenders' rates is expected as profit maximization is not the main objective of CFIs. The yield is however above the prevailing South African commercial banks' lending rates of between 11 to 14% given the need to cover higher operating costs. The returns from these investments is just 8.5%, less than the 33.4% that could be earned from lending. Nearly 38% of the industry's total assets are invested in financial instruments.

The CBDA (2017) encouraged CFIs to invest part of their mobilized savings in RSA Financial Co-operative Retail Bonds offering average rates of 8.2% per annum among other investments. This strategy might be noble for liquidity management purposes since there is limited default risk compared to loans. However, the approach curtails lending to members as it promotes the outflow of money from poor communities to the cities which hinders local development as the real objectives of CFIs is to mobilize and circulate money locally to promote community development. Only 48% of total assets are circulated to members as loans.

Table 4.2: Descriptive statistics

Variable Name	Mean	St. Dev	Min	Max
Financial Self-Sustainability (FSS)	0.913	0.625	-1.829	3.946
Operational Self-Sustainability (OSS)	1.027	0.696	-1.829	5.548
Return on Assets (ROA)	-0.071	0.368	-3.029	0.913
Age (Years)	9.5	6.091	1	25
Grants to Gross Income (Grants)	0.079	0.186	0	0.891
Portfolio Yield	0.334	0.441	-0.013	4.820
Saving Interest rate	0.023	0.027	0	0.127
Investment Yield	0.085	0.267	-0.013	2.652
Cost-in-Ratio (CIR)	1.430	2.229	0.207	21.860
Provision to Gross Loans (Risk)	0.101	0.174	0	1.108
Loan-to-Assets (LTA)	0.478	0.304	0.003	1.662
Investments-to-Assets (ITA)	0.377	0.263	0.008	0.967
No. of Members (Members)	1,263	1,687	17	10,777
Cost Per Member (CPM)	1,617	2,944	3.06	14,971
Profit	14,904	397856	-1,276,183	2,530,616
Investments	2,507,398	4945128	13,087	30,805,624
Loans	5,797,848	11838505	1,477	72,441,095
Deposits	7,746,625	15285015	1,000	96,353,394
Assets	9,042,610	16310781	15,532	103,408,531

The average interest on savings of 2.3% can be viewed as not attractive enough to saving members as it gives a negative real interest rate considering inflation of slightly below 5%. On

the other hand, increasing interest on savings will negatively impact FSS but will attract much needed savings. The CIR averages 143%, pointing to low cost efficiencies. This calls for innovative and cost-effective ways of delivering financial solutions to members. Provisions for default risk average 10.1% which can be considered low given the rate of failures in the industry, negative ROA and low FSS scores. The differences between average and maximum membership, deposits and assets indicate that our CFIs comprise very small and large players. Since CFIs in South Africa are in three sub-groups as detailed by Mushonga et al. (2018) it will be important to understand the variations in their sustainability and profitability by their legal status so as to proffer appropriate managerial recommendations. In summary, FSC are focused on providing peri-urban and rural financial services, SACCOs are predominantly township and city based mostly formed by associations whilst co-operative banks (CBs) are more formal community-based financial institutions, currently there are two of these.

Table 4.3 below present the summary statistics by CFI legal status which reveals that FSCs are the least sustainable both financially and operationally with an index score of less than 1. They also have the lowest ROA of -6.9% with SACCOs and CBs having -0.1% and 0% respectively, despite them charging the highest interest rate to borrowing members of 38.4% on average. SACCOs have a portfolio yield of 29% with CBs charging 20.5% on average. Despite earning a relatively high portfolio yield, 45.4% of FSCs' total assets are in financial investments earning 6.8% per annum whilst 37.4% are in loans earning on average 38.4% interest per annum. CBs seem to be doing better on portfolio allocation with 73% of their assets in loans, whilst 23% is held in financial investments for liquidity management though earning a 4% return. In addition, CBs have a lower CIR of 92% compared to FSCs and SACCOs, however, it is too high by international standards. FSCs and SACCOs are also suffering from cost inefficiencies given their CIR of 150%, though in monetary value their costs per member (CPM) looks favourable compared to CBs. However, the high CPM for CBs might be partly associated with interest rate on savings of 5.1% compared to 1.1% and 3.4% offered by FSCs and SACCOs respectively, which might partly explain the ability of CBs to mobilize substantial deposits.

Although CBs are better able to mobilize more savings, their size variations are high when considering the standard variation on deposits and assets, the same also applies to SACCOs. SACCOs and FSCs are attracting 9.3% and 7.8% respectively of their gross income in grants. In monetary terms, in the period 2010 to 2017 FSCs and SACCOs received R3.1 million and R10.1 million respectively whilst CBs only attracted half a million.

Table 4.3: Descriptive statistics by legal status

	Financial Services Co-operatives (FSCs)		Saving and Credit Co-operatives (SACCOs)		Co-operative Banks (CBs)	
	Mean	St. Dev.	Mean	St. Dev.	Mean	Std. Dev.
FSS*	0.825	0.554	1.005	0.750	1.056	0.175
OSS	0.952	0.640	1.121	0.821	1.074	0.168
ROA*	-0.069	0.396	-0.090	0.366	0.000	0.031
Age*	9.9	6.502	8.5	5.9	12	2.4
Grants*	0.078	0.194	0.093	0.191	0.014	0.057
Portfolio Yield*	0.384	0.534	0.290	0.317	0.205	0.093
Saving Interest*	0.011	0.021	0.034	0.026	0.051	0.022
Investment Yield	0.068	0.257	0.117	0.305	0.040	0.037
Cost-in-Ratio (CIR)*	1.466	2.174	1.486	2.518	0.920	0.110
Provision (Risk)*	0.118	0.207	0.091	0.134	0.033	0.024
LTA*	0.374	0.268	0.569	0.322	0.732	0.067
ITA	0.454	0.262	0.303	0.256	0.226	0.091
Members	847	744	1,925	2,432	850	348
CPM	470	472	2,366	3,589	5,701	4,270
Profit	-2,404	166,356	18,515	603,846	114,135	197,931
Investments	1,245,751	2,700,599	2,515,846	2,846,879	10,982,325	12,082,405
Loans	670,692	872,824	8,722,746	11,463,093	26,147,276	22,872,802
Deposits*	1,730,457	2,696,150	10,519,873	13,312,525	34,836,171	33,007,079
Assets	2,219,296	2,922,436	12,571,944	14,007,862	37,894,475	34,835,506

*variables to be used for regression analysis

4.5.2 Correlation coefficient matrix

We critically examine the links between financial sustainability and the independent variables to be sure that the relationship between all variables retained is not too strong or unbalanced. Table 4.4 below presents the correlation matrix used to test for multicollinearity which refers to the existence of a “perfect” or exact linear relationship among some or all explanatory variables of a regression model. In our case only two variables, loans-to-assets (LTA) and investment-to-assets (ITA) ratios are negatively and strongly correlated, this is expected as they both compete for asset allocation. Other variables are nearly independent.

We find that financial sustainability is positively correlated with ROA ratio at a statistically significant level, which is expected as profitability enhances organization performance hence is an assurance of a going concern. Loan portfolio yield is positively correlated with financial sustainability but is not statistically significant. This reveals that, although levying of positive interest rates on borrowing members improves the financial health of the co-operative, CFIs need not charge excessive interest rates as their goals go beyond financial returns to social and environmental impact which need to be fairly based

Financial sustainability is negatively and statistically significantly correlated with the grants-to-income ratio. This relationship is expected as grants gives a false picture of performance by creating an overdependency and inefficiencies. By eliminating grants most non-market-oriented interventions are unsustainable.

CFIs FSS and provisions to gross loans ratio (a proxy for credit risk) are negatively correlated and statistically significant. According to Ayayi and Sene (2010) the gradual increase in volume of unpaid loans is detrimental to the financial sustainability of a microfinance program. Whilst FSS is positively correlated with age but low statistically significant, which seems to indicate that although experience matters it is no longer perfectly associated with better performance (Ayayi and Sene, 2010). Surprising FSS is positively correlated with savings interest rate at a statistically significant level which suggests that indirectly the increase in interest rate attracts more deposits which can be loaned out at good returns. This can be reinforced by the positive correlation between financial sustainability and deposits at a statistically significant level. The CFI's ability to mobilize more savings from its members enables it to disburse more loans that will earn interest to enhance not only FSS but also its social and ecological goals.

Financial sustainability and CIR are negatively correlated at a very strong statistically significance level as costs have a negative impact on the financial sustainability of CFIs. So, managing costs through cost-effective models will improve the performance of financial co-operatives even without increasing the portfolio yield. The LTA is positively correlated with FSS at statistically significant level as loans are the highest earning assets of a CFI compared to returns from risk-free investments. Financial sustainability is negatively correlated with ITA as returns on investments are low. In addition, deposits are at statistically significant levels, whilst as expected ROA and CIR are negatively correlated at statistically significant levels as costs reduce the organization's profits. Accordingly, we did not identify collinearity between the explanatory variables.

Table 4.4: Correlation analysis between variables

	LnFSS	ROA	Portfolio Yield	Grants ratio	Provisions ratio (Risk)	LnAge	Saving Interest	LnDeposit	CIR	LTA	ITA
LnFSS	1.000										
ROA	0.562***	1.000									
Portfolio Yield	0.082	0.089	1.000								
Grants	-0.247***	0.193***	0.043	1.000							
Risk	-0.228***	-0.226***	-0.106	0.128*	1.000						
LnAge	0.129*	0.160**	-0.061	0.096	0.128*	1.000					
Savings interest	0.152**	0.069	-0.169**	-0.158**	-0.142**	0.012	1.000				
LnDeposits	0.218***	0.184***	-0.138*	-0.074	0.007	0.469***	0.496***	1.000			
CIR	-0.653***	-0.478***	-0.094	-0.102	0.004	-0.195**	-0.089	-0.144*	1.000		
LTA	0.149**	-0.024	-0.229***	-0.122*	-0.257***	0.159**	0.282***	0.428***	-0.137*	1.000	
ITA	-0.040	-0.046	0.165**	0.084	0.314***	-0.188***	-0.282***	-0.337***	0.060	-0.774***	1.000
	0.577	0.516	0.019	0.234	0.000	0.007	0.000	0.000	0.398	0.000	

*, **, *** represent statistical significance at 10%, 5% and 1% levels.

4.5.3 Regression model results

The model is intended to estimate the impact of ROA, loan portfolio yield, grants-to-income, provisions to gross loans (risk), age, interest on savings, deposits (size), CIR, LTA and ITA on the FSS of CFIs. The empirical model used to estimate their impacts is expressed as:

$$\begin{aligned} \log FSS_{i,t} = & \beta_0 + \beta_1(ROA_{i,t}) + \beta_2(PortYield_{i,t}) + \beta_3(Grants_{i,t}) + \beta_4(Risk_{i,t}) \\ & + \beta_5(\log Age_{i,t}) + \beta_6(Savingsint_{i,t}) + \beta_7(\log Deposits_{i,t}) + \beta_8(CIR_{i,t}) \\ & + \beta_9(LTA_{i,t}) + \beta_{10}(ITA_{i,t}) + \varepsilon_{i,t} \end{aligned} \quad \dots (4.3)$$

where β_0 to β_{10} are the coefficients of the variables and ε is the random error term. The results obtained after the first regression of the model imply that our model is well specified. However, to be certain, we refine the analysis by examining the residuals to ascertain that there are no problems of endogeneity and heteroskedasticity. These tests enabled us to determine that the coefficients obtained from our regressions are not biased. Table 4.5 below presents the results which reveal that the model is well specified with non-biased coefficients. F test = 36.33 with the Prob > F = 0.000 which signifies that our model has good explanatory power. This is further confirmed by the R^2 of 65.68% which means that 65.68% of the total variation of financial sustainability scores is explained by the independent variables.

Table 4.5: Results of the regression model

logFSS	Coef	t-statistic	# obs	F (10, 190)	Prob>F	R ²	Root MSE
Cons	-0.75717	(-2.55) **	202	36.36	0.000	0.6568	0.43812
ROA	0.81450	(6.04) ***					
PortYield	-0.01264	(-0.17)					
Grants	-1.32616	(-7.56) ***					
Risk	-0.73572	(-3.54) ***					
LnAge	0.00614	(0.14)					
Savingsint	-0.00528	(-0.55)					
LnDeposits	0.03928	(1.72) *					
CIR	-0.15532	(-8.72) ***					
LTA	0.33044	(1.84) *					
ITA	0.53881	(2.77) ***					

*, **, *** represent statistical significance at 10%, 5% and 1% levels.

The coefficient of ROA is positive, and statistically significant as theory predicts that profitability determines the organization's going concern. An improvement in sufficient returns from total assets promotes the organic growth and increases loanable funds to the members, indirectly impacting positively on their social and environmental well-being. In our model, ROA is the highest positive coefficient in absolute value, indicating that it is a key determining

indicator of financial sustainability. The findings are consistent with Marwa and Aziakpono (2015) who found that 77% of the variation of FSS was explained by ROA alone in their study of SACCOs in Tanzania. In other words, to be financially sustainable CFIs should adopt measures that ensure they are profitable not necessarily by charging high real interest rates but by finding innovative and cost-effective financial intermediation channels with their members. Surprisingly, the coefficient of loan portfolio yield is slightly negative (-0.013) and statistically non-significant. Theory expectation is that loan interest rates contribute to the profitability of the enterprise and finally to financial sustainability. The fact that CFIs do not have the ultimate goal of profit maximization but of balancing their triple objectives through service maximization to their members, could explain this. This result leads us to reject the commonly held notion that high interest rates lead to financial sustainability of a microfinance program as it might contribute to high default risk with major consequences. However, our results are consistent with Cull et al.'s (2007) findings that raising interest rates very high does not ensure greater profitability as evidence in solidarity group lenders suggest that financial performance tends not to improve as yields increase. This is also congruent with Stiglitz and Weiss's (1981) assumption, which says that raising interest rates will undermine portfolio quality due to adverse selection and moral hazard.

The coefficient of grants is negative and statistically significant. This is consistent with the argument that grants contribute to unsustainable microfinance programs as they encourage inefficiencies and limit innovation. This result supports the position advocated by institutionalists that, although grants might be necessary at the inception of a microfinance program for capacity building purposes, they might contribute to the dependence syndrome and eventually result in unsustainable programs. The grants coefficient is the highest negative in absolute value, indicating that it has the most negative impact on financial sustainability.

The portfolio quality variable as measured by loan loss provisions ratio (default risk) has the expected sign and is highly statistically significant. The high default risk reduces financial revenue, cash flows and loanable funds, risking insolvency. According to Ayayi and Sene (2010) high credit risk would lead to credit rationing and consequently failure of the microfinance program to provide loans to its clientele resulting in a negative impact on financial viability, social and ecological performance. Once members are not deriving any economic benefits from CFIs they withdraw their membership and savings, leading to bankruptcy. Therefore, it is important for CFIs to engage in good risk management by

proactively assessing their capacity to recover problem loans to prevent contagion risk among the borrowers. More importantly, CFIs must continue to strengthen social capital among their members by applying the group lending principles to borrowers to co-guarantee, monitor, and apply peer pressure and social sanctions on each other to enforce good credit behaviours (Stiglitz, 1990; Ghatak, 2000; Morduch, 1999). Achieving lower credit risk enables CFIs to increase their lending to members and gradually lower their effective interest rates.

The experience (age) has a minor positive coefficient of 0.006 and is statistically non-significant, which implies that the age of CFIs does not guarantee financial sustainability as they might be slow in adopting new and innovative ways of interacting and delivering financial services to their members. These findings are consistent with Ayayi and Wijesiri (2017) who found that new and younger NMFIs perform better than mature ones, meaning that age does not matter, whilst Ayayi and Sene (2010) and Wijesiri et al. (2017) found that older MFIs perform better than younger ones in achieving their financial objectives. Paying of a savings interest rate has a negative coefficient (-0.0053) but is not significant. This implies that as a CFI pays interest on savings to encourage more savings from members it has an insignificant negative impact on its sustainability. However, the deposit coefficient is positive and significant, as deposit mobilization is important for the financial sustainability of CFIs. An increase in savings makes funds available for lending to members or investments to generate returns. Our findings are compatible with Tehulu (2013) and Groeneveld (2012) who found that deposits enhance FSS.

The efficiency and asset management variables have the expected signs and are statistically significant. The coefficient of CIR, which is a measure of cost efficiency, is negative and statistically significant which is consistent with the argument that, *ceteris paribus*, an increase in operating costs causes a decrease in financial sustainability. Therefore, to be financially sustainable CFIs must significantly lower their costs by identifying and implementing cost-effective measures. On the asset management side, the coefficient of LTA is positive and marginally significant, which shows that an increase in loanable funds results in an improvement of FSS but credit risk also increases as gross loans increase, which results in a negative impact on FSS. This may suggest that the coefficient of 0.3304 at 10% compared to ITA's coefficient of 0.5388 is strongly significant. Since investments are almost risk-free compared to loans, ITA statistically significantly contributes to FSS besides low investment return of 8.5% compared to 33.4% on loans. However, this might be difficult to comprehend calling for further study by legal status.

4.5.4 Analysis according to legal status

Following the analysis of our results at an aggregate level, we examine financial sustainability according to legal status to illustrate similarities and differences and to answer some of the outcomes from aggregate level. Due to limited observations (just 16) for the two co-operative banks over the eight years they are dropped from this analysis, so our analysis will focus only on FSCs and SACCOs. Table 4.6 below presents the results of our regressions

Our regression result based on the legal status partly confirms the results obtained at aggregate level but there are some differences. FSCs and SACCOs have the highest positive coefficient in absolute value on ROA, which is statistically significant. There are conflicting results on portfolio yield as the coefficient is negative and statistically insignificant for FSCs, whilst the coefficient is positive and statistically significant for SACCOs. This implies that portfolio yield does not affect FSCs' financial sustainability whilst in SACCOs they do. These conflicting results can be better understood from the descriptive statistics which show that FSCs allocate a bigger portion of their assets in investments (45.4%) earning a return of 6.8% compared to 37.4% in loans earning a yield 38.4% with a higher default risk of 11.8%. On the other hand, SACCOs prefer more asset allocation into loans (56.9%) earning a 29% yield with a possible default risk of 9.1% whilst 30.3% is in investments earning 11.7% in average returns.

Table 4.6: Regression results by legal status

FSS	Financial Services Co-operative (FSCs)	Saving & Credit Co-operatives (SACCOs)
ROA	1.07915 (4.19) ***	1.10181 (6.41) ***
PortYield	-0.06626 (-0.70)	0.24014 (1.63) ***
Grants	-1.71274 (-5.70) ***	-0.92901 (-2.94)
Risk	-0.88177 (-3.21) ***	-0.58135 (-1.33)
LnAge	0.05106 (0.65)	0.02645 (0.45)
Savingsint	-0.08121 (-0.34)	0.01493 (1.46)
LnDeposits	0.05326 (1.26)	-0.12710 (-3.25) ***
CIR	-0.14994 (-5.28) ***	-0.12366 (-5.45) ***
LTA	0.51992 (1.62)	0.58235 (2.28) **
ITA	0.75203 (2.60) **	0.34588 (1.25)
Constant	1.07915 (-2.49) **	1.52739 (2.78) ***

# obs	107	78
F (10, 190)	15.25	28.46
Prob>F	0.0000	0.0000
R ²	0.6137	0.8095
Root MSE	0.49251	0.35014

*significant at 10%; **significant at 5%; ***significant at 1%

Grants and risk coefficients for both FSCs and SACCOs are negative and statistically significant, for FSCs meaning they have negative impact on financial sustainability whilst they are statistically insignificant for SACCOs. Age is found to have a positive coefficient but not statistically significant in both categories as previously found. The interest rate on savings coefficient on FSCs is negative and insignificant whilst it is positive and insignificant on SACCOs.

Surprisingly the deposits coefficient on SACCOs is negative and statistically significant, meaning that an increase in deposits will lead to a decrease in financial sustainability. One of the likely explanations is that since SACCOs are paying an interest rate of 3.4% compared to 1.1% by FSCs, any increase in savings not loaned back to members is a cost since they have to pay interest on those deposits. As expected, CIR coefficients are negative and statistically significant for both categories. LTA coefficients are positive for both sub-groups, and nonsignificant for FSCs but statistically significant for SACCOs. This means for SACCOs to be financially self-sufficient they need to increase the assets allocated to loans. ITA coefficients are positive and statistically significant in FSCs whilst insignificant in SACCOs. In summary, FSCs and SACCOs are following different asset allocation strategies for investments and loans.

4.6 SUMMARY AND CONCLUSIONS

This study examined the financial sustainability of community and membership-owned financial institutions which are known for their ability to reduce the biggest challenge of information asymmetry for people sharing a common bond. Their approach to “savings-first” differentiates them from “credit-first” microfinance programs. This approach has enabled them to transfer high transaction costs associated with financial intermediation in marginalized segments from an external financial intermediary to the community level by exploiting existing social capital. Being governed by the co-operative principles whose ideals and beliefs seek to bring about social justice and solidarity for the greater good of the communities within which they operate, they contribute to sustainable development. As member-centric institutions, CFIs are driven by improving the economic and social well-being of their members through giving people control over their financial destiny.

Based on our findings, the CFI industry is financially unsustainable with an FSS index of 0.913 which is below the expected performance benchmark of 1. Based on our sample only 35% of CFIs are financially sustainable with 65% in need for a turnaround strategy in order to be financially viable. The industry has an OSS index of 1.027 which is below the standard of 1.1. The difference between OSS and FSS reflects low profitability of the industry and the effect of incoming grants. The industry ROA average is -7.1% with grants helping some players to survive as 7.9% of total income is grant funding. Our regression results show that ROA, LTA, ITA, deposits, grants, credit risk, and cost-to-income ratio are the major determinants of CFI's financial sustainability.

On a disaggregate level the major determinants of FSCs' financial sustainability is ROA, grants, risk, CIR and ITA, whilst ROA, portfolio yield, deposits, CIR and LTA are the significant determinants of SACCOs' sustainability. The CIR of our sample CFIs is very high at 143% which is at variance with theoretical expectations that due to the common bond financial co-operatives are able to reduce operating costs due to reduced information asymmetry, credit evaluation and monitoring costs. The 10.1% provisions for doubtful debts are of great concern to the financial viability of CFIs as the identity economics theory expects members to behave in the best interest of their organization. In addition, due to peer monitoring, peer pressure and social sanctions the potential default risk is expected to be low.

Our findings demonstrate that CFIs need to continuously improve their efficiencies through costs minimization whilst at the same time improving revenue generation through product diversification, embracing new innovative delivery channels that minimize transaction costs. The adoption of mobile money and strengthening of social ties might contribute to cost structure reduction. In addition, members also need to appreciate the basic principles of co-operation and the underlying rationales. They have to be motivated and committed to work together for their individual and common benefit as co-operative enterprises are as strong as their members make them. The viability and success of co-operatives depend on the readiness of their members to fulfil a number of requirements such as making savings, monitoring each other and repaying loans.

It is important to realize that financial sustainability is only one major dimension of the overarching concept of sustainability, and as such it is a means to the end not an end of itself. Cooperatives must make a profit to build sufficient reserves for solvency, growth and continuity. However, donations might be necessary at formative stages for technical assistance

to help CFIs to learn, improve and survive in the market without donor funding. To encourage CFIs to strike a healthy balance between sustainability and outreach, donors are encouraged to lubricate entry and exit.

Our major recommendation is for CFIs to achieve financial viability to effectively contribute to the attainment of sustainable development, as the best way to help the poor is not to be like them, but to be successful. Similarly, CFIs as social enterprises serving the economically active poor need to be financially sustainable to uplift their members from the trap of low productivity and poverty. To achieve this, CFI management need to have the mind of a banker and the heart of a social worker by ensuring their institutions make fair surpluses to guarantee their longevity in making a lasting impact on their members' livelihoods, society and the ecology at large.

Our study has some limitations. Since we utilized only audited CFI financial statements this might have led to some biases in our results as CFIs with unaudited financials were excluded from our study. Although we wanted to include the CFIs with unaudited financials in our study, they were not willing to share their financial records with us. As a follow-up to our research, further research may consider empirically investigating the social and financial efficiency of CFIs in South Africa and its determinants. Another area for further research might be on the impact or influence of size and membership profile (affluent group and the poorer) on the sustainability of financial co-operatives.

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CHAPTER FIVE

SOCIAL AND FINANCIAL EFFICIENCY OF CO-OPERATIVE FINANCIAL INSTITUTIONS IN SOUTH AFRICA¹¹

5.1 INTRODUCTION

The mainstream financial sector has experienced an intense process of concentration in recent decades resulting in the sharp decrease of financial institutions while their average size has risen. As a result, small and growing businesses, and marginal communities are experiencing inadequate access to financial services as banks consider them too costly to serve. As noted by Minsky (1993), big banks like big deals with low information and transaction costs. Microfinance programs emerged as one of the solutions to alleviate global poverty and financial exclusion over the past years (Woller et al., 1999; Armendariz de Aghion and Morduch, 2005; Balkenhol and Hudon, 2011).

As originally conceived, microfinance is the provision of small loans, payments, insurance and savings facilities to poor households to establish or expand simple income-generating activities, thereby supposedly facilitating their eventual escape from poverty (Bateman, 2010). This way microfinance institutions (MFIs) help to address the credit market failures in the financial markets which make households credit-rationed by the formal banking system due to the prevalent of information asymmetry. Recently, investor-owned MFIs faced criticisms from practitioners and researchers due to their profit maximization motives over poverty reduction in the current wave of microfinance commercialization (see Copestake, 2007; Bateman, 2010, 2011; Sinclair, 2012).

There are strong calls by some researchers and practitioners that MFIs have lost their moral compass of addressing poverty through fairly priced credit to the poor and marginalized people. These critics are calling for the restructuring of MFIs to be owned by their borrowers as co-operative banks (CFIs) so that borrowers have control over them whilst their profits are ploughed back in their communities (Bateman, 2007; Sinclair, 2012). CFIs differ from MFIs in many aspects as they are owned and democratically controlled by their members who

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contribute its capital and savings for on-lending to finance their economic activities at much reasonable rates. During the recent global financial crises CFIs proved to be better resilient to global shocks as they limit transactions in speculative activities. As a result, during the global economic crisis their total assets and membership increased from US\$1.2 trillion and 177 million in 2007 to US\$1.8 trillion and 235 million in 2015 respectively, winning people's trust as responsible institutions (World Council of Credit Unions (WOCCU), 2007 and 2016). CFIs are a more socially responsible way to reach out to the economically active poor to lift themselves from the trap of poverty and low productivity. This makes CFIs face dual and conflicting objectives of reaching to the poor whilst striving for long-term sustainability.

The current debate in co-operative finance is whether it is possible for CFIs to be financially sustainable while at the same being able to improve their outreach to large number of members (socially sustainable). The situation is tricky as CFIs will need to mobilize financial resources from the same people excluded from the formal banking system for own lending to them. McKillop and Wilson (2011) highlighted that in the intermediation process CFIs face potential conflicts between borrowing members (who want access to low-cost credit) and saving members (who want a high rate on funds invested). Taylor (1971) studied three credit union scenarios: (i) the neutral credit union (where neither savers' nor borrowers' interests dominate); (ii) the saver-dominated credit union (where the interests of savers dominate); and (iii) the borrower-dominated credit union (where the interests of borrowers dominate). Theoretical analysis suggests that neutral credit unions are more efficient as neutrality is less likely to create incentives for CFIs to discourage potential members joining and therefore helps to maintain the strength of the institution (Smith, 1986; McKillop et al., 2007; Brown et al., 1999). "Overall, the neutral CFI seeks to maximize the total net gains to the borrowing and saving members without bias between them in terms of optimal borrowing and savings rates" (Taylor, 1971; 211). This means there could be a trade-off between financial and social sustainability of CFIs (Hermes and Lensink, 2011; Annin, 2012; Lebovics et al., 2016).

Quite a number of studies have investigated the trade-off between social and financial efficiency of MFIs (see Annin, 2012; Bédécarrats et al., 2009; Widiarto and Emrouznejad, 2015; Martínez-Campillo et al., 2016; Wijesiri et al., 2017). Most of these studies include all types of MFIs in a single study – NGO MFIs, investor-owned MFIs, non-bank financial institutions and financial co-operatives (credit unions). Few studies have separately investigated social efficiency or the trade-off in CFIs (see Hartarska et al., 2012; Piot-Lepetit and Nzongang, 2014; Amersdorffer, Buchenrieder et al., 2015; Martínez-Campillo et al., 2016;

Martínez-Campillo and Fernández-Santos, 2017). Hartarska et al. (2012: 70) in their recommendations for future work said, “Our results suggest that there is a significant heterogeneity in co-operative MFIs and that future work may need to focus on a less aggregate level of analysis, e.g., on efficiency analysis in co-operative MFIs and their networks within a country. For this purpose, detailed data collection from smaller co-operative MFIs should be encouraged via their networks and other professional organizations”.

It is in line with these findings and their recommendations that this paper contributes to the empirical literature on the trade-off by investigating whether or not CFIs in South Africa are socially and financially efficient. The study uses an unbalanced dataset from the Co-operative Banks Development Agency (CBDA) for the period 2010 to 2017. The questions we address are: (1) what could be the social and financial efficiency of CFIs in South Africa? and (2) what factors determine their social and financial efficiency? This study employed bootstrap Data Envelopment Analysis (DEA) to estimate social and financial efficiency of CFIs and bootstrapped truncated regressions in the second stage. DEA is a non-parametric linear programming-based efficiency analysis which constructs a piece-wise frontier from all best-forming CFIs: thereafter the relative efficiency of individual CFIs is calculated against CFIs with similar characteristics located in the frontier as its benchmark(s). From an efficiency perspective, a CFI must strive for efficiency in its social and financial objectives. DEA enables different specifications to measure overall efficiency, social efficiency and financial efficiency (Widiarto and Emrouznejad, 2015; Wijesiri et al., 2017; Martínez-Campillo et al., 2016).

The study is organized as follows: Section 5.2 gives the background and context of the study, Section 5.3 outlines empirical literature in efficiency in microfinance programs, Section 5.4 is the methodology, model and specifications. Results are explained in Section 5.5, with the conclusion and implications of the study in Section 5.6.

5.2 CONTEXT OF THE STUDY AND CFIs IN SOUTH AFRICA

The South African banking system is highly concentrated, with the big five banks collectively holding 90.7% of the total banking sector assets as at 31 December 2016. The entry of foreign banks and branches of international banks in the market failed to dilute the dominance of the big five banks as new entrants decided to focus on niche markets not dominated by the corporate banking divisions of the big five. Over the years the number of registered banks has decreased from 30 banks in 2002 to 17 in 2016 (see Mushonga et al., 2018). As a result, nearly 8.5 million are still excluded from formal banking system according to FinMark (2016), and

the majority of those with bank accounts lack access to credit facilities. This proves Minsky (1993) right that with bank concentration big banks are concerned with big deals which leaves many households without access to adequate financial services. This has entrenched the high level of inequality in the country, which had a Gini coefficient of 62.8% in 2017 (up from 59.3% in 1993), and 18.6% of the population is in extreme poverty (World Bank, 2018), making South Africa one of the most unequal economies in the world.

Efforts have been under way over the years to improve access to financial services for the general population with the introduction in 2004 of the “Mzansi account”, a low-level entry bank account. But these efforts failed, partly because of no access to credit facilities. The government has been promoting CFIs to reduce financial exclusion through the Co-operative Act of 2005 and the Co-operative Banks Act of 2007. These Acts enabled the formation of the Co-operative Banks Development Agency (CBDA) in 2009 to formally regulate and provide capacity building to the industry. Previously, the regulation of the industry was fragmented with a lot of self-regulation association bodies. Since the CBDA started regulating the industry in 2011 the number of CFIs and membership has dropped from 121 and 59,394 to 30 and 29,818 in 2017 respectively, see Table 5.1 below.

Table 5.1: Information on South Africa CFIs (2010–2017)

Period	No. CFIs	Members	Savings (ZAR)	Loans (ZAR)	Assets (ZAR)
2010	56	36 434	124,365,000	93,651,000	142,069,000
2011	121	59,394	175,265,000	116,577,000	195,213,000
2012	106	53,240	196,230,000	132,227,000	217,506,000
2013	35	38,084	200,841,000	142,310,000	220,800,000
2014	26	33,391	198,624,948	140,463,755	231,367,670
2015	26	24,721	201,101,522	152,143,102	236,533,481
2016	30	29,752	233,763,289	179,338,526	279,624,000
2017	30	29,818	228,216,993	202,160,606	293,493,697
% 2010-2017	-46.4	-18.2	83.5	53.7	51.6
% 2011-2017	-75.2	-49.8	30.2	42.3	50.3

Source: Authors' own compilation based on CBDA and SARB Annual Reports

However, despite the decrease in players and membership, savings, loans and assets show good performance. The decrease might be as a result of the minimum membership and capital contribution being pegged at 200 and R100,000 respectively, which might have pushed weak players out of the market. In the midst of these trends, South Africa has the lowest penetration rate in the world of 0.06% compared to Kenya (13.3%), Rwanda (13.8%), Togo (26.7%), Australia (17.6%), Canada (46.7%), United States (52.6%), Ireland (74.5%) and a world

average of 13.5% (WOCCU, 2016). This gives us the interest to investigate their social and financial efficiency.

CFIs, being member-driven enterprises, pull members' savings together for on-lending to the same members at competitive interest rates that ensure sustainability provided they are efficient in managing their costs, credit risk and generate sufficient revenue. They have the information advantage to circumvent adverse selection and moral hazard challenges prevalent in credit markets through peer selection and peer monitoring. In order to support CFIs' self-help ethos, CBDA do not allow them to borrow more than 15% of their total assets.

5.2.1 CFIs and double bottom-line objectives

The success of CFIs rests within its actual performance to continue providing service to its members and its ability to grow and uplift its membership from poverty. This differentiates CFIs from commercial banks due to the dual objectives of financial sustainability and outreach (Bédécarrats et al., 2009; Cull et al., 2007). Outreach is the social value of CFIs outputs in six aspects: depth, breadth, length, scope, worth of users, and cost to users (Schreiner, 2002; Marwa and Aziakpono, 2016; Widiarto and Emrouznejad, 2015). Depth of outreach is the extent to which CFIs penetrate deeper to the poorest to recruit members, breadth is measured by the number of members assisted, length is the period of financial services delivered to a community, scope of outreach refers a variety of financial services provided (e.g. savings, loans, insurance, money transfer, financial literacy and others), worth of users is how much client value the services provided in meeting their needs, and cost to users is the total cost that member borrowers have to incur for the financial services provided (interest and fees) and other transaction costs. However, the focus of many empirical studies is on depth and breadth of outreach (Schreiner, 2002; Crawford et al., 2011; Gutiérrez-Goiria et al., 2017). Sustainability is the ability of the CFI to sustain its operations in the long term as a viable financial institution able to meet its own costs and surplus for its members (Armendáriz de Aghion and Morduch, 2005; Hermes and Lensink, 2011; Quayes, 2012). It is important for social enterprises to operate for the long term to have a profound impact on its members.

Investor-owned MFIs are often accused of mission drift by serving households that are either just below the poverty line ("the richest of the poor") or just above the poverty line ("the poorest of the rich") in order to make huge profits. The challenge seems also to be witnessed in some co-operative MFIs (Hartarska et al., 2012). There seems to be a trade-off in literature between financial efficiency and social efficiency. However, such trade-off in theory is expected to be

less profound in CFIs as they are member-owned compared to investor-owned MFIs which seem to be more concerned with profitability to derive value for their shareholders (Sinclair, 2012; Bateman, 2010). Bateman (2010) and Sinclair (2012) accuse MFIs of mission drift in the search for profitability resulting in reduced lending to the poorest due to the high cost of lending. This is made worse by the individual lending approach now being pursued by MFIs moving slowly away from the group lending methodology which ensures that MFIs exploit social capital to reach out to more people at reduced cost as the case with CFIs.

5.3 LITERATURE VIEW

5.3.1 Theoretical motivation

Farrel (1957) was the first to clearly identify the three main concepts of efficiency that are usually used in practice and research as technical efficiency, allocative efficiency and cost efficiency. Technical efficiency is defined as the ability of a firm to use resources productively in the most technologically efficient manner to produce a maximum quantity of outputs (output orientation) or the use of minimum resources to produce a given quantity of outputs (input orientation). Allocative efficiency reflects the ability of the firm to utilize a set of inputs in optimal proportion, given their prices and the available production technology. Cost efficiency refers to the combination of both technical and allocative efficiencies: a firm will only be cost-efficient if it is efficient in both technical and allocative efficiencies. In line with previous literature, the current study focuses on technical efficiency which will be referred to as “efficiency”. Efficiency in production theory is concerned with optimal combination of inputs to produce maximum outputs or producing given outputs with least possible quantity of inputs, hence minimising waste (Banker and Cummins, 2010; Brown and O’Connor, 1995).

5.3.1.1 Efficiency in the financial sector

During the last two decades there have been rapid changes which have affected or shaped the financial sector in the way they deliver financial services to their customers. These ongoing changes are being necessitated by the financial market reforms resulting in the intensification of competition, intensified use of technology and continuous financial product innovation to meet customers’ evolving financial needs. All these sweeping changes have forced the financial sector to take efficiency measurement seriously as a way of improving their ability to survive in an increasingly competitive environment (Worthington, 2010; Martínez-Campillo and Fernández-Santos, 2017). In the financial sector efficiency is defined as the level of optimization attained in the use of physical, human and financial resources in providing various

financial services (Worthington, 2010; Piot-Lepetit and Nzongang, 2014; Martínez-Campillo and Fernández-Santos, 2017). Efficiency plays a crucial role in every financial institution as it is the road to survival (Gutiérrez-Nieto and Serrano-Cinca, 2007).

5.3.1.2 *Efficiency in the co-operative financial institutions*

Within the broader financial sector, CFIs are experiencing growing popularity due to their ability to achieve social and financial benefits for their members and local communities, unlike traditional banks that focus mainly on shareholder return maximization. Due to their dual mission, CFIs' technical efficiency is related to the physical relation between their social and financial performance and the resources they use to produce such outputs (Martínez-Campillo and Fernández-Santos, 2017). Specifically, efficiency in the CFIs financial activity, referred to as *financial efficiency*, can be defined as a degree of optimization achieved in the use of physical, human and financial resources for providing different financial services. Being social enterprises, CFIs have important social objectives, and efficiency in their social activity, referred to as *social efficiency*, has to do with how effectively they achieve the social goals of their members and local community from their inputs which are mainly membership share contributions, savings and intermediation costs (Worthington, 2010; Bédécarrats et al., 2009; Gutiérrez-Goiria et al., 2017).

In summary, the major objective of CFIs is to provide maximum financial and social returns given the available resources. As such CFIs are considered to be efficient when they generate more financial and social returns from the given resources provided (inputs) (Wijesiri et al., 2017; Bédécarrats et al., 2012). However, balancing the achievement of these dual objectives is not easy, raising the debate on the trade-off between social and financial sustainability. Some researchers claim that there is no trade-off between the two objectives, meaning that social impact could be achieved while the enterprise is financially efficient. Other researchers and practitioners point to the presence of a trade-off as financial sustainability will result in targeting the less poor and resulting in mission drift.

5.3.2 Empirical evidence

Few studies have been done focusing mainly on the efficiency of CFIs or trying to establish the existence of a trade-off between outreach and financial sustainability despite their growing popularity as sources of ethical and sustainable finance. According to Martínez-Campillo et al. (2016) the research gap might be due to their small weight in financial systems and the scarce information on them. In addition, assessing their performance is rather complex as in addition

to their financial performance, they are supposed to attain their social objectives or impact (Ory and Lemzeri, 2012; Barra et al., 2013; Bédécarrats et al., 2009).

At the global level most of the studies on the efficiency of CFIs or credit unions have been carried out in Australia with some in the US, United Kingdom, Ireland and Turkey (Worthington, 2010; Brown and O'Connor, 1995; Esho, 2001; McKillop et al., 2005; McKillop et al., 2002; Pille, 2002; Wheelock and Wilson, 2013). Although quite a number of efficiency studies are being done in these countries, the area of social and financial efficiency is still receiving limited research in credit unions/CFIs even in Australia and Europe. The study of efficiency is of paramount importance for developing economies which recently initiated various economic and financial reforms with the aim of broadening and improving efficiencies of financial institutions to accelerate financial inclusion. The few studies that are focusing on Africa are on investor-owned MFIs with very scanty research on member-owned financial institutions (Marwa and Aziakpono, 2016; Piot-Lepetit and Nzongang, 2014; Wijesiri and Meoli, 2015). Recently, the debate among policymakers, practitioners and researchers has shifted to understand the trade-off between financial and social efficiency. However, results of these empirical studies seem to be mixed. See Table 5.2 below.

5.3.2.1 No empirical evidence on the existence of a trade-off

There is a growing amount of empirical literature which does not support the view that financial and social efficiency are substitutes. Gutiérrez-Nieto et al. (2009) in a global study of 89 MFIs found that socially efficient MFIs were also financially efficient. However NGO-MFIs were found to be more highly efficient than any other MFI type. Bédécarrats et al. (2012), using survey data from 295 MFIs in 51 countries, found that financial and social performance can both be achieved as long as MFIs have a well-planned social performance management strategy. Piot-Lepetit and Nzongang (2014) investigated village banks (financial co-operatives) in Cameroon and showed that in almost half of these CFIs there was no trade-off between financial and social sustainability; in only 15% of the village banks they did find a trade-off.

In 28 Vietnamese MFIs, Lebovics et al. (2016) found no evidence that a trade-off exists between financial and social efficiency. The study sample achieved an average financial efficiency of 94.15% and 73.75% social efficiency, and all MFIs were above 70% on both financial and social efficiency. However, subsidies help them to show high financial efficiency and attain social goals. In India Kar (2013) found no evidence for the presence of trade-off between financial and social efficiency in 87 MFIs. In a global study of 420 MFIs, Widiarto et

al. (2017) found that most MFIs are financially and socially inefficient. Older MFIs perform better than younger ones financially but are socially inefficient and Africa MFIs are the most inefficient.

5.3.2.2 Mixed empirical evidence on the existence of a trade-off

There are some studies which do not find clear evidence for the existence of a trade-off in MFIs. In a study of 231 MFIs in the Middle East and North Africa (MENA), Europe Asia Pacific (EAP) and South Asia (SA), Widiarto and Emrouznejad (2015) found that in 2009 Islamic MFIs (IMFIs) had lower financial efficiency than conventional MFIs (CMFIs) – 56.26% vs 66.53%, and in 2010 61.7% to 67.56%, while on social efficiency CMFIs outperform IMFIs. Using data on Cambodian MFIs Crawford et al. (2011) found that profit-oriented MFIs are no less efficient at reaching the poor than non-profit ones, but they also observe that Cambodian MFIs are becoming less efficient at outreach over time while increasing their profitability.

In Spain Martínez-Campillo et al. (2016) found no evidence of a trade-off in credit unions in the period 2008-2013, attaining 63.94% financial efficiency vs. 70.62% social efficiency. In a follow-up study, Martínez-Campillo and Fernández-Santos (2017) using a unbalanced dataset of 81 Spanish credit co-operatives covering the period 2008-2014 found that social efficiency had reduced to 66.42%, with second-stage analysis revealing that CFIs with a high percentage of branches in urban areas were socially less efficient. Those with a greater proportion of branches in urban areas are socially less efficient, whereas both their size and the number of service points had a positive effect.

5.3.2.3 Empirical evidence on the trade-off between financial and social efficiency

There are quite a number of studies that found convincing evidence for the view that financial and social efficiency are substitutes. Cull et al. (2007) were among the first to have investigated this trade-off. Using a dataset of 124 MFIs in 49 countries, they found that MFIs that used an individual lending approach focused more on wealthier clients, resulting in better profitability performance, but scoring lower on the depth of outreach, an indication which points to a trade-off between financial and social performance. Gonzalez (2007) showed that efficiency improvements are not driven by a higher quantity of loans per MFI staff member, but by increasing the average loan size, at the expense of the poorest clients. Hermes et al. (2011) found evidence that suggests that outreach is negatively related to efficiency of MFIs. More specifically, MFIs that have a lower average loan balance (a measure of the depth of outreach)

are also less efficient, whilst Amersdorffer et al. (2015) found that only credit co-operatives with sound financial performance can achieve a higher ranking in their social output.

Annim (2012), who employed balanced panel data of 164 MFIs, Louis and Baesens (2013), who used panel data for 456 MFIs, and Abate et al. (2014), using data from Ethiopian MFIs, all found evidence that outreach is negative to cost efficiency. Cull et al. (2011) stressed that transforming MFIs into formalized banking institutions generates costs for MFIs, which in turn may negatively affect their outreach. In a global study of 1,146 MFIs, Bos and Millone (2015) found significant trade-offs between social and financial performance, but not necessarily affecting all MFIs in the same manner.

Table 5.2: Summary of empirical literature on social and financial efficiency

Study	Method	Region	Observations	Period	Social Eff var.	Financial Eff var.	Main Findings
Gutiérrez-Nieto et al. (2009)	DEA and regression	Global	89 MFIs using MIX dataset	2003	Inputs: total assets, operating costs, no. of employees. Outputs: no. of women, the poorest,	Inputs: total assets, operating costs, and no. of employees. Outputs: gross loans, and financial revenue	With one exception, MFIs that are socially efficient are also financially efficient. NGOs-MFIs are more socially efficient than other MFI-types (banks, NBFIs, credit unions)
Hermes et al. (2011)	SFA and regression	Global	435 MFIs using unbalanced MIX dataset	1997-2007	Inputs: total expenses per labour unit, interest expenses per unit of deposits. Outputs: avg. loan size, % of women	Inputs: total expenses per unit of labour, interest expenses per unit of deposits. Outputs: gross loans	Evidence show that outreach is negatively related to efficiency of MFIs. MFIs that have lower average loan balance (a measure of the depth of outreach) are also less efficient.
Omri & Chkoundali (2011)	Regression models	Mediterranean	16 MFIs using MIX dataset	2001-2008	Independent variables: average loan size, average loan size/GNI per capita, women %, no. of outstanding loans as % of women borrowers.	Dependent variables: profitability, efficiency and productivity indicators, portfolio quality	Commercial viability increases with average loan size. Secondly, it also increases with the no. of loans per women. Neither targeting the poor nor targeting women affect the repayment default.
Crawford et al. (2011)	DEA	Cambodia	14 MFIs using MIX and Cambodian Microfinance Association	2003-2009	Inputs: personnel, operating expenses and equity. Outputs: no. of customers (savers and borrowers)	Inputs: Personnel, operating expenses and equity. Outputs: savings and loans	For profit MFIs are financially efficient but less social efficient than non-profit ones. MFIs are becoming less socially efficient over time while increasing profitability.
Hartarska et al. (2012)	Classical structural approach	41 countries Globally	216 Co-operative MFIs using unbalance MIX dataset	2003-2010	Inputs: total costs, labour and financial costs. Outputs: no. of active borrowers and no. of depositors	Inputs: total costs, labour and financial costs. Outputs: gross loan portfolio and deposits	MFI co-operatives have increasing returns to scale, majority can lower cost if they become larger around \$100m in lending and half of that in deposits
Louis et al. (2013)	Self-organizing map approach	6 regions	650 MFIs using MIX dataset	2011	Average loan size/GNI per capita, and portion of women borrowers	Real gross portfolio yield, profit margin, loans to total assets, cost per loan, PAR>30 and debt/equity ratio	Found evidence of significant, positive relationship between social efficiency and financial efficiency
Piot-Lepetit & Nzongang (2014)	Multi-DEA approach	Cameroon	52 Village Banks with above 5 years,	2009	Inputs: loans, operating revenue and other financial revenue.	Inputs: equity, assets, personnel, financial & operating costs. Outputs: loans,	Even if a trade-off exists for 15% of the village banks there is no trade-off for 46% of them. No conclusion

Study	Method	Region	Observations	Period	Social Eff var.	Financial Eff var.	Main Findings
Amersdorffer et al. (2015)	DEA	Bulgaria	dataset from ADAF 15 Credit Co-operatives using NCU dataset	2000-2009	Outputs: nos. of clients, women and poor Inputs: target and outreach, adaptation of services, clients benefit, social responsibility. Outputs: SPI score x average no. of loans.	operating revenue and other financial revenue Input: total operating expenses. Outputs: volume of loans, and share capital	on 36% since they are both financially and socially inefficient Credit co-operatives with sound financial performance can achieve a higher ranking in their social output
Bos & Millone (2015)	Output distance function	Global	1,146 MFIs using unbalanced MIX dataset	2003-2010	Inputs: All as % of total assets (financial, personnel, administrative expenses). Outputs: average loan balance/GNI per capita and no. of loans	Inputs: All as % of total assets (financial personnel and administrative expenses). Outputs: loan portfolio yield %	There are significant trade-offs between social and financial performance in microfinance. These trade-offs do not necessarily affect all MFIs the same manner
Widiarto & Emrouznejad (2015)	DEA and Two-stage regression analysis	MENA, EAP, and SA	231 MFIs using unbalanced MIX dataset	2009-2010	Inputs: total assets, operating expenses, PAR30, and employees. Outputs: borrowers and inverse of average loan balance/GNI per capita	Inputs: total assets, operating expenses, PAR30, and no. of employees. Outputs: financial revenue	In 2009 Islamic MFIs (IMFIs) had lower financial efficiency than conventional MFIs (CMFIs) 56.26% vs. 66.53% in CRS and in 2010 61.7% to 67.56%. On social efficiency CMFIs outperform IMFIs
Pedrini & Ferri (2016)	Linear Mixed Model Analysis	Global	194 MFIs using unbalanced MicroFinanza dataset	2001-2010	Social performance = outreach depth and breadth Control variables: average loan balance, lending type, staff	Financial performance = ROA and ROE. Control variables: MFI type, MFI location, OSS, loan loss reserve,	A trade-off exists between financial performance and outreach. Results show that mission drift positively impacts on financial performance but it reduces outreach.
Lebovics et al. (2016)	DEA	Vietnam	28 MFIs using MIX, VMFWG, and MFIs obtained datasets	2011	Inputs: total liabilities, operating costs, and no. of staff. Outputs: average loan balance to GNI and no. of borrowers	Inputs: total liabilities, operating costs, and no. of staff. Outputs: gross loan portfolio and financial revenue	MFIs are 94.15% financially and 73.75% socially efficient, no evidence for a trade-off. Subsidies helps them to show high financial efficiency and attain social goals.
Kaur (2016)	DEA	India	87 MFIs using MIX dataset	2012	Inputs: total assets, operating cost, no. of loan officers. Outputs: no. of active women borrower and the poorest reached	Inputs: total assets, operating cost, no. of loan officers. Outputs: revenue and gross loan portfolio	No evidence found for the presence of trade-off between financial and social efficiency though average financial efficiency is 84.2% and social efficiency 32.5%.

Study	Method	Region	Observations	Period	Social Eff var.	Financial Eff var.	Main Findings
Martínez-Campillo et al. (2016)	Two-Stage bootstrap DEA	Spain	446 observations using unbalanced credit unions dataset from UNACC (65-81 MFIs)	2008-2013	Inputs: No. of employees, no. of branches and equity (members' shares and reserves). Outputs: No of loans to customers/total members, no. of branches in municipalities having <25000 inhabitants /total branches (%), % of net profits allocated to social fund contribution	Inputs: No. of employees, no. of branches and equity (members' shares and reserves). Outputs: loan portfolio, deposits and security investments	There was no trade-off between financial and social efficiency. Financial efficiency average 67.26% while social efficiency reaches 72.02%. On second-stage analysis, age, and merger and acquisition has a positive and significant impact on financial efficiency but opposite on social efficiency, and belonging to a corporate group improve social efficient but not financial efficiency
Wijesiri et al. (2017)	Two-step DEA bootstrap and regression	Global	420 MFIs using MIX dataset	2013	Inputs: operating expenses, and no. of employees. Outputs: standardized average loan balance, and no. of active borrowers	Inputs: operating expenses, and no. of employees. Outputs: gross loan portfolio, financial revenue	The average efficiency scores are too low, most MFIs are financially and socially inefficient. Older MFIs are better financially than younger ones but socially inefficient. Africa MFIs are the worst inefficient.
Gutierrez-Goiria (2017)	DEA and seemingly unrelated regression	Global	403 MFIs using MIX dataset	2012	Inputs: equity and external funding. Outputs: gross loan portfolio, no. of clients, no. of female borrowers, economic sustainability	Inputs: equity and external funding. Outputs: profit and risk	NGO-MFIs and NBFIs show best relative results in terms of social and economic efficiency accounting for 81% of most efficient MFIs, whilst credit unions and MFI banks were 7.7% and 3.8% respectively
Widiarto et al. (2017)	DEA and Tobit regression	Global	628 MFIs from 87 countries using unbalanced MIX dataset	2003-2012	Inputs: total assets, operating expenses, no. of employees. Outputs: Inverse average loan per member/GNI per capita	Inputs: total assets, operating expenses, and no. of employees. Outputs: interest revenue	Group lending was found to be best method in achieving highest overall and social efficiency in Africa and MENA. NGO-MFIs show generally satisfactory financial efficiency
Martínez-Campillo and Fernández-Santos (2017)	Two-Stage bootstrap DEA	Spain	490 observations, unbalanced credit unions dataset from UNACC (65-81 CFIs)	2008-2014	Inputs: personnel expenses, amortisation expenses, and interest expenses. Outputs: loans to customers/ total no. of members and no. of branches in municipalities having <25000 inhabitants /total branches (%)	Only estimated social efficiency	Credit co-operatives reaches a social efficiency level of 66.42%. Those with a greater proportion of branches in urban areas are socially less efficient, whereas both their size and the number of service points have a positive effect.

5.3.3 Measurement of efficiency in CFIs

Performance measurement in an organization is very important, to understand whether the firm is doing well or badly so as to select the appropriate mixture of required resources (inputs) to produce optimal outputs. According to Paradi and Zhu (2013), Widiarto and Emrouznejad (2015) and San-Jose et al. (2014) the limitation of ratios and regression analysis have led to the development of more advanced techniques for evaluating firm performance. The limitations are that a CFI might perform very well in one ratio but badly in others hence the difficulty in overall performance benchmarking (Paradi and Zhu, 2013; Marwa and Aziakpono, 2016). In addition various separate ratios cannot measure how different inputs concurrently affect multiple outputs in the transformation process (Widiarto and Emrouznejad, 2015). This makes financial ratios not adequate to comprehensively measure performance changes in a CFI's social mission which differentiates it from conventional banking institutions.

In recent years, research in this domain has increasingly focused on benchmarking techniques based models that can assess how well a decision making unit (DMU) performs relative to the best of their peers if they are doing business under the same operating conditions. An important class of benchmarking methods is the frontier efficiency methodology. According to Paradi and Zhu (2013), using this technique the best firms are identified from the dataset and they form the empirically efficient frontier. Efficiency in production theory refers to the optimal combination of inputs to produce maximum outputs or producing given outputs with least quantity of inputs hence minimizing waste (Worthington, 2010; Amersdorffer et al., 2015; Widiarto et al., 2017; Martínez-Campillo et al., 2016). The main advantage of frontier efficiency over other indicators of performance is that it offers overall objective numerical efficiency scores with economic optimization mechanisms in complex operational environments and summarizes the performance in a single statistic. One such method is DEA.

5.3.4 Data envelopment analysis

DEA is the most widely used non-parametric technique developed by Charnes et al., (1978), advancing Farrell's (1957) single input-output productive efficiency concept into an efficiency assessment of DMUs involving multiple inputs-outputs to calculate a best practice efficient production frontier, enveloping all data as a reference set or benchmark against which each DMU is assessed (Widiarto et al., 2017; Lebovics et al., 2016). DEA evaluates efficiency without an *a priori* assumption on the distribution and production as with Stochastic Frontier Analysis (SFA) (Aigner et al., 1977) therefore applicable where multiple input-output relationship is not directly observable as in the context of CFIs. Their dual objectives is how

they utilize inputs to produce outputs related to outreach and sustainability, in comparison to their best performing peers (Ben Soltane, 2008; Lebovics et al., 2016; Widiarto et al., 2017).

This method provides a measure of relative but not absolute efficiency. However, DEA does not handle measurement errors (Charnes et al., 1978), therefore we will do bootstrapping. Moreover, it imposes conditions on homogeneity, that is, it assumes that organizations are performing identical functions and producing similar outputs so that a common set of outputs can be defined; it also assumes that identical resources are available to all DMUs and that they operate in a similar environment (Lebovics et al., 2016). As recommended by Belkenhol and Hudon (2011) comparisons of efficiency are best conducted within a single country context.

5.4 RESEARCH METHODOLOGY

We apply a two-stage double bootstrap DEA procedure, specifically, the Algorithm 2 developed by Simar and Wilson (2007). The procedure consists of estimating DEA scores of technical efficiency in the first stage, resulting efficiency scores are then regressed on a set of environmental variables in the second stage using the truncated regression with bootstrap. This is because of the presence of the inherent dependency among the efficiency scores and with the aim of reducing the inappropriate and misleading possible results because of the lack of independence within the sample. According to Martínez-Campillo et al. (2016) and Wijesiri et al. (2017) a two-stage approach makes econometric sense only if the variables included in the second stage are exogenous, that is, they do not participate in the production function but do affect efficiency. DEA is useful in achieving the first benchmark – identifying best performers. DEA produces an efficient frontier consisting of the set of the most efficient firms, allowing a direct comparison to the best performers. DMUs on the efficient frontier are peers that can be emulated by DMUs that are not on the efficient frontier. DEA is also useful in setting benchmarking goals that are measurable, attainable and actionable (Spendolini, 1992; Marwa and Aziakpono, 2016)

5.4.1 First stage: Estimation of DEA efficiency scores

The two DEA models are the Charnes, Cooper and Rhodes (1978), famously known as the CCR model after their names and the Banker, Charnes and Cooper (1984), popularly known as the BCC model. The CCR model assesses technical efficiency under a Constant Returns to Scale (CRS) condition, hence the CRS model. Multiple inputs and outputs for a given DMU are linearly aggregated into single ‘virtual’ input and output in the following manner:

$$\text{Virtual Input} = v_1x_1 + \dots + v_mx_m = \sum_{i=1}^m v_ix_i$$

$$\text{Virtual Output} = u_1y_1 + \dots + u_sy_s = \sum_{r=1}^s u_ry_r$$

$$\text{Efficiency} = \frac{\text{virtual output}}{\text{virtual input}} = \frac{\sum_{r=1}^s u_ry_r}{\sum_{i=1}^m v_ix_i}$$

Where v_i and u_r are weights for observed input x_i and for observed output y_r , respectively. An efficiency score is assigned for each DMU in a way that maximizes the ratio of weighted output to weighted input. BCC modifies the CCR model by applying a more realistic assumption of the Variable Returns to Scale (VRS) wherein each DMU is allowed to exhibit different returns to scale due to a different environment, hence the VRS model. CRS is only valid if a DMU operates at its most productive scale size yet that is often not the case. So, we employ the DEA model under the VRS assumption because it is consistent with the environment of imperfect competition in which credit co-operatives operate (Brown, 2006; Martínez-Campillo and Fernández-Santos, 2017). Scale efficiency causes the difference between the VRS technical efficiency of a given DMU, that is, pure technical efficiency, to its CRS technical efficiency, that is, global technical efficiency (Widiarto and Emrouznejad, 2015).

Basic DEA models are based upon output-orientated and input-orientated strategy. The input-orientated approach aims to maximize proportional input reduction whilst holding outputs constant, whilst the output-orientated approach maximizes the proportional outputs increase whilst maintaining inputs constant. CFIs are treated as financial intermediaries between the member savers and member borrowers as they seek to maximize the outputs (outreach, loans, investments and revenue) given the input levels (deposit, labour and expenses). Input orientation has been recommended for cost minimization focused policies, while output orientation has been recommended for impact maximization policies (Cooper et al., 2011). It is argued that the orientation choice must be chosen according to the quantities of inputs and outputs that the managers are able to control (Coelli et al., 2005). In our case, managers are more able to control the outputs (loans, investments, financial revenue) than the inputs, which are mainly deposits which they desperately need but which are subject to external economic and social forces. Therefore, the current study adopts the intermediation approach and output

orientation as CFIs mobilize members' contributions and savings to give out loans (Hermes et al., 2011; San-Jose et al. 2014. See Equation (5.1).

$$\hat{\delta}_i = \frac{\max}{\hat{\delta}_i \lambda_i} \left\{ \delta > 0 \mid \hat{\delta}_i y_i \leq \sum_{i=1}^n y_i \lambda_i; x_i \geq \sum_{i=1}^n y_i \lambda_i; \sum_{i=1}^n \lambda_i = 1; \lambda_i \geq 0 \right\}; i = 1, \dots, n \text{ DMUs} \quad \dots (5.1)$$

where y_i is a vector of outputs, x_i is a vector of inputs, λ_i is an $n \times 1$ vector of constants measuring the weight used to compute the location of an inefficient DMU aiming to become efficient, and $\hat{\delta}_i$ is the efficiency score for the i th DMU under the VRS assumption. If $\hat{\delta}_i = 1$, the i th DMU is fully efficient, and if $\hat{\delta}_i < 1$, the i th DMU is relatively inefficient.

Despite the DEA having some advantages, it does not allow for statistical inference and consequently its results are biased because it ignores sampling and measurement errors. This study adopted the homogeneous bootstrap algorithm in the first stage of the analysis as initiated by Simar and Wilson (2000) which combines the conventional DEA model with the bootstrap technique to infer the statistical properties of efficiency scores. Bias-corrected efficiency scores are generated. However, according to Efron and Tibshirani (1993) the bias correction may introduce additional noise, whilst Simar and Wilson (2000) advise that bias-corrected efficiency scores should only be used when the following ratio r_i is well above unity (Equation 5.2).

$$r_i = \frac{1}{3} \left(\widehat{bias} \frac{2}{B} [\hat{\delta}(x, y)] / \hat{\sigma}^2 \right) \quad \dots (5.2)$$

where r_i is a statistical test value, which allows us to assess whether the bias correction might increase the mean square error, $\hat{\sigma}^2$ is the variance of the bootstrap values, B is the number of replications and $\hat{\delta}$ is the original efficiency estimate.

5.4.2 Second stage: Bootstrap truncated regression

Simar and Wilson (2007) criticized the use of censored (Tobit) regression in the second stage analysis although it has been widely applied. The reason is that, because explanatory variables (z) are correlated with the disturbance term (ϵ), the assumption that ϵ is independent of z becomes invalid and input and output variables are correlated with explanatory variables (Wijesiri et al., 2017). They address this issue by proposing an alternative double bootstrapped procedure (Algorithm 2) that permits valid inference while simultaneously generating standard

errors and confidence intervals for the efficiency estimates. DEA indices are bounded by 0 and 1, a bootstrap truncated regression model is used in the second stage which provides consistent and non-biased estimates (Simar and Wilson, 2011; Martínez-Campillo and Fernández-Santos, 2017) as where the bootstrap efficiency scores from the first stage are regressed on a set of explanatory variables using the following regression model:

$$\hat{\delta}_i = \alpha + \beta z_i + \varepsilon_i \quad i = 1, \dots, n, \quad \dots (5.3)$$

where α is a constant term, β is a vector of parameters to be estimated, z_i is a vector of exogenous factors that are expected to affect the efficiency/inefficiency of the i th DMU, and ε_i is an error term assumed to be $N(0, \sigma_\varepsilon^2)$ distributed with right truncation at $(1 - \alpha - \beta z_i)$.

5.4.3 Research data sources

Data used in this study was collected from CFI financial reports filed with the CBDA and from regulators' annual reports (CBDA and SARB) for the financial years 2009/2010 to 2016/2017, ranging from 21 to 29 CFIs per financial year. This makes this study different from others which rely mostly on MIX database (see Table 5.2 above). Since the CBDA started regulating the industry it became mandatory for every CFI to file its audited annual financial statements. However, in the period pre-CBDA supervision financials could not be found as the previous regulators, SACCOL and SAMAF, had ceased operations and in addition, they were not strict with CFIs getting their financials audited and filed with them. Six observations with insufficient financials were removed from the study, remaining with a total of 206 observations over eight years.

5.4.4 DEA input – output selection

The challenge that applies in many studies of financial institution efficiency is the identification of inputs and outputs. According to Paradi and Zhu (2013) management should select variables that they see as reflecting the function of a DMU as this will help in the acceptance of the results. Taking that into consideration and being guided by the literature in Table 5.2 above, our input variables, financial outputs (relating to financial efficiency) and social outputs (social efficiency) are justified from the literature and context viewpoints on our understanding of the uniqueness of CFIs from the mainstream financial institutions or credit-only MFIs. The current study will use the output-orientated approach as CFIs are more concerned with reaching out to more member-borrowers by not limiting the mobilization of member share capital and savings as inputs.

The major role of financial co-operatives is to mobilize members' financial resources, and in the process they incur intermediation costs in mobilizing savings and managing the loan portfolio. Poverty outreach as a measure for social efficiency focuses on the breadth (number of the poor clients reached or members in the case of CFIs) and the depth (the extent to which the poorest clients are reached). Following Crawford et al. (2011), Pedrini and Ferri (2016), and Gutiérrez-Nieto et al. (2009) for outreach we take the inverse format of average loan balance per member, which is a widely used proxy to measure depth of outreach, standardized over gross national income (GNI) per capita. We use the inverse format so as to have characteristics as output where a larger value means better (Widiarto and Emrouznejad, 2015). On social indicator of breadth, instead of using the number of borrowers we use the number of members because CFI outreach to its members is by savings first and credit later, and other related financial services such as insurances or payments.

Lastly, our financial output variables consist of the gross loan portfolio (GLP), investments and financial revenue. GLP includes all outstanding principals due, this includes current delinquent and negotiated loans, but not written-off loans or interest receivable. Investments include money with outside institutions to earn interest on a fixed period. However, there are debates around mobilizing the poor's savings and investing outside their communities. Financial revenue include interest and fees income from the loan portfolio and investments. It is used as a proxy for sustainability since a CFI that cannot collect enough revenue will not be viable to operate in the long run by itself. Table 5.3 below gives a detailed analysis of the variables considered for this study with supporting literature and arguments.

From the identified input and output variables, the overall, social and financial efficiency models are estimated using the same inputs but different outputs are as shown in Table 5.4 below. According to Cooper et al. (2007), in order for the efficiency scores to be robust and reliable, the number of DMUs must be at least the maximum between $m \times s$ or $(m + s)*3$, with m and s being the number of input and output variables, respectively. In the current study, the efficiency models comply with this standard requirement.

Table 5.3: Summary and justification of DEA input and output variables

Variables	Definition	Usage in literature	Units	CFI Objective (Efficiency) Represented
Inputs				
Deposits	Total savings by members held in the CFI.	San-Jose et al. (2014). Most literature use it as output, but CFIs' philosophy is savings first, everything later, making it an input in this study	ZAR 000	Financial mobilization
Operating expenses	Total costs related to operations, e.g. all personal expenses, administrative expense, governance expenses and depreciation or amortization. They are used in the intermediation process, so they need to be managed to avoid waste.	Gutiérrez-Nieto et al. (2009); Hermes et al. (2011); Crawford et al., (2011); Piot-Lepetit & Nzongang (2014); Amersdorffer et al. (2015); Widiarto & Emrouznejad (2015); Lebovics et al. (2016); Wijesiri et al. (2017); Widiarto et al (2017).	ZAR 000	Intermediation costs
Outputs				
Inverse of average loan borrower	Inverse format of average loan balance per borrower, is a widely used proxy to measure depth of outreach, standardized over GNI per capita to remove currency and purchasing power parity difference. Inverse format usage is meant to have output where larger value means better.	Omri & Chkoundali (2011); Kar (2013); Bos & Millone (2015); Widiarto & Emrouznejad (2015); Widiarto et al. (2017).	%	Outreach (Social Efficiency)
No. of members	The total number of members who benefiting from financial services be it savings or loans.	Crawford et al. (2011); Hartarska et al. (2012) used total number of customers (savers and borrowers). Most literature use number of women borrowers, e.g. Hermes et al. (2011); Gutierrez-Goiria (2017); Kaur (2016) whilst some use number of borrowers, e.g. Wijesiri et al. (2017); Widiarto et al. (2017)	Numerical	Outreach (Social Efficiency)
Financial revenue	This comprise of revenue from loans and income from investment. It is an output in intermediation approach and proxy for sustainability since CFIs that cannot generate enough revenue will not be viable to operate in the long run by its self.	Gutiérrez-Nieto et al. (2009); Kaur (2016); Piot-Lepetit & Nzongang (2014); Lebovics et al. (2016); Widiarto & Emrouznejad (2015); Wijesiri et al. (2017)	ZAR 000	Sustainability (Financial Efficiency)
Gross loan portfolio	These are total loans outstanding disbursed to members to generate interest revenue to the CFI.	Hermes et al. (2011); Hartarska et al. (2012); Piot-Lepetit & Nzongang (2014); Lebovics et al. (2016); Kaur (2016); Wijesiri et al. (2017);	ZAR 000	Sustainability (Financial Efficiency)
Financial investments	Liquid financial investments with defined maturity date other than investments in fixed assets and loan portfolio	Martínez-Campillo et al. (2016). Most literature do not use investments as outputs, our sample CFI are investing substantial funds	ZAR 000	Sustainability (Financial Efficiency)

Table 5.4: DEA model variables

Efficiency represented	Inputs variables	Outputs variables
Overall Efficiency (OE)	Deposits Operating expenses	Gross loan portfolio Investments Financial revenue No. of members Inverse average loan balance per member/GNI per capita
Financial Efficiency (FE)	Deposits Operating expenses	Gross loan portfolio Investments Financial revenue
Social Efficiency (SE)	Deposits Operating expenses	No. of members Inverse average loan balance per member/GNI per capita

5.4.5 Explanatory variables

Following previous literature six explanatory variables are used to examine the determinants of efficiency/inefficiency in the CFI industry in South Africa (Wijesiri et al., 2017; Widiarto and Emrouznejad, 2015; Worthington, 2010). Based on the literature the following explanatory variables will be used: age, size, ROA, average savings per member, capital adequacy and association. However, one would advocate for the inclusion of some macro-economic environment variables such as the country's good governance, political stability, government effectiveness, inflation and so on. Since the study is not a cross countries research but a country-specific study, our DMUs are being affected by these macro-economic factors in the same way, hence it is not necessary to include them in the present study.

CFI age is measured in the number of years since inception, it is included as an indicator of experience and improved managerial ability with co-operative finance programs. Wijesiri et al. (2017) discussed the efficient of age on efficiency as twofold, with a group of researchers arguing that efficiency improves as the MFIs mature (Marwa and Aziakpono, 2015; Paxton, 2007) due to their ability to manage their costs better through years of adjusting the business model to be efficient and their ability to cushion the short-term losses compared with younger CFIs. However Hermes et al. (2011) provide evidence that age is negatively associated with technical efficiency, which might be as a result of failing to respond to new challenges and innovations as the firm ages. In Sri Lankan MFIs, Wijesiri et al. (2015) found that mature MFIs though financially efficient, are socially inefficient.

The size of a financial institution has been empirically proven to be an important source of efficiency as it reflects the strength of the firm to compete effectively in the market with rivals (Glass et al., 2014; Martínez-Campillo and Fernández-Santos, 2017). Size is also associated

with the ability to adopt new technology, pursue investment opportunities, diversify and enter into strategic alliances and the attractiveness to competent human capital to provide effective leadership. Normal size is measured in the value of total assets.

Return on assets (ROA) is widely regarded as a proxy of sustainability on how effectively the assets of a firm are being used to generate profit and if it is negative, it means the firm is not operating sustainably (Wijesiri et al., 2017; Marwa and Aziakpono, 2015; Schreiner, 2000). Other variables are average savings per member (AVSAV), which measures commitment of members to their co-operative: the higher the average savings the higher the expected efficiency as transactional costs are likely to be lower and improve the ability of the CFI to lend.

Capital adequacy (CAP) is calculated as the proportion of equity to total assets: it is a measure of financial leverage in which the higher the ratio, the lower the financial leverage and the lower the financial risk (Martínez-Campillo and Fernández-Santos, 2017; Glass et al., 2014); the variable ASS (*association*) is made a dummy that takes the value of 1 when CFI belong to an association or a group, and 0 otherwise. The dummy seeks to understand the influence of associational bond under which a credit union is created (Worthington, 1999; Martínez-Campillo and Fernández-Santos, 2017; Glass et al., 2014). From these environmental variables, two truncated regress models – social efficiency and financial efficiency models – are built to study the determinants of efficiency/inefficiency in CFIs. In the above models, the following specification is estimated:

$$\widehat{\delta}_i = \alpha + \beta_1 RoA_{i,t} + \beta_2 \ln(AVSAV)_{i,t} + \beta_3 \ln(AGE)_{i,t} + \beta_4 \ln(ASSETS)_{i,t} + \beta_5 CAR_{i,t} + \beta_6 ASS_{i,n} + \varepsilon_i \quad \dots (5.4)$$

where the dependent variable $\widehat{\delta}_i$ refers to the bootstrapped efficiency score from the first stage of the i th DMU, α is a constant term, $\beta_1, \beta_2, \dots, \beta_6$ are the parameters to be estimated, $RoA_{i,t}$ is the return on assets of the i th DMU in period t , $AVSAV_{i,t}$ is the average saving per member of the i th DMU in period t , $AGE_{i,t}$ is the firm age of the i th DMU in period t , $ASSETS_{i,t}$ is the total assets of the i th DMU in period t , $CAR_{i,t}$ is the capital adequacy of the i th DMU in period t , $ASS_{i,t}$ is members of a trade association/club/movement of the i th DMU in period t , and ε_i is the error term.

5.5 EMPIRICAL RESULTS

Table 5.5 below summarizes the main descriptive statistics for input and output variables and the determinant variables considered in the second stage analysis in the study. A quick look at the statistics of deposits, loans and number of members reveal that our DMUs comprise small and large/medium CFIs. Inverse of average loan borrower has a very wide range of 0.0376 to 2,686.65. This is supported a trend in the CFI industry as shown in Table 5.1 with the number of members declining from 59,394 in 2011 to 29,818 in 2017, whilst the average loan balance per member is increasing rapidly from ZAR1,963 to ZAR6,780 respectively. As also shown in the Table below the variations of members is huge revealing that there are some outliers in our sample CFIs and DEA model. However, due to our limited sample removing these outliers will violate the DEA rule of thumb as already discussed in Section 5.4.4. The average capital adequacy ratio (CAR) of the industry is at acceptable levels of 18% against the Basel III Acord's minimum of 8%.

Table 5.5: Descriptive statistics (Input and output variables in ZAR)

N=206 DMUs	Mean	SD	Minimum	Maximum
<i>Input variables</i>				
Deposits	7 611 092	15 166 800	1 000	96 353 394
Expenses	584 441	606591	1 406	3 571 892
<i>Output variables</i>				
<i>Financial efficiency</i>				
Loans	5 700 301	11 743 945	1 477	72 441 095
Investments	2 482 658	4 903 603	13 087	30 805 624
Financial revenue	1 059 340	1 677 448	1 355	9 976 973
<i>Social efficiency</i>				
Inverse of average loan borrower	60.589	229.221	0.0376	2686.650
Members	1194	1478	17	10777
<i>Efficiency determinants</i>				
ROA	-0.0668	0.3674	-3.0291	0.9129
Average Saving per Member	13497	31515	3.23	206022
Age	9.42	6.09	1	25
Capital Adequacy Ratio	0.1766	0.3848	-1.6798	0.9934
Association	0.4078	0.4926	-	1
Assets	8942096	16171929	15532	103408531

Table 5.6 presents the Pearson correlation coefficients between the efficiency determinants when measured using a continuous variable. Analysis of the variance inflation factors (VIF) is 1.1 below 10 (Kleinbaum et al., 1998), confirming that multicollinearity is not a problem.

Table 5.6: Correlation coefficient between the efficiency determinants

N = 206 DMUs	ROA	lnAVSAV	lnAGE	lnASSETS	CAR	ASS
ROA	1.0000					
lnAVSAV	0.1731**	1.0000				
	0.0129					
lnAGE	0.1426**	0.2656***	1.0000			
	0.0410	0.0001				
lnASSETS	0.3359***	0.8201***	0.3540*	1.0000		
	0.0000	0.0000	0.0000			
CAR	0.4577***	-0.3508***	-0.3165***	-0.1847***	1.0000	
	0.0000	0.0000	0.0000	0.0079		
ASS	0.0824	0.3350***	-0.2384***	0.5029***	0.0773	1.0000
	0.2390	0.0000	0.0006	0.0000	0.2695	

*, **, *** represent statistical significance at 10%, 5% and 1% levels.

5.5.1 First-stage results: Social and financial efficiency measures

In order to take care of some statistical noises in our DEA estimation, the bootstrap DEA was employed by using 2,000 replications with a confidence interval of 95%. In order to build a single efficient frontier, each CFI is regarded as a separate, different observation in each year of the study period of eight years (Curi et al., 2012; Moradi-Motlagh et al., 2015). Our estimation scores are shown in Table 5.7 below with the average, estimates of the original and bias-corrected efficiency scores of overall, social and financial efficiencies for the period 2010-2017. Our results show numbers and percentage of CFIs that are fully efficient in each category. For interpretation purposes we focus on the bias-corrected scores as they are closer estimates to the real efficiency.

The social efficiency mean score of South African financial co-operatives is very low at 8.94%, far below the tolerable value of above 50% (Cooper et al., 2007) and below what Martínez-Campillo and Fernández-Santos (2017) found in credit co-operatives in Spain of 66.42%. South African CFIs have a very long way as to go as they need to increase their social output by 91.06% given the resources at their disposal. Only 5.8% of DMUs are socially efficient above 50%, which translates to only 12 of the DMUs out of the 206 observations and there is no fully efficient DMU. Social efficiency is also low with the average original score at 15.19% and a minimum close to zero (0.12%). This can also be partly explained by the descriptive statistics in Table 5.5 revealing a large variation in the number of members among the sample CFIs, with a minimum of 17, standard deviation of 1,478 and a maximum of 10,777. This can also be supported by Table 5.1 showing a trend in the CFI industry with members regressing from

59,394 in 2011 to 29,818 in 2017. On the other hand, average loan balance increasing significantly from ZAR1,963 to ZAR6,780 respectively.

The performance of financial efficiency is better compared to social efficiency but still far below the performance of credit co-operatives in other countries. CFIs have a financial efficiency mean score of 38.43%, meaning the industry has the potential to increase its financial performance by 61.57% from the resources they are currently utilizing (deposits and operating expenses). Only 34.9% of the DMUs (72 observations) are financially efficient above 50%. This performance is lower than the 63.94% financial efficiency mean recorded in Spain for the period 2008-2013 (Martínez-Campillo et al., 2016) and 63% found by Barra et al. (2013) in Italian credit unions during the period 2006-2010. The overall technical efficiency combining social and financial variables has an efficiency score of 44.8% whilst 39.8% of DMUs (82 observations) have an efficiency score above 50%. In summary, our sample CFIs are both financially and socially inefficient, meaning there is 55.2% technical inefficiency which points to a lot of input wastage in the intermediation process. To eliminate the technical inefficiencies the industry it is necessary to implement innovative business models that optimize the use of the available resources to increase outputs.

Table 5.7: Social and financial efficiency scores

	Overall Technical Efficiency		Social Efficiency		Financial Efficiency	
	Original eff	Bias-corrected	Original eff	Bias-corrected	Original eff	Bias-corrected
Mean	0.5645	0.4480	0.1519	0.0894	0.4873	0.3843
St. Dev	0.3118	0.2370	0.2619	0.1454	0.3300	0.2509
Minimum	0.0304	0.0225	0.0012	0.0008	0.0304	0.0220
Maximum	1.0000	0.8720	1.0000	0.5935	1.0000	0.8835
Fully efficient DMUs #	40	0	12	0	32	0
Fully efficient DMUs (%)	19.4	0.00	5.8	0.0	15.5	0.0
Efficient > 50% DMUs #	106	82	19	12	86	72
Efficient > 50% DMUs (%)	51.4	39.8	9.2	5.8	41.7	34.9

To understand better whether South African CFIs are improving their social and financial efficiencies Table 5.8 below presents the mean efficiency scores for each year. The overall efficiency shows little progress from 46.91% in 2010 to 49.16% in 2017, the industry regressed from its highest of 51.54% in 2015. Throughout the years social efficiency has not shown any indications of improvement as a year of slight progress was followed by a swing. In a nutshell, the 2010 social efficiency score of 12.3% still remains the highest as there is no improvement

on the social impact. However, financial efficiency has been improving since 2010 from 31.61% to 45.3% in 2017, meaning CFIs can still improve their financial performance by 54.7% without the need for additional deposits and expenses. One major reason that could strongly explain insignificant and stagnant social efficiency is that, on average 37.7% of total assets are being invested in financial investments, crowding out credit to members. This is despite a low return of 8.5% as compared to a loan portfolio yield of 33.4% on average. This might mean that financial investments are not only contributing to social inefficiency but also enhancing financial inefficiency since assets that were supposed to benefit members are held in fixed investments and are not generating maximum potential returns for improved financial efficiency.

Table 5.8: Social and financial efficiency estimates (2010-2017)

	DMUs	Overall Efficiency		Social Efficiency		Financial Efficiency	
		Original eff	Bias-corrected	Original eff	Bias-corrected	Original eff	Bias-corrected
2010	21	0.5744	0.4691	0.2093	0.1234	0.3787	0.3161
2011	29	0.4529	0.3605	0.1485	0.0860	0.3586	0.2844
2012	27	0.4478	0.3650	0.1086	0.0653	0.3636	0.2966
2013	22	0.5583	0.4450	0.1386	0.0819	0.4869	0.3901
2014	24	0.5912	0.4713	0.0940	0.0587	0.5667	0.4460
2015	28	0.6573	0.5154	0.2034	0.1175	0.5946	0.4654
2016	26	0.6040	0.4745	0.1296	0.0748	0.5356	0.4157
2017	29	0.6351	0.4916	0.1824	0.1080	0.5978	0.4530

Figure 5.1 below presents the social-financial efficiency (SFE) matrix based on biased-corrected scores. Only 8 DMUs have their social and financial efficiency estimate scores above 50% as shown in quadrant I, an indication that socially and financially the industry is performing below its potential as more DMUs are expected to be in this quadrant, indicating that CFIs are not achieving their outreach and financial objectives. In quadrant II, most CFIs are socially inefficient as their efficiency scores are below 50% whilst financially they seem to be doing relatively better. However, the bulk of South Africa's CFIs are performing relatively poorly in both dimensions as shown by the many DMUs in quadrant III, whilst only four in quadrant IV are doing better on social efficiency at above 50% but they are financially inefficient.

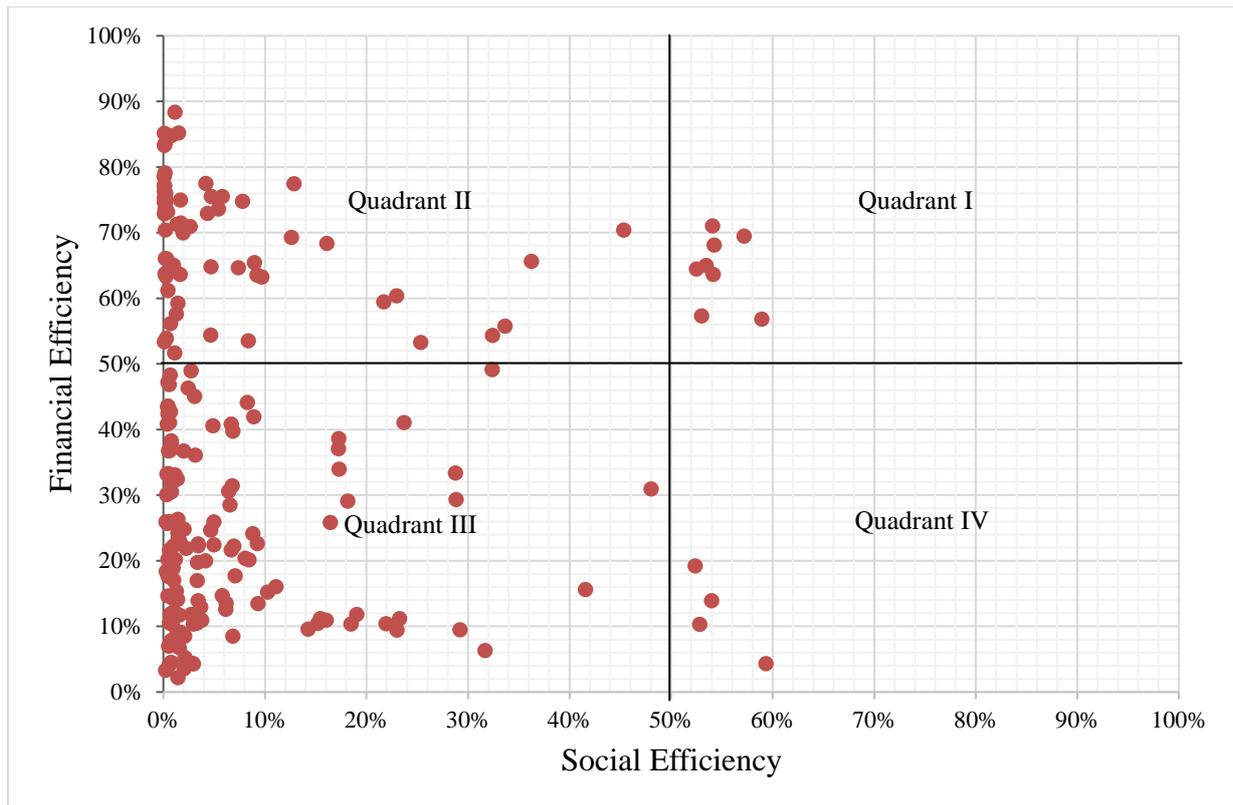


Figure 5.1: Scatter plot of social and financial performance

5.5.2 Second-stage results: Determinants of social and financial efficiency

The results of the bootstrap truncated regression for financial and social models, where bias-corrected DEA scores in the period 2010-2017 are regressed against a set of environmental variables, are presented in Table 5.9. The results show that the coefficient of age is negative and significant, meaning that as CFIs become mature they become inefficient in their activities. Although our results are not consistent with Martínez-Campillo et al. (2016), Marwa and Aziakpono (2016) and Paxton (2007) they are in agreement with Hermes et al. (2011) who provide evidence that age is negatively associated with technical efficiency.

The ROA coefficient is negative but not statistically significant of financial efficiency (FE) but positive of social efficiency (SE), whilst AVSAV is positive and significant in the financial model, implying that an increase in average savings per member increases financial sustainability as more financial resources will be made available for lending to earn interest which is consistent with San-Jose et al. (2014). However, AVSAV is negatively and significantly correlated with social efficiency, implying an increase in average saving will affect the depth of outreach meaning that better-off members are joining the CFIs rather than the actual poor.

Table 5.9: Determinants of financial and social efficiency

Variable	β Coefficients (bootstrap standard errors)	
	Financial Efficiency (FE)	Social Efficiency (SE)
Constant (α)	-1.7215*** (0.2450)	0.0144 (1.6060)
LnAge	-0.7841*** (0.0242)	-0.1255** (0.1749)
ROA	-0.0124 (0.0953)	0.0614 (0.3588)
LnAVSAV	0.0272** (0.0136)	-0.3813*** (0.2742)
LnASSETS	0.1289*** (0.0206)	0.1791** (0.1866)
CAR	0.4138*** (0.0759)	-0.4849*** (0.4891)
ASS	0.0004 (0.0472)	-0.1930* (0.4279)
Sigma	0.1944*** (0.0121)	0.2286*** (0.0595)
Log-Likelihood	93.204	363.27
R^2	0.47867	0.30442

LnAge age (in years); ROA return on assets; LnAVSAV average savings per member; LnASSETS total assets value (in ZAR); CAR capital adequacy ratio; ASS association belonging (dummy: 1=yes/0=non).

Total number of replications = 2000

*significant at 10%; **significant at 5%; ***significant at 1%

The coefficient for the relationship between total assets (LnASSETS), which is a measure of size in both models, is positive and statistically significant on both. This agrees with Glass et al. (2014), Martínez-Campillo and Fernández-Santos (2017) and Wijesiri et al. (2017), suggesting that larger CFIs are more efficient in terms of financial sustainability and poverty outreach, which can further be explained by their ability to reduce costs given their economies of scale through use of better technologies to deliver financial services. CAR, which measures financial leverage: the higher the ratio, the lower the financial leverage and the lower the financial risk (Martínez-Campillo and Fernández-Santos, 2017; Glass et al., 2014), has positive coefficient values and is statistically significant on financial and negatively statistically significant on social efficiency. This is expected since CFIs are self-funded enterprises with members' savings as their major source of capital.

Finally, regarding the ASS variable, our results suggest that the CFIs belonging or affiliated to an association such as a trade union, professional association or social club do not have any bearing on financial and social performance. Our results agree with the findings of Martínez-Campillo et al. (2016) in Spain on financial efficiency but they differ on social efficiency as

they found that belonging to a group having a statistically positive coefficient at 10% indicated that Spanish CFIs belonging to a group managed their social activity better.

5.6 CONCLUSIONS AND IMPLICATIONS

5.6.1 Conclusions

The inefficiency in the intermediation process in the financial sector can affect its ability to generate sufficient income and reduce economic activities and economic development. This makes efficiency evaluation of importance not only to management but also to investors, policy makers, regulators and the general public. Efficiency measurement is important not only for mainstream banks but also for member-owned co-operative financial institutions to understand their progress in both their financial performance and their social performance. This research had two goals: to estimate the relative levels of social and financial efficiency of CFIs in South Africa between 2010 and 2017, and to analyze the major determinants of social and financial efficiency.

With regard to the first goal, our research findings show evidence that South African CFIs achieved an overall technical efficiency of 44.8% between 2010 and 2017. As a result, the industry is 55.2% technically inefficient meaning there is a lot of resource wastage as the CFIs would increase their output by that margin if utilizing their deposits and operating costs (inputs) efficiently. On social efficiency, the industry achieved a relative efficiency level of only 8.94%, meaning that CFIs are generating 91.6%, far less the maximum level of social output expected if they used their savings and expenses in a more efficient manner. Similarly, they achieved a relative mean score of 38.43% in financial efficiency, meaning they need to increase their financial output by no less than 61.57% using the same amounts of deposits and expenses. The industry is operating below 50% minimum standard which puts into question their survival going forward if no action is taken.

With regard to the second goal, our results indicate that age does not matter to social and financial efficiency, in fact as CFIs get older the less efficient they may be due to failure to embrace new technologies or more innovative ways of enhancing operations. ROA however does have a positive relationship with both financial and social efficiency, but it is not significant to explain the efficiency. These results are not surprising as the industry over the study period had -6.7% ROA. However, an increase in average loan per member will result in mission drift as the variable shows that the breadth of outreach on social efficiency is being affected as CFIs are targeting financially well-up members therefore affecting social efficiency

although financially it makes business logic to reduce transaction costs. These findings can be perfectly explained by Table 5.1 which shows that as membership declined from nearly 60,000 to around 30,000, total savings increased from ZAR124 million to ZAR228 million from year 2010 to 2017 respectively. As empirically proved, the size of the firm matters. In our case both financial and social efficiencies improve with CFI size, as the bigger the CFI the more attractive it becomes to quality human skills to provide effective leadership, making it better positioned to innovate, attract more members and have a strong balance sheet to disburse more loans and absorb some of the temporary losses.

According to Marwa and Aziakpono (2015) a tight association bond might expose the institution to excessive systematic risk due to members' homogeneity and might be a stumbling block towards further growth. This makes it necessary for the CFIs to diversify its membership base but also to exploit fully the benefits from members sharing a tight common bond.

5.6.2 Managerial and policy implications

The inefficiencies in the CFI industry are astronomically high due to the extreme sub-optimal outputs from available resources. Efforts to improve efficiencies in the industry require substantial collective efforts of policy makers, regulatory authorities, trade associations, CFI management and members to optimize resource utilization. From our findings a number of recommendations can be made to government, NACFISA and CFI management. Our recommendations cover the need to have an industry strategy, effective leadership, growth options and asset allocation strategy. Firstly, the industry lacks a strategic guideline as currently there is no developed co-operative banking strategy. A shared strategic vision for the industry is important to clearly map the role of co-operative banking in the transformation of the financial sector and how CFIs can be used as a tool to tackle poverty, unemployment and inequality in the country. Specifically, it should address how CFIs can be used as conduits to create synergies between the formal and informal sectors of the South African economy.

Secondly, as the saying goes "Everything rises and falls with the leader": the level of industry inefficiencies points to a lack of effective leadership to deliver value to members and their communities. The effective industry leadership seems to be lacking in building strong institutions, starting at association level and going down to CFI governance and management levels. If Canada, US and Australia can have vibrant CFIs, then why not South Africa, where more than 8.5 million adults are financially excluded and the Gini income inequality coefficient is 63%? CFIs also thrive in Kenya, reaching 6.2 million people – why not in South Africa?

What differentiates these countries from South African CFIs is strong leadership that understands that the industry exists to deliver social and financial value to its members and the society sustainably. In appreciating the importance of good co-operative business leadership, Kenya established the Co-operative University of Kenya which is dedicated to develop skills in co-operative leadership. In a study of 353 MFIs across the globe, Pascal, Mersland and Mori (2017) found that MFIs with CEOs who have a business qualification perform far better socially and financially than those with CEOs without business qualifications. Although South Africa is still in the nascent stage of development characterized by volunteering labor, decision-making positions should be occupied by skilled and experienced personnel.

After addressing the strategic vision and the need for strong and effective leadership, thirdly, the industry needs growth in membership and deposits. The inefficiencies are partly attributed to low and decreasing membership over the years, therefore there is a need to diversify the range of financial services to members such as offering insurance services to members, payment services, and acting as a monthly social grants conduit from government. Importantly, banking systems need to be implemented to facilitate improved efficiencies and revitalize physical branches. CBDA and NACFISA need to jointly provide technical assistance to CFIs to improve their performance. In addition, new CFIs which are either community- or association-based need also to be developed to contribute to the broader agenda of financial freedom. In 2011 there were 121 CFIs, of which many have disappeared from the regulatory environment into the informal economy: it will be necessary to identify them and provide them with much needed technical assistance to re-establish themselves in the formal economy. Establishing new CFIs might take time as their appreciation of the co-operative banking concept and its value proposition might take time compared to existing players in the shadow economy. It is widely speculated that there are 820,000 stokvels with 11.4 million members and R44 billion collective savings in stokvels. Given their economic significance, CFIs should engage them to do their business in a formal and regulated environment. Finally, the industry and the regulator need to reconsider the current financial investment approach on how it enhances or affects social and financial efficiency. From the previous chapter it seems that both financial and social returns from investments are low compared to loans.

5.6.3 Limitation and areas of further research

This study has some limitations despite its contributions. Lack of qualitative information on the level and type of qualifications of the CFI managers could have been used as one of the exogenous variables. Empirical literature has it that MFIs with CEOs with business

qualifications perform significantly better, socially and financially, than those MFIs managed by CEOs with other types of educational backgrounds. The usage of number of members as a measure of social indicator might be implausible compared again the norm in the MFI literature where number of female borrowers are used to capture depth. Besides a well-motivated reason for using total number of members in the context of financial co-operatives as outreach is through savings first and credit later, the study could not obtain the figures of borrowers or its disaggregation along gender. Hence it is another limitation of this study. The study of productivity change in South African CFIs is of future interest to determine if our results were due to variations in efficiency and/or technological change. In addition, future research might need to consider a larger sample and remove some outliers to determine if efficiency score might improve.

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CHAPTER SIX

PRODUCTIVITY CHANGE OF SOUTH AFRICAN CO-OPERATIVE FINANCIAL INSTITUTIONS¹²

6.1 INTRODUCTION

Over the recent years, financial inclusion has captured the attention of the international development community, governments, policymakers, and academics to find ways of broadening access to financial services and effective delivery channels. This is supported by theoretical and empirical studies which demonstrate a link between inclusive finance and economic growth (see Goldsmith, 1969; Levine, 1997; Beck et al., 2009). Therefore, unsurprisingly, the performance (allocative efficiency) of different types of financial institutions has attracted the interest of academic researchers and policymakers. The financial intermediaries' performance has traditionally been assessed with financial ratios, but recently, there is a shift towards frontier efficiency estimations. Recent studies use either parametric (e.g. stochastic frontier analysis) or non-parametric (e.g. data envelopment analysis) to estimate the efficiency of financial institutions (Berger and Humphrey, 1997).

However, a smaller strand of the literature focuses on productivity growth, which measures productivity change generated from technological progress and changes in efficiency over time. Understanding the productivity of financial institutions is important because financial institutions are responsible for the efficiency allocation of funds to enterprises to finance their investments. Therefore, improvements in their ability to transform efficiently inputs such as savings/deposits and operating expenses to outputs like loans and investments is vital not only to the institution, but to the economy as well.

CFIs are membership-based community organisations that operate in communities where conventional financial intermediaries have failed or chosen not to operate. CFIs mobilizes savings from their members for on-lending to the same members. CFIs differ from commercial banks in various aspects. First, CFIs pursue social and economic development objectives by maximizing members' value compared to the profit-maximization motives of commercial

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banks (Goddard et al., 2008). Second, financial cooperatives are different in terms of their corporate governance and ownership structure. For example, cooperative shares are only traded with the cooperative itself at the nominal value or transferred to existing members. Furthermore, irrespective of the number of shares a member holds, only one vote is allowed per member. This is known as the “one man-one vote” principle which means that the rights are granted in the membership and not in the share. Therefore, there is no tension between minority and majority shareholders as there are no opportunities from the concentration of decision-making. Consequently, the members of a CFI are in a better position to ensure that the organisation is managed in the general interest of all the owners, reducing the agency problem (Pasiouras & Sifodaskalakis, 2010).

However, dispersed ownership can weaken the individual member’s desire to control the activities of management, because the benefits arising are distributed equally among all owners. Third, CFIs operate within the common bond geographical space and focus on specific individual membership, while they provide support and encourage the development of local enterprises. Although this results in some restrictions in volume of their operations, it allows them to provide competitive financial services accustomed to local conditions at low transactional costs due to low information opacity. The CFI model is characterized as friendly and flexible suitable to empower communities by taking banking to the people. During the global financial crisis, CFIs proved that they are resilient to economic shocks (see Birchall, 2013; Kuc & Teply, 2015; Becchetti et al., 2016). Such resilience drew policymakers’ attention to understand their model, making a study of CFIs important to enhance their sustainable socio-economic transformation.

The cooperative financial industry in South Africa is of particular interest to investigate productivity change as it went through major regulatory changes and technological advances in recent years. The passing into law of the Cooperative Act of 2005, the Cooperative Banks Act of 2007 and the subsequent formation of the Cooperative Banks Development Agency (CBDA) in 2009 provided the sector with both threats and opportunities. The major cost of regulatory changes to CFIs was the pegging of the minimum membership and share capital requirements to 200 and R100,000 (equivalent to US\$13,700 in 2010) respectively, whilst Cooperative Banks (CBs) minimum share capital was pegged at R1,000,000 (equivalent to US\$137,000 in 2010). Whilst opportunities emanated from the CBDA in providing free capacity building to the industry to enhance efficiency, and strengthening of CFIs’ corporate

governance structures (CBDA, 2015). In addition, CFIs are trying to develop financial products suited for their communities and are slowly embracing technology to lower transactional costs.

Previous studies investigated productivity of South African commercial banks (Okeahalam, 2006; Ncube, 2009; Mlambo & Ncube, 2011; Maredza & Ikhide, 2013; Simbanegavi et al., 2015). Okeahalam (2006) examined efficiency of 61 bank branches in the nine provinces using 1999 financials and found every branch operating at increasing returns to scale. Mlambo and Ncube (2011) found that in the period 1999-2008 average efficiency in the South African banking was trending upwards but the number of efficient banks was falling. In the period 2000-2010 Maredza and Ikhide (2013) employing the Hicks-Moorsteen index found that the four largest banks experienced a 16.96% productivity decline during the global financial crisis period compared to the pre-crisis period. The authors identified operational efficiency, non-performing loans, size and non-interest income activities as the major bank productivity determinants in South Africa.

Simbanegavi et al. (2015) found monopolistic competition in the South African banking sector though not acting as a cartel and recommend enhancing of contestability to improve efficiency required to create a fully functional credit system. The current study contributes in two different ways. CFIs are playing an important role in addressing credit market failure in the South African financial system and ensuring their efficiency and productivity will enhance contestability in the banking sector for improved financial services to the excluded. The importance of CFIs efficiency not only will it enhance overall economic efficiency and growth, but it enhances poverty reduction caused by low productivity as a result of lack of access to financial services. Lastly, recommendations are made to managers, practitioners and policymakers on areas of performance improvement thereby contributing to the finance cooperatives literature.

The objective of the present study is to use the data envelopment analysis (DEA)-based Malmquist productivity index (MPI) bootstrap approach as proposed by Simar and Wilson (1999). The approach allow us to estimate for the first time, the productivity change on an unbalanced and balanced panel dataset of South African CFIs over the period 2010-2017. By applying the bootstrap DEA-based MPI methodology, the study investigates the sources of productivity change of South African CFIs given the regulatory change in the industry. In the second stage we employ truncated bootstrap regression approach proposed by Simar and Wilson (2007) to examine impact of environmental variables on Malmquist Index (MI) and

technical efficiency change (TECH) for managerial implications. Our current research will make contribution from the methodological points of view through use of double bootstrap on DEA-based Malmquist approach and truncated regression as proposed by Simar and Wilson (1999 and 2007). To the best of our knowledge, double bootstrap method is for the first attempt employed to examine productivity change of CFIs as well as the use of both balanced and unbalanced datasets in a single study.

The study is organised as follows: Section 6.2 provides a brief overview of the South African banking sector and the CFI industry. Section 6.3 reviews the main literature on microfinance and CFI productivity, while in Section 6.4 we outline the approaches to productivity measurement. Section 6.5 discusses the results, and finally we conclude with managerial implications in Section 6.6.

6.2 BANKING SECTOR OVERVIEW AND FINANCIAL INCLUSION

Contrary to most African countries, South Africa's financial sector is regarded as developed by international standards. The World Economic Forum (2014) Competitive Survey Report 2014-2015 ranked South African banks in terms of soundness at 6th position out of 144 countries. However, South Africa's banking sector is dominated by five big banks¹³, which collectively hold 90.7% of the total banking-sector assets (SARB, 2016). The entry of foreign banks that was expected to increase market competition failed as they chose to enter niche markets not dominated by the big five. Hence the sector still exhibits a high concentration and continues to behave in an oligopolistic manner. Economic theory suggests that the banking sector domination has an effect on efficiency and reduced lending to deserving projects as banks become too selective, as big banks like big deals (Minsky, 1993). This results in "too much finance" to the few, rather than increasing access to the broader population. The World Bank (2015) reports that South Africa's domestic credit to private sector (% GDP) in 2015 was 148.7%, up from 111.0% in 1994, indicating an increasing over-indebtedness but to the few.

Although South Africa is a more industrialized economy than most of its African peers, it has the highest inequality in the world with a 63.4% Gini coefficient in 2011 from 59.3% in 1993 (World Bank, 2013). Moreover, total financial inclusion is yet to be achieved, as shown by the results of FinScope (2015) which indicates that 8.5 million adults remain excluded from formal financial services. The country's oligopolistic banking sector makes access to credit difficult

¹³ Standard Bank, FirstRand Bank, ABSA Bank, Nedbank and Investec Bank

for most households, rural areas, the informal sector and small to medium enterprises (SMEs). This is despite the belief that SMEs in South Africa account for 91% of formal businesses, contribute 57% of GDP and provide almost 60% employment (Groepe, 2015). FinScope (2010) survey reveals that 90% of small business owners lack access to credit and start-up finance, and one in two borrow business finance from family and friends. In an effort to build an inclusive and efficient financial system, the government is promoting the development of CFIs.

6.2.1 South African CFIs and their role in financial inclusion

The CFI industry has undergone through significant structural and institutional changes in recent years. Before the enactment of the new regulations, the regulation and supervision of the industry was fragmented, resulting in the proliferation of small CFIs with weak capital base due to lack of sufficient regulatory oversight. The small CFIs were believed to have been used as channels for development funding (grants) and donations, to the detriment of the CFIs as deposit mobilisation vehicles lending to its membership (CBDA and SARB, 2013).

With the changes in the regulation and supervision, CFIs have gone through sweeping changes, mainly driven by policy and regulatory reforms, and also by some technological innovations, which together considerably altered the environment in which they operate. Following the introduction of formal registration in 2012, the number of registered CFIs dropped from 121 in 2011 to 26 in 2015. It is understood the dropouts were either non-operational or did not meet the minimum requirements of 200 members or R100,000 in member shares (CBDA, 2016).

Table 6.1 highlights the trend in the industry where the number of CFIs and membership dropped by 46% and 18% respectively from 2010 to 2017, while the quality of the institutions, as reflected in the savings and total assets, has improved, albeit at a slow pace. Figures from WOCCU (2016) reveal that South African CFI industry very small with the lowest penetration rate of 0.06% compared to Africa average of 8%, Kenya (13.3%) Togo (26.7%), Senegal (15%) and Mauritius (5.2%). This seems to confirm the findings of Perileux et al. (2016) that CFIs reach more members in countries where the banking sector is less developed. However, according to WOCCU (2016) the penetration rate in well developed financial markets is better than in developing and emerging markets for example Australia (17.6%), Canada (46.7%), US (52.6%) and Ireland (74.5%). This challenges the findings of Perileux et al. (2016).

Table 6.1 Trend in the South African CFIs industry 2010-2017 (in Rand)

Period	No. CFIs	Members	Savings (ZAR)	Loans (ZAR)	Assets (ZAR)
2010	56	36,434	124,365,000	93,651,000	142,069,000
2011	121	59,394	175,265,000	116,577,000	195,213,000
2012	106	53,240	196,230,000	132,227,000	217,506,000
2013	35	38,084	200,841,000	142,310,000	220,800,000
2014	26	33,391	198,624,948	140,463,755	231,367,670
2015	26	24,721	201,101,522	152,143,102	236,533,481
2016	30	29,752	233,763,289	179,338,526	279,624,000
2017	30	29,818	228,216,993	202,160,606	293,493,697
% 2010-2017	-46.4	-18.2	83.5	53.7	51.6
% 2011-2017	-75.2	-49.8	30.2	42.3	50.3

Source: Authors' computation from CBDA and SARB Annual Reports

In an effort to support innovation and stability, the South African government issued CFI Retail Savings Bonds and is providing technical assistance to CFIs leadership to manage effectively (CBDA, 2015). If CFIs are to develop fully, they are likely to give competition to moneylenders, such competition is likely to push the production possibility frontier outward in a battle to increase outreach and sustainability, therefore reducing credit rationing (Manos and Yaron, 2009). CFIs in South Africa are collectively the Financial Service Cooperatives (FSCs) (Village Banks), Savings and Credit Cooperatives (SACCOs), and Cooperative Banks (CBs). The South African CFI model promotes the evolution of FSCs and SACCOs into CBs as the CBs were once SACCOs.

6.3 EMPIRICAL LITERATURE REVIEW

There have been considerable research efforts to measure MFI efficiency (see Marwa and Aziakpono, 2016; Gutierrez-Nieto et al., 2007; Hermes et al., 2011; Wijesiri and Meoli, 2015; Paradi & Zhu, 2013), but very few empirical studies explore productivity change (see Gebremichael and Rani, 2012; Ben Soltane, 2014; Ben Soltane and Mia, 2016). This may be attributable to difficulties in obtaining panel data for individual CFIs as most of them do not submit their financial results to the Microfinance Information eXchange (MIX) database as is usually done by MFIs.

A relative, although smaller, strand of the literature focuses on productivity growth, which measures productivity improvement generated from changes in efficiency and technological progress (Pasiouras and Sifodaskalakis, 2010). The majority of the literature on productivity has focused on the formal banking industry in various economies (see Worthington, 1999;

Tortosa-Ausina et al., 2008; Sufian, 2009; Portela and Thanassoulis, 2010; Matthews and Zhang, 2010; Maredza and Ikhida, 2013; Bahrini, 2015). The semi-formal microfinance sector has largely been overlooked, however, there are limited productivity analyses lately (see Ben Soltane, 2014; Aslam Mia and Ben Soltane, 2016; Azad et al., 2016). However, productivity assessment for CFIs is largely missing except for Pasiouras and Sifodaskalakis (2010). Although empirical research on MFI programs productivity analyses is still in its infancy, the number of studies increased during and after the global financial crisis.

Among the handful of studies attempting to evaluate productivity change in MFIs are Ben Soltane (2014), who examined the productivity change of 33 MFIs operating in the Middle East and North Africa (MENA) region during the period 2006-2011 using DEA-based MPI. He finds an overall productivity gain of 4.9% annually attributed to technical efficiency change. On the other hand, Wijesiri and Meoli (2015) investigated the productivity movement using a balanced panel dataset of 20 Kenyan MFIs in the period 2009-2011 using bootstrap MI and find productivity progress of 7% per annum due to technological advances. However, matured MFIs had lower productivity than their young counterparts which are adopting innovative financial solutions. Studies by Gebremichael and Rani (2012), Ben Soltane (2014), Mia and Chandran (2016) and Azad et al. (2016) show evidence that seems to suggest that MFI productivity is contributed more by technical efficiency change than technological change. Table 2 below summarizes empirical studies on MFI productivity.

Low utilization of innovative delivery channels in CFI operations, financial literacy and managerial capabilities seem to be the major contributors of low productivity. Kauffman and Riggins (2012) find that information communication technology (ICT) plays a very important role in mature MFIs sustaining their businesses in competitive operating environments. Despite the positive impact of ICT in MFIs, only a third of MFIs in Africa and South-East Asia have been computerised compared to two-thirds of their peers in East Europe, Central Asia and Latin America (Frankiewicz, 2004; Corvoisier and Gropp, 2009). However, the use of ICT by CFIs remains low compared to the modern banking sector. On the other hand, there are critics of higher technology use in MFIs, as large capital investment may affect the double bottom of CFIs due to the inherent labour intensiveness of their operations (Mia et al., 2015)

Table 6.2 Summary of empirical literature on MFIs and CFIs productivity

Study	Method	Country/Region	Observation	Period	Indicators Used	Main Findings
Sufian (2007)	Malmquist Productivity Index	Malaysia	Balanced panel dataset with 20 NBFIs observations, Annual reports	2000-2004	Inputs: total loans, interest income Outputs: total deposits, interest expense	NBFIs exhibit productivity regress of 2.3% attributed to TCH (-5.9%) and TECH (+5.1%) i.e. 1.9% SECH and 3% PTECH
Tortosa-Ausina et al. (2008)	Bootstrapped Malmquist Index	Spain	Balanced panel dataset of 50 Savings Banks with 350 observations	1992-1998	Inputs: labour, capital, and deposits Output: loans, core deposits, and non-interest income	Productivity growth occurred due to improvement in production possibilities. The bootstrap reveals disparities in the original scores as some DMUs lessened greatly.
Pasiouras & Sifodaskalakis (2010)	Malmquist TFP	Greece	Balanced panel dataset of 13 Cooperative Banks with 65 observations	2000-2005	Intermediation approach (IA) and production approach (PA) Inputs: fixed assets, no. of employees, and deposits Outputs: loans and investments (deposits input in IA, output in PA)	The results are mixed. IA indicates a small decrease of 3% whereas PA indicates an increase of 6.6% in TFPCH.
Nawaz (2010)	DEA and Malmquist	54 Countries	Unbalanced panel dataset of 204 MFIs with 383 observations	2005-2006	Inputs: total assets, operating costs, no. of staff, and total subsidies Outputs: loans, financial revenue, and subsidy revenue	MFIs that cater for the poor are less efficient than with relatively well-off clients. Lending to females is efficient only in subsidies presence. Productivity progress of 1.1% from TECH 8.1%, TCH regress by 6.5%
Gebremichael & Rani (2012)	Malmquist Index	Ethiopia	Balanced panel dataset of 19 MFIs with 114 observations	2004-2009	Inputs: operating expense/admin expense, and no. of employees Outputs: gross loan portfolio, interest and fee income, and loans outstanding	Technical efficiency gain is the source of productivity growth, i.e., PTECH and SECH (8.9% and 1.1% respectively)
Twaha & Rashid (2012)	Bayesian technique	India	Unbalanced panel of 64 MFIs, 292 observations	2005-2011	Variables: MFI age, no. of staff, offices, active borrowers, average loan size, and cost per loan	Active borrowers (0.04%), and cost per loan (1.9%) correlate to the productivity
Bairagi (2014)	Stochastic Frontier Approach	Bangladesh	Balanced panel dataset of 10 MFIs	2003-2011	Inputs: total assets, no. of staff, operating and financial expenses Output: loans, interest, & fees	Productivity gain of 2.6% annually driven by 2.5% technological progress, and TECH of 0.1%
Ben Soltane (2014)	DEA-based Malmquist Index	Middle East and North Africa	Balanced panel of 33 MFIs with 198	2006-2011	Inputs: operating expense/admin expense, and no. of employees	TFPCH progress of 4.9% p.a. TECH of 8% (5.4% PTECH and

Study	Method	Country/Region	Observation	Period	Indicators Used	Main Findings
			observations, MIX database		Outputs: interest fee income, and gross loan portfolio	2.4% SECH) drives performance, while -2.9% technological change has a detrimental impact.
Tahir & Tahir (2014)	Dynamic Malmquist approach	Cambodia	Balanced panel dataset of 13 MFIs with 54 observations	2008-2011	Inputs: total assets, and operating expenses Outputs: no. of active borrowers, and gross loan portfolio	Total productivity gain of 4.9% mainly attributed to technological change, while there is scale inefficiency
Bahrini (2015)	Bootstrapped Malmquist Index	Middle East and North Africa	Balanced panel dataset of 33 Islamic banks with 198 observations	2006-2011	Inputs: labour, fixed assets, total deposits Outputs: total loans, investments, non-operating income	Banks productivity decline of 0.4% due to PTE regress of 0.7% and scale inefficiency of 0.4%. TFP decrease mainly in the global financial crisis period
Wijesiri & Meoli (2015)	Bootstrapped Malmquist Index	Kenya	A balanced panel dataset of 20 MFIs with 80 observations	2009-2012	Inputs: total assets, operating expenses, and no. of employees Outputs: financial revenue and no. of active borrowers	Productivity progress of 7% p.a. attributed to TCH advances of 13.9%, whilst TECH regress by 6.1% (PTECH -1.8% and SECH -4.3%). Matured MFIs had lower productivity than young MFIs
Mia & Chandran (2016)	Malmquist Index	Bangladesh	Balanced panel dataset of 162 MFIs with 972 observations	2007-2012	Inputs: no. of employees, operating expenses/average assets. Outputs: financial revenues/assets, average loan balance, no. of savers	4.3% productivity advances attributed to TECH of 4.9% (2.5% SECH and 2.4% PTECH), whilst 0.6% regress in TCH.
Aslam Mia & Ben Soltane (2016)	DEA Malmquist Productivity Index	5 South Asia Countries	Balanced panel dataset of 50 MFIs with 300 observations	2007-2012	Inputs: operating expense/ loan portfolio (%), total staff Outputs: financial revenue/ assets, no. of active borrowers, average loan balance/GNI per capita	Productivity growth of 2.1% due to technical efficiency change (PTECH 0.6% and 1.5% SECH change with technological change remaining static
Azad et al. (2016)	Malmquist Index	Bangladesh	Balanced panel dataset of 15 major MFIs with 75 observations	2008-2012	Inputs: financial cost ratio (%), operating expenses Outputs: net savings, return on assets (%)	MFIs experienced excellent TECH progress (93.5%) mainly driven by PTE (84%), SECH 2.2%, TCH 3.7% and country's best economic setting before 2008
Azad et al. (2016)	Meta-frontier Malmquist Index	51 Countries in SSA, MENA, ESA, LAC, EECA	Balanced panel dataset of 743 MFIs with 7,430 observations	2004-2013	Inputs: cost per borrower, and cost per loan Outputs: borrowers per staff member, borrowers per loan officer, and depositors per staff	There is productivity progress in ESA (0.5%), EECA (0.17%), and LAC (0.06%), while there is productivity regress in SSA (0.39%) and MENA (0.23%)

6.4 METHODOLOGY

6.4.1 The Malmquist productivity index

There are several methods that could be used to measure productivity change in the academic literature: Fisher, Törnqvist and the Malmquist indexes (MI) (Sufian, 2007; Ben Soltane, 2014). The Malmquist Productivity Index (MPI) was named after Professor Sten Malmquist (Malmquist, 1953) who pioneered the distance function idea in the field of economics, independent of each other with Shephard (1953). The MI was then introduced by Caves et al. (1982) as a theoretical index defined in terms of input and output distance functions, it was further extended by Färe et al. (1992) and is now widely utilized to measure the changes in performance over time in various firms.

The Malmquist index has three main advantages relative to the Fischer and Törnqvist indexes. Firstly, it does not require the profit maximization (or cost minimization) assumption. Secondly, it does not require information on the input and output prices. Finally, it allows the decomposition of productivity change into two components: technical efficiency change (or catching up), and technical change (or changes in best practice). Therefore, the CFI's productivity change can be attributed to either change in technical efficiency (i.e. whether CFIs are getting closer to the production frontier over time) or changes in technology (i.e. whether the production frontier is moving outwards over time), or both. The total factor productivity change (TFPCH) is the product of technical efficiency change (TECH) and technological change (TCH). TECH is further decomposed into pure technical efficiency (PTECH) and scale efficiency change (SECH). PTECH refers to the CFI's ability to avoid waste by producing as much output as input usage allows or by using as little input as output allows, whilst SECH refers to the ability to work at optimal scale (Ben Soltane, 2014; Wijesiri & Meoli, 2015; Grifell-Tatje and Lovell, 1996).

TCH is the capacity of optimal mixture of inputs and outputs generated from capital equipment and better technology used in the production process (frontier shift over time). In the context of the present study, superior technology can be referred to incorporating ICT in operations, new products, new lending methodology, close proximity of services to members, comprehensive savings schemes, and so on. The use of latest innovation and devices in the financial intermediation channels shifts the DMU's production frontier upwards and produces increased output from the same input levels or maintains output level from a reduced amount of inputs (Mia and Chandran, 2016). By so doing, productivity (TFPCH) either deteriorates or

improves. The main disadvantage of MPI is the necessity to compute the distance functions. However, the DEA technique can be used to solve this problem as developed by Farrell (1957). Despite the DEA having some advantages, it is criticized by researchers for not allowing for statistical inference and consequently its results are biased because it ignores sampling and measurement errors. This study adopted the homogeneous bootstrap algorithm in the first stage of the analysis as initiated by Simar and Wilson (2000) as discussed in section 6.4.2 below.

Given these reasons, among others, we have opted to choose the Malmquist productivity index (MPI) to estimate the productivity change of CFIs in South Africa. Following Fare et al. (1994), Fukuyama (1995), Jaffry et al. (2007) and Isik (2007) among others, the output-oriented MPI will be adopted for this study. Jaffry et al. (2007) point out that the output orientation is more appropriate given the objectives of a country's financial industry. Output orientation refers to the emphasis on the equi-proportionate increase of outputs, within the context of a given level of input. Given that, this study follows Fare et al. (1994) and the output distance function is defined as:

$$\begin{aligned} d_0^t(x^t, y^t) &= \inf \left\{ \theta : \left(x^t, \frac{y^t}{\theta} \right) \in S^t \right\} \quad \dots (6.1) \\ &= (\sup \{ \theta : (x^t, \theta y^t) \in S^t \})^{-1} \end{aligned}$$

Equation 6.1 is defined as the reciprocal of the “maximum” proportional expansion of the output vectors y^t , given inputs x^t that refer to technology. Furthermore, as we want to estimate the Malmquist index, the distance function in relation to time $t + 1$ is:

$$d_0^t(x^{t+1}, y^{t+1}) = \inf \left\{ \theta : \left(x^{t+1}, \frac{y^{t+1}}{\theta} \right) \in S^t \right\} \quad \dots (6.2)$$

This distance function (6.2) measures the maximal proportional change in outputs required to make (x^{t+1}, y^{t+1}) feasible in relation to the technology at t . The output based TFP index, which is the ratio of the Malmquist output, and input quantity index extended by Bjurek (1996) is as follows:

$$m_0^t(y_s, x_s, y_t, x_t) = \frac{d_0^t(y_t, x_t)}{d_0^t(y_s, x_s)} \quad \dots (6.3)$$

Following Fare et al. (1994) the Malmquist TFP change index between period s (the base technology period) and period t (the reference technology period), in that case, that t is the base technology and s is the reference technology (6.3) converts to:

$$m_0^s(y_s, x_s, y_t, x_t) = \frac{d_0^s(y_t, x_t)}{d_0^s(y_s, x_s)} \quad \dots (6.4)$$

As Coelli, Prasada Rao, O'Donnell, and Battese (2005) point out, to circumvent the need of either imposing limitations or subjectively selecting one of the two technologies, the Malmquist TFP index is derived as the geometric mean of these two indices as follows:

$$m_0(y_s, x_s, y_t, x_t) = \left[\frac{d_0^s(y_t, x_t)}{d_0^s(y_s, x_s)} \times \frac{d_0^t(y_t, x_t)}{d_0^t(y_s, x_s)} \right]^{1/2} \quad \dots (6.5)$$

A value of m_0 greater than one indicates positive TFP growth from period s to period t , while a value less than one indicates TFP decline. An equivalent way of writing this index is:

$$m_0(y_s, x_s, y_t, x_t) = \underbrace{\frac{d_0^t(y_t, x_t)}{d_0^s(y_s, x_s)}}_{\text{Technical Efficiency Change}} \times \underbrace{\left[\frac{d_0^s(y_t, x_t)}{d_0^s(y_s, x_s)} \times \frac{d_0^t(y_t, x_t)}{d_0^t(y_s, x_s)} \right]^{1/2}}_{\text{Technological Change}} \quad \dots (6.6)$$

Where the ratio outside the square brackets corresponds to the change in the output-oriented measure of Farrell technical efficiency between periods s and t . The remaining part of the index in equation (6.6) is a measure of technology shift between the two periods, evaluated at x_t and also at x_s . Hence, we have:

$$TFPCH = TECH \times TCH \quad \dots (6.7)$$

Where TFPCH is the TFP change, TECH is technical efficiency change (under CRS technology), and TCH is the technological change. A gain in TCH shows a shift in the best practice frontier, while improvement in TECH resembles the catching-up (i.e. greater than one) or productivity stagnation TECH if equal to one.

As highlighted above, if the production technology exhibits CRS there are only two sources of productivity growth: technical change and efficiency change. However, if the production technology exhibits variable returns to scale (VRS) there are two additional sources of

productivity growth: scale efficiency (SECH) and pure technical efficiency (PTECH). PTECH is specified as:

$$PTECH = \frac{d_{0v}^t(y_t, x_t)}{d_{0v}^s(y_s, x_s)} \quad \dots (6.8)$$

and SECH is specified as:

$$SECH = \left[\frac{d_{0v}^t(y_t, x_t)/d_{0c}^t(y_t, x_t)}{d_{0v}^s(y_s, x_s)/d_{0c}^s(y_s, x_s)} \times \frac{d_{0v}^s(y_t, x_t)/d_{0c}^s(y_t, x_t)}{d_{0v}^s(y_s, x_s)/d_{0c}^s(y_s, x_s)} \right]^{1/2} \quad \dots (6.9)$$

SECH is actually the geometric mean of two-scale efficiency change measures, the first relative to the period t technology, and the latter relative to the period s technology. Subscripts v and c refer to the VRS and CRS technologies respectively. Hence, we have:

$$TECH = PTECH \times SECH \quad \dots (6.10)$$

Which results in equation (6.7) being re-specified as:

$$TFPCH = PTECH \times SECH \times TCH \quad \dots (6.11)$$

The above formula shows that CFIs will experience improvement in their productivity due to technological investments and advances ($TCH > 1$) and/or closure of the performance gap between the best and worst practice CFIs owing to better resource management ($PTECH > 1$) and/or movement towards their optimal size ($SECH > 1$). The importance of this decomposition lies in the fact that, in practice, CFIs face either economies or diseconomies of scale because of imperfect competition, constraints of finance and so on. Thus, it is possible that they are technically efficient but not scale efficient. This means that CFIs can produce their current level of output with fewer inputs (under an input-oriented approach) or expand their output with the same inputs (under an output-oriented approach) if they operate at the right size.

6.4.2 Bootstrapping Malmquist indices

Despite the DEA having some advantages, it does not allow for statistical inference and consequently its results are biased because it ignores sampling and measurement errors (Simar and Wilson, 2000). Given the estimation of TFPCH, TECH and TCH are based on conventional DEA, it is not clear whether these changes indicate real change or are artificial of sampling

noise (Simar and Wilson, 2000; Wijesiri and Meoli, 2015). Simar and Wilson (1998, 1999) introduced the bootstrap techniques, which allow for determining the statistical properties of non-parametric frontier methods and, hence, for constructing confidence intervals and correcting the estimation bias for efficiency scores and Malmquist productivity indices. The bootstrap was introduced by Efron (1979) as a computer-based method considered as a resampling procedure that makes inferences about a sampling distribution by resampling the sample itself with replacement. This study adopted the homogeneous bootstrap algorithm in the first stage of the analysis as initiated by Simar and Wilson (1998). See Simar and Wilson (1998, 1999, 2000) for technical details on bootstrap algorithm employed in this study. This study performs 2000 bootstrap number of replications ($B=2000$).

6.4.3 Data sources

This study is employed secondary data extracted from CFIs audited financial statements filed with the CBDA for SACCOs and FSCs, and the SARB for CBs covering the period 2010-2017. The study period is characterized as an era of regulatory changes and is also determined by data availability. When the CBDA started regulating the industry, submission of CFI annual financial statements became mandatory as compared to the approach of previous regulators. Our study is different from similar empirical work, which usually utilize the (Microfinance Institutions eXchange (MIX) database which usually collection financial information on MFIs. However, the MIX database usually does not have data for CFIs, which makes empirical research on these grassroots economic actors very limited.

Due to variations in number of CFIs in the period under study, the number of CFIs submitting their annual financial statements also varies: 21 in 2010, 29 (2011), 27 (2012), 22 (2013), 24 (2014), 28 (2015), 26 (2016) and 29 in 2017. Given the level of variation due to the frequency of entry and exit in the first stage analysis of productivity unbalanced panel dataset with a total of 192 observations was used to estimate productivity and its sources in the period 2010-2017. This makes our study one of the few studies to employ an unbalanced panel data to estimate total factor productivity (see Nawaz, 2010; Twaha & Rashid, 2012).

Due to high frequency of entry and exit a sample of CFIs that managed to survive from 2010 to 2017 was identified to understand their productivity compared to the high frequency consolidated sample. 15 CFIs (i.e. two CBs, six SACCOs, and seven FSCs) managed to submit their financials with CBDA and SARB consistently from 2010 to 2017. Before the advancement of measurement techniques, the Malmquist total factor productivity approach

requires all the DMUs to have their inputs and outputs without any missing data according (Coelli et al., 2005). In summary, the second analysis is based on a balanced panel dataset of 15 DMUs with 120 observations over 8 years. Our study sample contributes 99.9% of the CFI industry's total assets in 2017 making the sample equal to the population.

The sample sizes are considered sufficient for the purpose of this study considering previous empirical studies and the rule of thumb by Charnes et al. (1990) and Cooper et al. (2007). Of particular interest to this study is a study by Drake (2001) who used a sample of nine banks to estimate technical and scale efficiency and productivity gains in the UK banking sector. Pasiouras and Sifodaskalakis (2010) used 13 cooperative banks in Greece on a productivity study covering the period 2000 to 2005. Maredza and Ikhide (2013) employed SFA estimate productivity change of four major commercial banks in South Africa for the period 2000 to 2010 to investigate the impact of the global financial crisis on banks' productivity. According to Charnes et al. (1990) and Cooper et al. (2007), in order for the efficiency scores to be robust and reliable suggest the minimum sample size required for a DEA study is three times the sum of total number of inputs (X) and total number of outputs (Y), that is, $N=(X+Y) *3$. Cook et al. (2014) posits that, the large numbers of inputs and outputs compared to the number of DMUs may diminish the discriminatory power of DEA. Therefore, we consider our sample size to be appropriate based on empirical literature and best practice.

6.4.4 Selection of inputs and outputs

In measuring productivity of financial institutions, the most challenging problem lies in, defining the outputs and inputs of such institutions, and this remains a controversial issue in the literature (Berger and Humphrey, 1997; Gebremichael and Rani, 2012). However, there are two common approaches to this problem: the production approach and the intermediation approach (Berger and Humphrey, 1997; Athanassopoulos, 1997). Under the production approach, financial institutions are regarded as producers of deposits and loans, while the number of employees, physical capital and operating costs used to perform these transactions are considered as inputs. Berger and Humphrey (1997) and Sufian (2011) advise that the production approach might be more suitable for branch efficiency studies, as at most times bank branches process customer documents and bank funding, while investment decisions are for the most part not under the control of branches. This makes this approach not likely to be appropriate for the current study. The intermediation approach considers financial institutions as playing an intermediary role of transferring resources from savers to borrowers. Under this approach, inputs are measured as deposits collected, funds borrowed from financial markets,

and operating expenses incurred in playing the intermediary role such as staff salaries and administration costs, whereas outputs are the loans, investment, interest income.

CFIs play an intermediary role between member savers and member borrowers, who in most instances are the same. Given this, we consider that CFIs produce three outputs: *Loans to members* (Y_1), *Investments* (Y_2) and *Financial Revenue* (Y_3). Investments includes liquid term investments with commercial banks, and investment securities held to maturity, such as CFI bonds. By producing these outputs, CFIs employ two inputs: *Deposits/members savings* (X_1) and *Operating expenses* (X_2) incurred in the intermediation role. In addition, the choice for inputs and outputs is guided by their frequent use in literature (see Table 6.2 above) and our understanding of the role of CFIs on the inputs they need and how the outcome of their role is usually revealed. Bahrini (2015) used total deposits as inputs whilst total loans, investments, and non-operating income were outputs. Pasiouras and Sifodaskalakis (2010) selected fixed assets, number of employees and deposits as inputs, and loans and investment as outputs under the intermediation approach. In a more recent study, Aslam Mia and Ben Soltane (2016) used two inputs which are operating expenses/loan portfolio, and number of staff, whilst three outputs were financial revenue/assets, number of active borrowers, and average loan balance/GNI per capita. According to Paradi and Zhu (2013), a more practical approach is to choose variables that the researcher sees as representative of the DMU's model as this tends to help with acceptance of the results.

6.5 EMPIRICAL RESULTS

In this section, we first present and discuss the descriptive statistics of inputs and outputs to have a better understanding of the variables and the size variability of the CFIs in the sample. This is followed by the results found by applying the bootstrap DEA-based MPI approach to an unbalanced and balanced dataset of CFIs over the period 2010-2017 and finally, bootstrap truncated regression results are discussed.

6.5.1 Descriptive statistics

It is apparent from Table 3 below that over the study period, the standard deviation values vary greatly for both inputs and outputs. This is attributable to the difference in CFI size in our sample, being small, medium and large entities especially if one takes a closer look into the pooled means and standard deviations of loans and deposits. The average total loans per CFI has been on the increase from R4.3 million in 2010 to R7.1 million seven years later, supported by the growth in total deposits from R6 million to R8.5 million respectively. However,

operating expenses increased by nearly 37% to an annual average of closer to R0.7 million per CFI, which might have a negative impact on productivity and funds available for lending. Although financial revenue doubled in the period 2010 to 2017, some firms are not generating significant revenue when considering the minimum values. An analysis by CFI type, shows CBs, SACCOs and FSCs with deposits averaging R34.8 million, R10.3 million and R1.7 million respectively over the period. Their size variation also stimulates the interest to understand the productivity differentials of these sub-groups so that appropriate managerial recommendations are suggested.

Table 6.3 Summary statistics of input and output variables (Figures in Rand)

Variable	Year	Mean	Std. Dev.	Min	Max
Deposits	2010	6 039 113	9 023 588	153 154	32 000 151
	2011	5 843 585	10 833 125	11 600	41 331 634
	2012	7 038 004	12 802 830	70 884	48 986 108
	2013	8 561 941	15 140 935	132 676	54 436 314
	2014	8 261 121	16 288 773	20 550	68 789 571
	2015	7 636 351	16 547 632	1 000	77 205 992
	2016	9 057 669	19 107 685	15 305	86 737 120
	2017	8 469 882	19 379 334	3 240	96 353 394
Expenses	2010	491 127	504 970	61 613	2 058 917
	2011	507 451	526 802	32 840	2 088 966
	2012	536 525	523 035	16 289	1 974 050
	2013	658 367	576 928	15 700	2 016 018
	2014	550 102	570 572	3 647	1 879 698
	2015	565 974	632 621	1 406	2 490 510
	2016	684 684	681 957	5 695	2 885 438
	2017	673 910	789 872	1 474	3 571 892
Loans	2010	4 318 619	7 441 807	15 563	24 625 118
	2011	3 716 808	7 990 720	11 000	29 442 227
	2012	4 909 780	10 121 471	98 416	36 382 616
	2013	6 285 666	12 227 951	15 780	44 091 910
	2014	6 200 488	12 191 920	10 500	45 608 419
	2015	5 758 532	11 808 518	1 477	50 435 065
	2016	7 185 075	14 559 427	2 164	61 711 154
	2017	7 174 907	15 725 774	5 000	72 441 095
Investments	2010	1 584 027	1 819 040	35 345	7 565 783
	2011	1 972 633	3 405 318	13 087	13 405 931
	2012	2 083 486	3 598 702	22 077	14 087 812
	2013	2 813 042	4 095 917	109 000	15 859 855
	2014	2 973 400	6 236 444	74 000	29 189 427
	2015	2 619 053	6 212 228	53 078	30 805 624
	2016	3 048 988	6 324 797	13 179	29 608 583
	2017	2 718 858	5 559 207	79 625	27 952 287
Financial Revenue	2010	713 987	982 586	31 553	3 243 761
	2011	719 167	1 114 519	13 511	4 443 451
	2012	729 562	1 176 346	10 529	5 168 035
	2013	1 228 506	1 498 644	4 435	5 877 222
	2014	1 076 646	1 560 177	3 364	6 234 776

	2015	1 163 921	1 802 405	3 011	7 444 019
	2016	1 402 013	2 114 734	4 439	8 227 851
	2017	1 405 777	2 448 229	1 355	9 976 973
Pooled					
Deposits	2010-2017	7 611 092	15 203 748	1 000	96 353 394
Expenses	2010-2017	584 441	606 591	1 406	3 571 892
Loans	2010-2017	5 700 301	11 772 554	1 477	72 441 095
Investments	2010-2017	2 429 374	4 855 456	13 087	30 805 624
Financial Revenue	2010-2017	1 059 340	1 677 448	1 355	9 976 973

Source: CFIs annual reports and authors' calculations

6.5.2 Productivity changes of South African CFIs

In this section, we present and discuss the results found by applying bootstrap DEA-based Malmquist index approach over the period 2010-2017 following Fare et al. (1994) output-oriented productivity change on unbalanced and then balanced datasets. Secondly, we analyse the performance of individual CFIs and then their sub-groups to understand their individual and sub-group productivity change. In this study, we report these indices following Casu and Girardone (2004), Pasiouras and Sifodaskalakis (2010), and Azad et al. (2016). The productivity scores are reported in Tables 6.4 and 6.5. As explained earlier, index values below 1 indicate productivity decline whilst above 1 represents progress. Table 6.4 below present the productivity change on unbalanced panel dataset. The results show an annual productivity regress of 3.9% in the period 2010-2017. Since 2013 the industry has been experiencing productivity regress with a huge productivity decline of 22.5% in the period 2015-2016. This huge drop is attributed to the deregistration of two big DMUs and failure of another DMU to fully utilize its improved deposits mobilized to generate more loans, investments and financial revenue. This is clearly unpacked in Section 6.5.4.

Table 6.4 Productivity change on unbalanced panel (Geometric means)

YEAR	TECH	TCH	PTECH	SECH	TFPCH
2010-2011	0.841	1.172	0.940	0.895	0.985
2011-2012	1.043	0.975	1.028	1.015	1.017
2012-2013	0.829	1.283	0.843	0.984	1.063
2013-2014	0.815	1.201	0.870	0.937	0.978
2014-2015	0.943	1.022	1.008	0.957	0.986
2015-2016	0.589	1.316	0.806	0.731	0.775
2016-2017	1.217	0.778	1.127	1.080	0.947
2010-2017	0.877	1.091	0.940	0.937	0.961

TECH, technical efficiency change; TCH, technology change; PTECH, pure efficiency change; SECH, scale efficiency change; TFPCH, total factor productivity change (MPI).

The major source of productivity decline is the technical efficiency change (TECH) regress of 12.3% which is the failure of CFIs to move closer to the production frontier over time. The only period CFIs managed to experience the catching-up or progress is the period 2011-2012 and 2016-2017. The results suggest that CFIs lack the managerial capability to catch-up with the best performers by implementing managerial strategies to improve the performance of CFIs over time. By decomposing the catching-up effect into pure technical efficiency change and scale efficiency change provide further evidence that CFIs are being affected by both the pure technical (-6%) and scale inefficiency changes. A scale efficiency change regress of 6.3% indicate that the industry is operating below its optimal scale and the gap can be closed through efficient use of deposits and operating costs to minimize unnecessary excesses or expenditures.

CFIs are doing well on the technological advancement with an annual gain of 9.1% on average. This indicate that the industry is trying to embrace use of technology and developing some improved financial services. Compared to what Wijesiri and Meoli (2015) observed in Kenya where MFIs experienced a 13.9% technological gain annually, there is still need for further improvement. The World Economic Forum (2017) ranked South Africa and Kenya at position 35 and 36 respectively on innovation out of 138 economies as they have over the years witnessed a rapid growth in technological advancement and financial innovation compared to other African and Asian countries. The industry requires urgent managerial upskilling to drive the performance of poorly productive CFIs. In addition, South African CFIs are not operating closer to their optimal scale operations as shown by a scale inefficiency of 6.3%. Closing this gap require improving organizational processes and managerial knowledge to help the inefficient financial co-operatives to get closer to the production frontier over time and to catch-up with those on the efficient frontier.

6.5.3 Productivity growth by CFI

To analyse further the productivity changes, we show the individual CFIs, in an attempt to find the best performers and what can be learnt by the industry from them to improve performance. Presented in Table 6.6 below is the geometric means of productivity change and its components by CFIs over the study period. From the Table we observe that, 18 CFIs experienced productivity progress, whilst 19 experience a productivity decline. Only one CFI has its average annual productivity growth above 20%, six has 10 – 20% productivity progress, whilst 11 has productivity change increase of less than 10%. On productivity regress six has an annual productivity decrease of 0-10%, with seven experiencing productivity declines ranging between 10-30% and six with productivity regress of more than 30% annually over the period.

CFI15 exhibit the highest productivity gain of 25.5%, whilst CFI5 witnessed the highest productivity regress of 90.7% annually in its two years of operations. Productivity of CFIs is being driven more by embracing new innovative interventions resulting in the frontier shift overtime than from improvement in managerial capabilities. However, few financial co-operatives are able to catch-up with those on the frontier through improving their managerial allocative efficiencies as well as optimizing their economies of scale as displayed by CFI1, CFI17 and CFI28.

South African CFIs are suffering more from scale inefficiency as 29 CFIs exhibit a scale efficiency regress compared to two with scale efficiency progress, whilst six are static. On the other hand, seven DMUs are experiencing progress resulting from efficiency improvements in operations and management activities, eight are static and 18 are experiencing managerial inefficiency regress to catch-up with those on the efficient frontier. Although the CFIs are doing generally better on technological advances with an overall 9.1% progress, 12 out of 37 CFIs experienced technological change regress. The worst performing CFIs need to learn from the best-in-class CFIs to catch-up and also try to be on the technological frontier of the industry.

Table 6.5 Productivity growth by CFI and rankings based on TFPCH

DMU	Rankings	TECH	TCH	PTECH	SECH	TFPCH
CFI1	26	0.868	1.007	0.962	0.902	0.874
CFI2	27	0.841	0.992	0.861	0.977	0.835
CFI3	19	1.035	0.929	1.200	0.863	0.962
CFI4	13	1.008	1.033	1.026	0.983	1.041
CFI5	1	1.003	1.252	0.689	1.456	1.255
CFI6	5	1.000	1.132	1.000	1.000	1.132
CFI7	16	1.080	0.947	0.944	1.144	1.023
CFI8	17	0.901	1.131	0.960	0.939	1.019
CFI9	21	1.000	0.935	1.000	1.000	0.935
CFI10	15	0.841	1.222	0.940	0.894	1.028
CFI11	2	1.000	1.191	1.000	1.000	1.191
CFI12	18	0.971	1.045	0.994	0.977	1.014
CFI13	3	0.921	1.287	0.962	0.957	1.186
CFI14	24	0.813	1.114	0.819	0.993	0.906
CFI15	28	0.839	0.994	0.859	0.977	0.834
CFI16	9	0.860	1.246	0.914	0.941	1.071
CFI17	20	0.642	1.480	0.780	0.824	0.950
CFI18	32	0.792	0.863	0.867	0.914	0.684
CFI19	14	1.000	1.031	1.000	1.000	1.031
CFI20	22	0.833	1.111	0.849	0.981	0.925
CFI21	30	0.726	1.005	0.808	0.899	0.730
CFI22	4	0.915	1.254	1.000	0.915	1.147
CFI23	6	1.229	0.916	1.230	0.999	1.126
CFI24	29	0.876	0.941	1.077	0.813	0.824
CFI25	7	0.961	1.147	1.025	0.938	1.102
CFI26	36	0.581	0.763	0.928	0.626	0.443
CFI27	31	0.565	1.037	0.693	0.977	0.702
CFI28	12	1.000	1.045	1.000	1.000	1.045

CFI29	11	0.990	1.061	1.031	0.960	1.051
CFI30	23	0.841	1.081	0.955	0.881	0.909
CFI31	10	0.919	1.155	0.991	0.927	1.061
CFI32	35	0.408	1.476	0.640	0.637	0.602
CFI33	33	0.558	1.152	1.496	0.373	0.642
CFI34	25	1.000	0.883	1.000	1.000	0.883
CFI35	34	0.843	0.756	1.000	0.843	0.637
CFI36	37	0.298	0.313	0.915	0.326	0.093
CFI37	8	0.893	1.204	0.927	0.964	1.075
Geometric mean		0.877	1.091	0.940	0.937	0.961

6.5.4 Productivity growth by CFI type

We categorize CFIs into three sub-groups: CBs, SACCOs and FSCs. The classification is not arbitrary, although other criteria could be used such as size (Worthington, 1999; Pasiouras & Sifodaskalakis, 2010; Alhassan & Biekpe, 2015) or age (De Sousa-Shields & Frankiewicz, 2004; Bogan, 2012; Bayai & Ikhide, 2018). The sub-groups are purely based on South Africa's CFI type (see Chapter 3 for a detailed discussion). CBs operating under the regulation of the SARB and are more professionally managed. Whilst SACCOs are concentrated in towns and townships catering for the need of both working class, such as workers' unions, and the informal sector. FSCs also known as Village Banks are mostly townships, peri-urban and rural communities based, they were initially formed as an alternative financial systems to reduce financial exclusion of the non-white race caused by the apartheid system through technical assistance from The International Fund for Agricultural Development (IFAD) (see Genesis Analytics, 2014; Meagher and Wilkinson, 2002). Given their different target communities and history, they differ on their product offerings and target membership. Table 6.7 presents the geometric means of TFPCH by CFI type.

We observe varying productivity change across all CFI type with CBs experiencing 3.2% productivity gain, whilst SACCOs and FSCs are witnessing an annual TFPCH regress of 6.8% and 3% respectively. Productivity change progress for CBs is coming from substantial gains in the technological frontier-shift of 8.8%, whilst technical efficiency change decrease by 5.1%. A similar technological progress trend is also being experienced in SACCOs and FSCs of 3.6% and 11.9% respectively. It is surprising that FSCs which are mainly located in most disadvantage communities are becoming more technologically and innovation driven than CBs and SACCOs which are mainly located in townships, towns and cities. FSC might be investing in new technology and delivery channels to reduce transactional costs and improve convenience leading to productivity change improvement (see Beck et al., 2013; Srairi, 2011).

In addition, the CBDA has been rolling out a banking system to CFIs since 2014 but implementation has been low.

Table 6.6 Productivity by CFI type (unbalanced panel)

CFI TYPE	TECH	TCH	PTECH	SECH	TFPCH
Cooperative Banks					
2010-2011	0.938	1.013	1.000	0.938	0.950
2011-2012	0.962	1.058	1.000	0.962	1.018
2012-2013	1.082	0.988	1.000	1.082	1.069
2013-2014	0.844	1.244	0.944	0.894	1.049
2014-2015	0.826	1.143	0.954	0.865	0.944
2015-2016	0.983	1.185	0.953	1.032	1.164
2016-2017	1.036	1.009	1.009	1.026	1.045
Geometric Mean	0.949	1.088	0.980	0.969	1.032
SACCOs					
2010-2011	0.839	1.116	0.995	0.844	0.937
2011-2012	0.977	1.119	0.993	0.984	1.094
2012-2013	0.941	0.961	0.851	1.106	0.905
2013-2014	0.981	1.109	1.177	0.834	1.088
2014-2015	0.808	1.046	0.911	0.887	0.845
2015-2016	0.892	1.065	0.974	0.915	0.950
2016-2017	0.874	0.860	1.003	0.872	0.752
Geometric Mean	0.900	1.036	0.982	0.916	0.932
FSCs					
2010-2011	0.822	1.277	0.870	0.945	1.050
2011-2012	1.136	0.827	1.073	1.059	0.939
2012-2013	0.728	1.606	0.810	0.899	1.170
2013-2014	0.700	1.268	0.675	1.036	0.887
2014-2015	1.050	0.993	1.076	1.014	1.084
2015-2016	0.441	1.493	0.713	0.619	0.659
2016-2017	1.601	0.691	1.252	1.279	1.107
Geometric Mean	0.862	1.119	0.903	0.959	0.970
Cooperative Banks	0.949	1.088	0.980	0.969	1.032
SACCOs	0.900	1.036	0.982	0.916	0.932
FSCs	0.862	1.119	0.903	0.959	0.970

However, some players are trying to broaden their financial services offering (CBDA, 2016) through issuing debt cards, structured credit facilities and various investment instruments that tries to address members' financial needs. However, the adoption of mobile money in South Africa is still low compared to Kenya, this explains a 13.9% leapfrog in technology progress in MFIs (Wijesiri and Meoli, 2015). The results are at variance from what was observed in European cooperative banks in the period 1996-2003 where 4 to 8% productivity gains were due to better managerial practices (Molyneux and Williams, 2005). The differences might be due to changing times, whereas in the current period there is a lot of technological innovation driving business growth compared to the period 1996-2003 when productivity was mainly due

to improvement in management competences, allocative efficiencies and economies of scale through increased branch networks.

Across all CFI types, managerial efficiency has regressed by 5.1% in CBs, 10% in SACCOs and 13.8% in FSCs. The results reveal that managerial deficiencies are more severe in FSCs followed by SACCOs but less acute in CBs. The decomposition of managerial inefficiency show that all CFI types are not fully utilizing the optimal mixture of inputs or producing as much loans, investments and financial revenue from available deposits and expenses being incurred as well as operating below optimal scale. FSCs experiencing the highest PTECH decline of 9.7% which represent inefficiency in their operations and management activities. In the period 2015-2016 FSCs experienced a huge productivity decline of 31.62% which is mainly due to technical efficiency change regress of 55.69% and scale inefficiency of 38.1%. This massive drop is attributable two large CFIs with substantial deposits which were dissolved and another CFI which suddenly increased its deposits mobilization by 361% but could not managed to convert them into loans and investments to generate more financial revenue resulting in massive productive regress during that period.

On the other hand, SACCOs are facing a huge challenge of scale efficiency decline of 8.4% yearly. Closing the managerial competencies deficit require management training to improve decision-making capabilities, whilst there is also need to improve allocative efficiency to operate at sub-optimal scale in SACCOs, however, CBs and FSCs need also reduce scale inefficiencies of 3.1% and 4.1% respectively.

6.5.5 Productivity change on 15 CFIs based on balanced panel (2010-2017)

Table 6.7 presents results of balanced panel of 15 CFIs that operated fully throughout the study period. The results reveal that our balanced panel of CFIs exhibit a nearly static productivity change but however had a minor 0.2% productivity regress attributable to TECH regress of 9.7% annually. Since the period 2012-2013, productivity has been on a seesaw with productivity advance being followed by a regress in the following year. PTECH and SECH regress by 5.5% and 4.4% respectively which points out for improvement in business decisions and better utilization of wasted resources.

Our balanced panel CFIs are failing to realise economies of scale through adopting appropriate technologies to produce even beyond tradition scale. Casu et al. (2004) reported scale inefficiencies in Italy, France and Spain and interpret it as “wasted expenditure” attributed to uneconomical scale size but use of appropriate technology make them produce beyond scale.

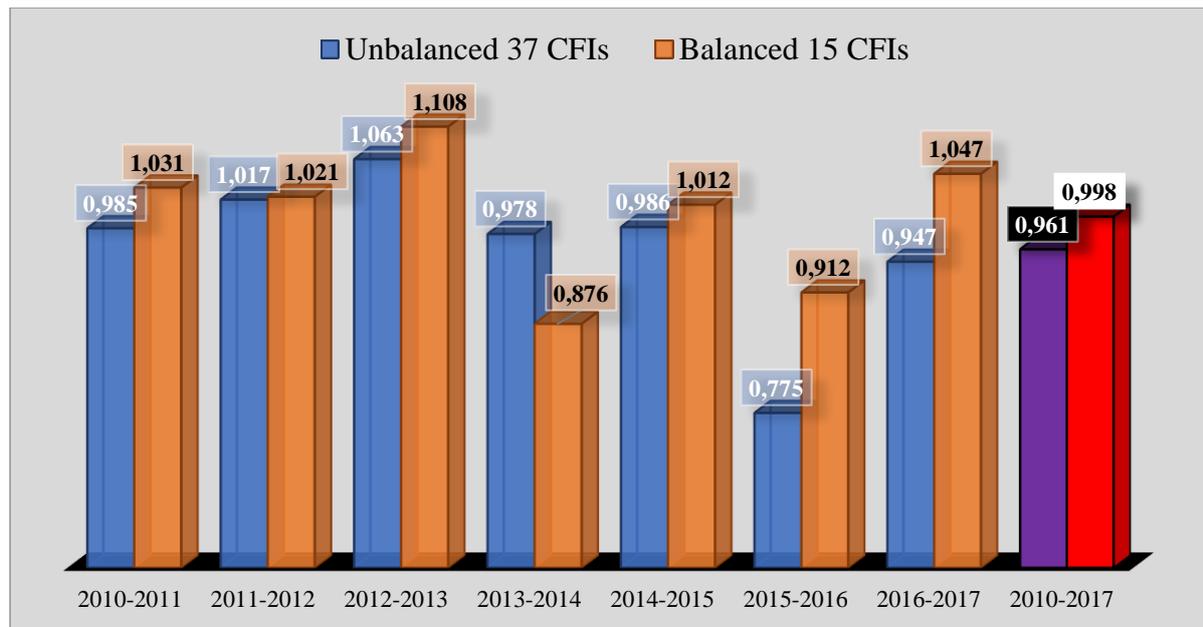
Table 6.7 Productivity change on balanced panel (Geometric means)

YEAR	TECH	TCH	PTECH	SECH	TFPCH
2010-2011	0.890	1.159	0.937	0.950	1.031
2011-2012	1.025	0.996	1.041	0.984	1.021
2012-2013	0.907	1.220	0.881	1.031	1.108
2013-2014	0.702	1.249	0.863	0.813	0.876
2014-2015	0.940	1.076	0.971	0.969	1.012
2015-2016	0.732	1.246	0.895	0.817	0.912
2016-2017	1.228	0.852	1.042	1.178	1.047
2010-2017	0.903	1.105	0.945	0.956	0.998

6.5.6 Productivity change comparison of unbalanced and balanced panels

To improve our understanding and analysis Figure 6.1 below presents a comparative trend of productivity change on unbalanced and balanced panels.

Figure 6.1 Comparative productivity change trend for the period 2010 – 2017



The results suggest that a balanced panel performs productively better than the unbalanced panel throughout the study period except in the period 2012-2013. This seem to suggest that as CFIs gain some experience they perform better than new entrants which call for further analysis on the determinants of productivity.

6.5.7 Second-stage: bootstrap truncated regression analysis

After the Malmquist productivity indices are estimated, the bootstrap truncated regression analysis suggested by Simar and Wilson (2007) is used to determine the effects of the initial efficiency change (IEFFCH), financial self-sufficiency index (FSS), number of members, cost-

to-income ratio (CIR) and AGE on MI and TECH. Simar and Wilson (2007) criticized the use of censored (Tobit) regression in the second stage analysis though it has been widely applied. The reason is that, because explanatory variables are correlated with the error term, the assumption that error term is independent of explanatory variables becomes invalid and input and output variables are correlated with explanatory variables (Wijesiri et al., 2017). Simar and Wilson (2007) addressed this issue by proposing an alternative double bootstrapped procedure that permits valid inference while simultaneously generating standard errors and confidence intervals for the efficiency estimates.

The current study employed the bootstrap procedure proposed by Simar and Wilson (1998) to derive the unbiased estimates of the determinants of MI and TECH. Following Odeck (2009) and Wijesiri and Meoli (2015:119), technical efficiency scores for the base year (IEFFCH) is included as one of the determinants of productivity change is “conditional on the initial level of efficiency from which change occur”. So we investigate the effects of base efficiency change on productivity and technological advances. FSS was employed as a measure of sustainability on how well generated revenue from loans and investments cover expenses (Cull et al., 2007; Ayayi and Sene, 2010). Number of members is included as Groeneveld (2012) observes that the strength of co-operatives are in their members and if members are not willing to put savings in their financial institutions, it will fail. As a measure of cost efficiency, CIR is included as a firm that fails to manage its operating costs will face productivity decline. In addition, AGE is used as an indication of years of experience. The estimation specifications are as follows:

$$MI_{i,t} = \alpha + \beta_1 IEFFCH_{i,t} + \beta_2 FSS_{i,t} + \beta_3 \ln(Members)_{i,t} + \beta_4 CIR_{i,t} + \beta_5 \ln(Age)_{i,t} + \varepsilon_i \quad \dots (6.12)$$

$$TECH_{i,t} = \alpha + \beta_1 IEFFCH_{i,t} + \beta_2 FSS_{i,t} + \beta_3 \ln(Members)_{i,t} + \beta_4 CIR_{i,t} + \beta_5 \ln(Age)_{i,t} + \varepsilon_i \quad \dots (6.13)$$

Where, $MI_{i,t}$ and $TECH_{i,t}$ are productivity and technological change, respectively. α is a constant term; $\beta_1, \beta_2, \dots, \beta_5$ being the parameters to be estimated and explanatory variables as already explained.

Table 6.8 below give some summary statistics of explanatory variables used in the second stage and the correlation matrix. Our correlation coefficients are less than 0.70 which Kennedy (2008) proclaims to be the value above which the regression estimates would suffer from multicollinearity challenges.

Table 6.8 Descriptive statistics and correlation matrix of model constructs

	IEFFCH	FSS	CIR	Members	Age
Mean	1.001	1.072	1.194	1292	10.662
St.Dev	0.639	1.333	1.525	1522	5.777
Minimum	0.298	-1.829	0.154	34	2
Maximum	4.834	14.397	18.254	10777	25
Correlation matrix					
IEFFCH	1.0000				
FSS	-0.0597	1.0000			
CIR	-0.1101	-0.1745**	1.0000		
Members	-0.1313	-0.0173	-0.0546	1.0000	
Age	-0.1861**	-0.0565	-0.1029	0.1362*	1.0000

6.5.8 Second-stage results: Double bootstrap truncated regression

The results of the regression analysis are presented in Table 6.9 below. IEFFCH contributes positively to MI and negatively to TCH but not statistically significant in both aspects, suggesting that initial efficiency has no influence on MI and TCH during the sample period. The results confirm with the findings of Wijesiri and Meoli (2015) in Kenya MFIs but differ from Odeck (2009) who found that Norwegian grain producers with greater initial efficiency had larger increases on the MI than otherwise.

Table 6.9 Truncated bootstrap regression (2000 iterations)

Variable	Coefficients (bootstrap standard errors)	
	Malmquist Index (MI)	Techological Change (TCH)
Constant (α)	0,8904* (0.4679)	0.8364** (0.3672)
IEFFCH	0.6071 (0.1368)	-0.0342 (0.1082)
FSS	0,1674** (0.1246)	0.2022*** (0.1081)
LnMembers	0.0699 (0.0532)	0.0521 (0.0486)
CIR	-0.1909 (0.1620)	-0.0899 (0.0706)
LnAge	-0,1482* (0.1117)	-0.0898 (0.0969)
Sigma	0.3646*** (0.0907)	0.3302*** (0.0991)
Log-Likelihood	-45.471	-32.463
R^2	0.16348	0.17001

FSS has a positive and significant impact on productivity and technological progress signifying that good financial performance of CFIs enhances productivity and that financially sustainable financial institutions are more likely to invest more in technology and innovation. The results are once again consistent with the findings of Wijesiri and Meoli (2015) who find ROA having a strong influence on productivity and technological change. On the other hand, the number of Members has a positive but insignificant impact on MI and TCH whilst CIR has a negative but insignificant influence on productivity and technological change. This suggest that in as much as the number of members and CIR influence productivity change and the catching-up effects in an expected way their impact in the study period is not felt but not necessarily mean that they are not important.

The results show that AGE has a negative significant impact on productivity but insignificant on technological advances. These results seem to suggest that young CFIs are aggressive in embracing technology and innovation than mature ones though not statistically significant, similar to what Wijesiri and Meoli (2015) found out. These results are consistent with Barron et al. (1994) who studied the growth and mortality of credit unions in New York City in the period 1914 – 1990 and found evidence that suggests that as credit unions age they become less able to respond to new challenges, innovation and thereby become less productive. Similar findings were also recently found by Bakker and Josefy (2018) who studied the impact of age by reviewing over 350 prominent studies that included age. They find evidence that seem to suggest that, organizations are becoming more fluid and temporary and far fewer organizations live to reach old age making age not much important.

6.6 CONCLUSIONS

The present paper investigates the productivity change of South African CFIs from 2010-2017 using bootstrap DEA-based Malmquist index. The total factor productivity change is further decomposed into technical efficiency change (managerial acumen/catching-up) and technological change (innovation frontier-shift) to identify sources of productivity change. Empirical findings reveal CFIs' productivity regressed by 3.9% annually, driven by the inability of CFIs to adopt industry best practices as shown by the catching-up regress of 12.3%, although technological change progressed by a 9.1% annually. Worryingly, productivity has been on a decrease over the years since the period 2012-2013 without any sign of stagnation or rebound. On a balanced panel of 15 CFIs there was a productivity decline of 0.2% annually emanating from technical efficiency change regress whilst there was much progress in innovation frontier-shift. By CFI type, only CBs had a productivity gain of 3.2%, whilst

SACCOs and FSCs experience productivity decline of 6.8% and 3% respectively, driven mainly by technical efficiency change. Overall, the CFI industry needs to improve its managerial acumen, and scale optimization for full resources utilization especially in SACCOs and FSCs.

The bootstrap second stage regression results suggest that financial sustainability is very important in driving productivity growth and technological advancement in CFIs. Younger CFIs appear to be experiencing better productivity progress than mature ones, the same as in technological advance but not at a significant level. Growth in members also revealed as having positive influence on technological and productivity progress but not a significant level in the study period. Meanwhile, CFIs need to take advantage of their strong roots in their communities and their good knowledge of the local entrepreneurial environment to reduce information asymmetries, monitoring costs, and reduce adverse selection and moral hazard.

This study has extended our understanding of the productivity dynamics in CFIs while empirically providing insights of sources of inefficiencies. Comprehensive in-depth investigation among the best performing CFIs has produced further insights into the innovation dynamics in the industry after changes in the regulatory environment to assist weak performers to catch-up with best industry performers. The major contribution of this research is the use of double bootstrap Malmquist productivity index methodology by Simar and Wilson (1999) in the co-operative finance industry. The additional contribution is the use unbalanced and balanced panel data in a single study of productivity change. Further studies could engage CFI experts to understand the qualitative drivers of performance among CFIs and suggest possible growth strategies.

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CHAPTER SEVEN

DRIVERS, INHIBITORS AND THE FUTURE OF CO-OPERATIVE FINANCIAL INSTITUTIONS IN SOUTH AFRICA¹⁴

7.1 INTRODUCTION

Financial markets failure is one of the challenges facing many economies as large banks tend to engage in credit rationing of small to medium enterprises (SMEs) and marginal communities citing information asymmetry and transaction cost challenges. The situation has worsened in the past two decades due to mergers and acquisitions which reduced the number of banks (Leyshon and Thrift, 1993; Berger et al., 2001). Ryan et al. (2014) found that increased bank market power results in increased financing constraints for SMEs across 20 European countries. Similarly, in Spain Carbó-Valverde et al. (2016) found that credit-constrained SMEs depend on trade credit, but not bank loans, and that the intensity of this dependence increased during the financial crisis. In a recent banking market structure study in Poland, Hasan et al. (2017) found that cooperative banks facilitate access to bank financing, lower financial costs, boost investments, and favour growth for SMEs. They found that regions where cooperative banks hold a strong position are characterized by the rapid pace of new firm creation, whilst the opposite effects appear in the majority of cases for local banking markets dominated by foreign-owned banks. Unlike traditional banking institutions, Co-operative Financial Institutions (CFIs) are member-focused deposit taking and loan granting institutions, and are efficient in generating borrower-specific information, which can address ‘informational’ distance. The role of CFIs in the provision of ethical and social finance is a loud call for research to understand their qualitative performance drivers and inhibitors by engaging co-operative finance experts to enhance their performance.

Recently, a number of studies have started looking at how CFIs, which are a grassroots innovation, have performed during and after the global financial crisis compared to investor-owned banks (Birchall, 2009, 2013; Kuc and Teply, 2015; Becchetti et al., 2016). Globally, Crear (2009) observed that not a single financial co-operative has received government

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recapitalization following the recent global financial crisis. Statistics from the World Council of Credit Unions, a global trade association for credit unions and financial co-operatives, shows CFIs' total assets reached \$1,8 trillion and serving 236 million members in 2016, up from \$1,2 trillion and 177 million respectively in 2007 (WOCCU, 2016). The one member one vote system ensures CFIs serve common needs rather than the needs of a handful of individuals as in the case with traditional banks (Davis, 2001; McKillop and Wilson, 2015; Jones and Kalmi, 2015). However, effective governance depends more on the willingness of members to exercise their ownership rights to express their views to the board of directors and to hold them accountable for value creation. CFI performance should be targeted towards value maximization (Keating and Keating, 1975), cost minimization, service maximization – whether for savers or borrowers (Keating and Keating, 1975; McGregor, 2005), and profit maximization for sustainability (Keating and Keating, 1975; Davis, 2001; Goddard et al., 2014).

The CFI penetration rate in South Africa is the lowest in the world at 0.06% compared to Kenya (13.3%), Rwanda (13.8%), Togo (26.7%), Australia (17.6%), Canada (46.7%), United States (52.6%), Ireland (74.5%) and the worldwide average of 13.5% (WOCCU, 2016). Over recent years, there has been a decrease of South Africa's CFIs and membership from 121 and 59,394 in 2011 to 30 and 29,818 respectively in 2017 (CBDA, 2017). The decrease can be partly explained by the CBDA's prescribed minimum membership and share capital contribution at 200 and R100,000 respectively. In 2007, South Africa passed the Co-operative Banks Act and formed the Co-operative Banks Development Agency (CBDA) in 2009 with a mandate to formally regulate, supervise and develop the sector. The implementation of the regulation could have been harsh to small but growing CFIs, forcing them out of the regulatory environment.

The study employed the ranking-type Delphi technique to gather expert opinions from those working in or with financial co-operatives. The major objectives of the study were, first, to properly understand the qualitative performance drivers and inhibitors of CFIs, and through a SWOT analysis to identify internal and external factors determining performance. Second, to forecast future developments that must happen in the co-operative finance industry to drive high-performance in the next 10 years and help craft growth strategies. We chose a forecasting period of 10 years because multiple organizations align their goals closer to the South Africa's "National Development Plan 2030", a socio-economic policy, and the United Nations' Sustainable Development Goals 2030. These ambitious plans target to end poverty and reduce inequality by 2030 through inclusive growth, hence the need to bring our year 2027 forecast

closer to the national and global visions. The need to build robust inclusive financial services is necessary, as access to finance (A2F) appears to be highly correlated with poverty reduction (Beck and Demirgüç-Kunt, 2008). The contribution of CFIs towards members' financial well-being cannot be overlooked, hence the need to understand their performance drivers. A contribution to a better understanding through rigorous research is of value not only to researchers, CFI practitioners and members, but also to policymakers and regulators.

To our knowledge, there are no studies that have examined the drivers and inhibitors to CFI performance or tried to develop alternative futures using hybrid Delphi-SWOT analysis. The Delphi method is suitable for exploratory research, theory building and forecasting involving complex and multi-disciplinary issues. The only previous attempt was by Marwa (2015) who used a case study mixed approach to understand what drives the performance of savings and credit co-operatives (SACCOs) in Tanzania. Most studies using Delphi focus on energy, automotive, information technology, agriculture, health, manufacturing and big data analytics (see Tavana et al., 2012; Campos-Climent and Apetrei, 2012; Förster, 2015; Worrell et al., 2013; Obrecht and Denac, 2016; Vidgen et al., 2017).

The chapter is structured as follows. Section 7.2 provides an overview of financial inclusion in South Africa, whilst section 7.3 critique the literature on CFI performance drivers and inhibitors. Section 7.4 provides the data analysis on the convergence of consensus, followed by findings based on the final rankings by experts in section 7.5. Finally, we conclude with managerial implications and recommendations for future research in section 7.6.

7.2 FINANCIAL INCLUSION IN SOUTH AFRICA AND THE ROLE OF CFIs

In South Africa nearly 8.5 million adults are excluded from the formal financial system (FinMark Trust, 2016). In total, 77% of all adults have a bank account. However, if the social grant beneficiaries (nearly 5.1 million) are excluded, only 58% are banked. About 51% of adults are borrowing from various sources to supplement their limited resources, 46% from non-bank financial institutions (NBFIs), while only 14% are borrowing from banking institutions. On the 'quality' aspect, the narrative for developmental credit is becoming the norm as only 5% are using credit for developmental reasons. In 2016, 33% of adults were saving, with 15% saving through banks, 14% saving with NBFIs, 8% with informal institutions and 11% saving at home. Previous attempts to increase financial inclusion through the Mzansi account (an entry-level national bank account targeting the mass population in 2004) failed, due to lack of quality of access to finance. Kostov et al. (2015) confirmed that Mzansi accounts

are perceived as not meeting the aspirations of those aiming to climb up the financial services ladder, making CFIs a suitable alternative.

CFIs help to bridge the financial exclusion gap by pooling members' financial resources together for on-lending to the same members (Frame et al., 2002; McKillop and Wilson, 2015; Périlleux and Szafarz, 2015). As member-driven organizations operating within a common bond, they are better placed to reduce informational opacity and high transaction costs which usually result in credit rationing in credit markets (Stiglitz and Weiss, 1981). This enables members to break the poverty trap caused by lack of economic opportunities and low productivity due to lack of access to financial services. Since CFIs are owned and operated by members, they have an objective of maximizing services provided to members. This immediately suggests that profit maximization is not an ultimate objective, since there are no non-member suppliers or customers to exploit (Fried et al., 1993).

7.3 LITERATURE REVIEW: PERFORMANCE DRIVERS AND INHIBITORS

There are seven streams of empirical papers dealing with the performance dynamics of CFIs: industry professionalization (governance), policies, technology diffusion, social capital, outreach, economic trends and sector perception. Several studies reveal that co-operatives established with the social purpose of serving poor communities have the real possibility of becoming sustainable and effective, *if and only if* they adopt a radical commercial approach to organizational development. Professionally managed CFIs are found to be attractive to middle-income earners (Jones, 2008; Crear, 2009; Goddard et al., 2009; Jones and Kalmi, 2015; McKillop and Wilson, 2015). Campos-Climent and Apetrei (2012) find human capital related factors as top priorities in overcoming challenges in Mediterranean co-operatives. McKillop and Wilson (2003) argued that if CFIs were to achieve social goals, they first had to achieve their economic ones. McKillop et al. (2007) found CFIs that concentrate solely on serving the needs of the financially excluded to be inherently weak and not sustainable in the long term. CFIs were advised to formulate policies and outreach strategies to draw members from a cross-section of the population to achieve a balanced mix of funding and membership (Jones and Kalmi, 2015; McKee and Kagan, 2016).

CFIs are driven by the social trust among people sharing a common bond much needed in building social capital and community relations. Putnam (1993) and Knack and Keefer (1997) posit that social capital supports growth and development through a number of channels, such as the reduction in uncertainty, transaction costs and contracts enforcement, thereby enhancing

efficiency. A survey by Sabatini et al. (2014) in Italy found that unlike any other type of enterprise, cooperatives have a particular ability to foster the development of social trust. In a similar study using a 2003-2011 dataset to understand the relationship between the market share of Italian credit cooperative banks and some measures of trust, Catturani et al. (2016) found that cooperatives require high levels of social capital to be successful. Trust is one of the pillars of well-functioning markets as the more the trust, the less the transaction costs.

In addition, CFIs need to appeal to a broader spectrum of people to correct the perception that they are just the poor people's banks rather than community banks serving a wider cross-section of the society. McKillop et al. (2011) found that a CFI with mixed outreach to the poor, working poor, working class and middle class has the capacity to reach greater numbers of people living in poverty than an institution that exists to serve only the poor. Such CFIs have reduced exposure to concentration risk as loans and deposits of the relatively wealthier members drive growth, profitability and sustainability of the institutions, enabling them to provide affordable financial services to poor members while keeping costs low (Crear, 2009). McKillop et al. (2011) advocated for further legislative changes in the UK to promote CFIs to a broader population mix.

In the UK the legislative review in 1996 provided an opportunity for credit unions to grow and extend their scale and scope of services to members including the affluent society (McKillop and Wilson, 2003). The reforms allowed CFIs to drive membership by relaxing the common bond restrictions to multiple bonds (Frame et al., 2002; Hinson and Juras, 2002; Jones, 2008). Even though the regulation changes transformed the structure of the industry, credit unions that switched from single-bond institutions to broader field-of-membership types were believed to be operating with a greater risk of bankruptcy. This is due to high information asymmetries through the broadening of the common bond and the likelihood of breaching regulatory standards (Frame et al., 2002; Ely, 2014). The introduction of a deposit insurance, the emphasis on effective risk management, and the opportunity to offer diverse innovative financial services were applauded (McKillop and Wilson, 2003). However, there were warnings of the likelihood of a decline in players through mergers.

The overall consequence of deregulation brought changes in the patterns of growth across different types of credit unions (Goddard et al., 2016). Larger credit unions in the UK tended to grow faster than their smaller counterparts. Externally generated growth also took place via mergers and acquisitions, whereby larger, well-capitalized and technologically-advanced credit

unions acquired smaller, less capitalized counterparts that failed to adopt interactive banking technologies. Between 2003 and 2013, the number of credit unions reduced by approximately 3% per year. In 1994, there were 7,848 credit unions with over US\$10 million in assets; by the end of 2012 this number had declined to 2,489, a 68% decline (McKee and Kagan, 2016). Consequently, there has been a rapid growth in credit union asset size. In 2013 the average credit union had US\$160.9 million assets compared to US\$65.6 million in 2003 (McKillop and Wilson, 2015). However, Goddard et al. (2014) found other growth sources via diversification into non-interest activities, although this did not lead to enhanced returns for members. In Finland, Jones and Kalmi (2015) found a positive relationship between membership growth and financial co-operative performance. In the US, Leggett and Strand (2002) observed that, as CFIs add unrelated groups and expand, the prospects for separation between ownership and control increases, creating potential agency control problems. Management is apparently able to channel residual earnings away from members (higher net interest margins) toward itself (higher salaries and operating expenses). Second, as membership expands, each member can feel disempowered as many members no longer exercise their ownership rights and responsibilities in overseeing management (Leggett and Strand, 2002). Eventually this creates strategic defaults as members no longer see themselves as owners, resulting in high delinquency which weakens CFI balance sheets as observed in Czech (Kuc and Teply, 2015).

Most CFIs are small and their capital stock in absolute value combined with risky assets puts pressure on their stability. Mathuva (2016) found size, capital base, loan to assets ratio, leverage and cost to income ratio were financial performance drivers in Kenya SACCOs. In similar study by McKee and Kagan (2016), of the US credit unions with assets below US\$10 million in 1994, only a third were still operational by 2011. De Carvalho et al. (2011) examined the causes of credit union failures in Brazil between 1995 and 2009, and their results suggest that the size of credit unions plays a key role in their survival and longevity. Goddard et al. (2014) found that in the US, relatively low membership and assets limits the capacity to attract deposits, adopt product marketing, process loans, adopt new technology and distribute regulatory compliance costs effectively. Technological innovation is often cited as the main, if not the most, influential driver of change in the banking industry. Technology has become the major game-changer in disrupting business models in delivering value (Bradley and Stewart, 2002; Chandio et al., 2017). The decision to adopt technology is usually associated with asset size and the diversity of the credit union's product offerings (McKillop and Quinn, 2015).

McKillop and Wilson (2003) warned policymakers not to provide too many policy incentives to support the development of CFIs as this will hinder their self-help cornerstone and weaken the future development of the movement. In US CFIs are tax exempt, with this status justified by their role in providing financial services to those of modest means. Investigations carried by Hinson and Juras (2002) and Chang et al. (2016) to understand which stakeholders benefit from tax exemption found that members do not receive the benefit in terms of lower loan rates, higher deposit rates or lower service charges as tax exemption benefits are directed to support inefficient operations.

From the literature review, we summarize that each of the seven forces can be either a driver or inhibitor depending on its strength or weakness in influencing CFI performance as depicted in Figure 7.1 below. CFIs thrive on community's social capital: if social ties are weak that will affect their performance. Social networks and technology enable financial innovation at grassroots and swift financial solutions delivery in a cost-effective manner, while its low adoption raises costs and restricts convenience. A wider membership outreach is important for meaningful capital and savings mobilization, while small CFIs have high chances of failure. In addition, professionally managed co-operatives attract membership as institutions with weak governance structures and incompetent staff perform poorly.

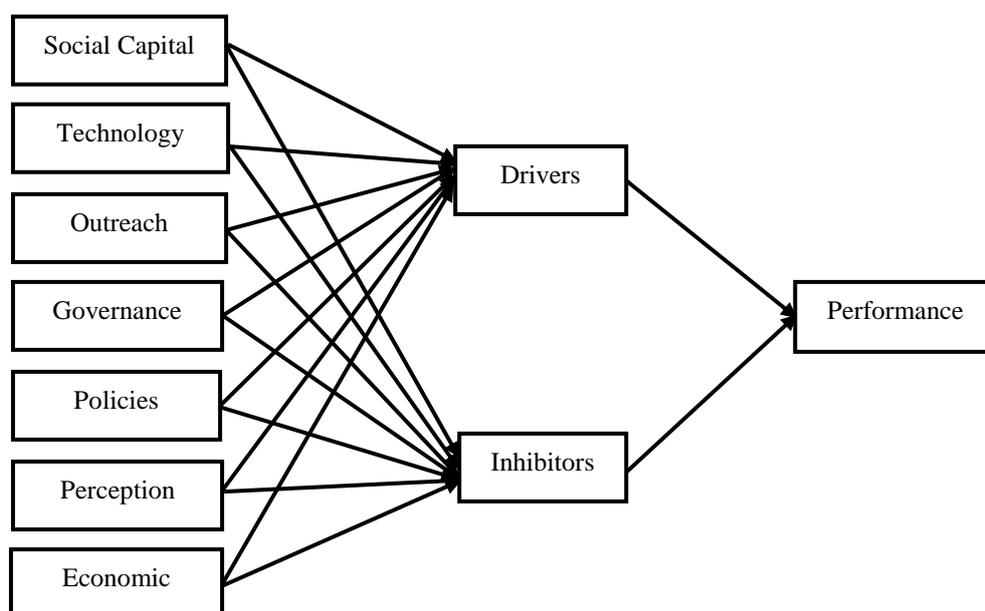


Figure 7.1: Forces that drive and inhibit CFI performance

Government policies and regulations as enablers have an important role to promote the formation and performance of CFIs, whilst unfavorable regulations affect growth and

performance and promote informality. Arun (2005) recommends appropriate country specificities for a regulatory framework to support sustainable delivery of inclusive financial services. On the other hand, perceptions on CFI value proposition is a major determinant of outreach. Lastly, the economic performance can either pull or push people to or from CFIs depending on the circumstances. We posit that each of these forces can be a driver or inhibitor depending on its strength or weakness.

7.4 RESEARCH METHODOLOGY

7.4.1 The Delphi method: an overview

Quite a number of studies have compared traditional surveys and the Delphi method regarding their strengths and shortcomings (see Rowe and Wright, 1999; Okoli and Pawlowski, 2004; Förster, 2015). From these studies, we judge the Delphi method to be a stronger methodology to carry out a rigorous inquiry from co-operative finance experts on complex questions requiring collective judgement. Rather than attempting to assemble a statistically representative sample, the Delphi method utilizes a purposely selected panel of experts to comment on a problem or situation. The rationale for this design choice is that a non-representative sample of experts is more equipped to arrive at a correct decision than a representative sample of non-experts (Rowe and Wright, 1999; Okoli and Pawlowski, 2004; Worrell et al., 2013).

The effectiveness of Delphi method is enhanced in this study through a panel diversity as well as integrating Delphi with SWOT analysis for scenario development with a view to harmonising their potentialities and reducing their limitations (see Landeta et al., 2011). By building on the experts' opinions, appropriate strategies are proposed using SWOT analysis as a methodological examination of the environment in which the sector operates. SWOT analysis is based on the identification of (a) internal organization/sector characteristics (Strengths and Weaknesses) and (b) external environment characteristics (Opportunities and Threats) (see Kotler, 1988). It constitutes an important method for learning about a situation and designing future propositions that can be considered necessary to enable strategic thinking by engaging with knowledgeable field experts (Barney, 1995; Dyson, 2004; Li et al., 2016). However, empirical literature that combines the Delphi method with SWOT analysis (hybrid Delphi-SWOT) are very limited (see Dyson, 2004; Terrados et al., 2009; Li et al., 2016; Campos-Climent and Apetrei, 2012; Tavana et al., 2012). None of the studies applied hybrid Delphi-SWOT in financial co-operatives.

The Delphi method was originated in the 1950s at the RAND Corporation, a California-based think-tank in the US to come up with group opinions and to develop consensus on future developments among a group of experts (Dalkey and Helmer, 1963). It was first applied in the US Air Force for systematically and asynchronously capturing expert input to understand accurately current and future development pertaining to national security via iterations of questionnaires (Linstone and Turoff, 1975; Landeta, 2006). The method became popular only after it was published in 1963 by Dalkey and Helmer for non-military purposes after being kept confidential for 12 years (Landeta, 2006; Helmer and Quade, 1963). As a result of the Delphi declassification by the American forces from its secrecy category, its use spread rapidly (Landeta, 2006; Förster, 2015; Rowe and Wright, 2011; Rowe and Wright, 1999). The seminal work by Linstone and Turoff (1975) characterized the further growth of interest in Delphi. An examination of recent literature reveals how widespread the use of Delphi is, with applications in areas as diverse as the automotive industry (see Förster, 2015), energy (see Obrecht and Denac, 2016), agriculture co-operatives (see Campos-Climent and Apetrei, 2012), technology (see Worrell et al., 2013), internet banking (see Bradley and Stewart, 2002), financial markets (see Kauko and Palmroos, 2014), sharing economy (see Barnes and Mattsson, 2016) and business analytics (see Vidgen et al., 2017). The major strengths of Delphi are based on knowledgeable experts, anonymity of experts, controlled group feedback and iteration whereby the group of experts review and evaluate alternatives through several controlled phases. However, the method has also received criticism that is not due to itself but to deficient application by researchers, such as lack of selection of rigorous panelists, questions and problems badly formulated, and insufficiently analyzed outcomes (Landeta, 2006; Winkler and Moser, 2016).

To address some of these concerns many types of the Delphi method have been proposed. The four main techniques extensively used are the classical Delphi, the policy Delphi, the decision Delphi and the ranking-type Delphi (Schmidt, 1993; Linstone and Turoff, 1975; von der Gracht, 2012). Although these techniques share some important features (such as feedback and an iterative process), they vary in terms of their specific objectives and approaches (see Table 7.1). According to Paré et al. (2013), although the quality standards vary with the assumptions of each Delphi method, we feel that a comparison between the different techniques is not as meaningful or useful as exploring the extent to which the studies that adopt a particular technique demonstrate methodological rigour.

Table 7.1: Comparison of Delphi types

	Classical Delphi	Policy Delphi	Decision Delphi	Ranking-type Delphi
Focus	Facts	Ideas	Decisions that influence future directions	Rankings
Goal	Create consensus	Define and differentiate views	Prepare and support decisions	Identify and rank key issues
Panelists	Unbiased experts	Lobbyists	Decision makers	Experts
Participation	Need many panelists (in relation to the complexity of the questions being asked)	Consider all relevant groups with many participants	Cover a high percentage of the relevant decision makers	Number of panelists should not be too large (in order to facilitate consensus)
Common uses	In the natural sciences and engineering where underlying physical “laws of nature” guide experts’ answers	In social and political contexts to analyze policy issues	In contexts where a small, well-defined group have decision making power	In business to guide future management action or research agendas

Source: Paré et al. (2013)

To limit the scope of this review and to permit meaningful comparisons between similar studies, we decided to restrict our assessment to ranking-type Delphi, which is by far the most commonly used Delphi technique in the business field (see Worrell et al., 2013 for detailed studies applying this technique in information systems; Bradley and Stewart, 2002 in internet banking; Kauko and Palmroos, 2014 in financial markets and Obrecht and Denac, 2016 in energy development). The ranking-type Delphi is used to try to reach a group consensus about the relative importance of a set of issues by utilizing three steps: brainstorming, narrowing-down, and ranking. However, Landeta (2006) reminded that Delphi is a research technique facilitating reliable group options not forcing consensus. More importantly, it is acknowledged that there is no one “right” future but alternative futures.

Although the Delphi method in general is relatively simple to administer, design choices made before administering the questionnaire directly impact the rigor and relevance of the results (Worrell et al., 2013). The study design consists of four phases: (1) assembling experts, (2) brainstorming alternatives, (3) narrowing alternatives, and (4) ranking alternatives.

7.4.2 The process of assembling expert panel

The selection of experts is the most critical requirement to improve the credibility and the validity of the process (Okoli and Pawlowski, 2004). However, the process is very challenging, making a Delphi survey rather complicated and very time-consuming (Grupp and Linstone, 1999; Obrecht and Denac, 2016). We divided experts into four panels: CFI management,

regulators, CFI associations, and consultants or capacity builders. The advantage of multi-panel Delphi studies is that they account for multiple expert perspectives in complex and multi-dimensional problems (Worrell et al., 2013). Following literature recommendations there are two to 18 experts in each panel (see Bradley and Stewart, 2002; Campos-Climent and Apetrei, 2012; Kauko and Palmroos, 2014; Barnes and Mattsson, 2016). We ended up with 36 experts of which 50% were CFIs managers. Boje and Murnighan (1982) found no relationship between panel size and effectiveness in decision making.

The identification of experts was done with the assistance of the CBDA who provided the initial list of important organizations and key experts in the CFI sector. Following the guidelines suggested by Okoli and Pawlowski (2004) and Worrell et al. (2013), the present study used a multiple-step iterative approach to identify and select experts through a knowledge resource nomination worksheet (KRNW) detailed in Figure 7.2 below, which took a month to compile.

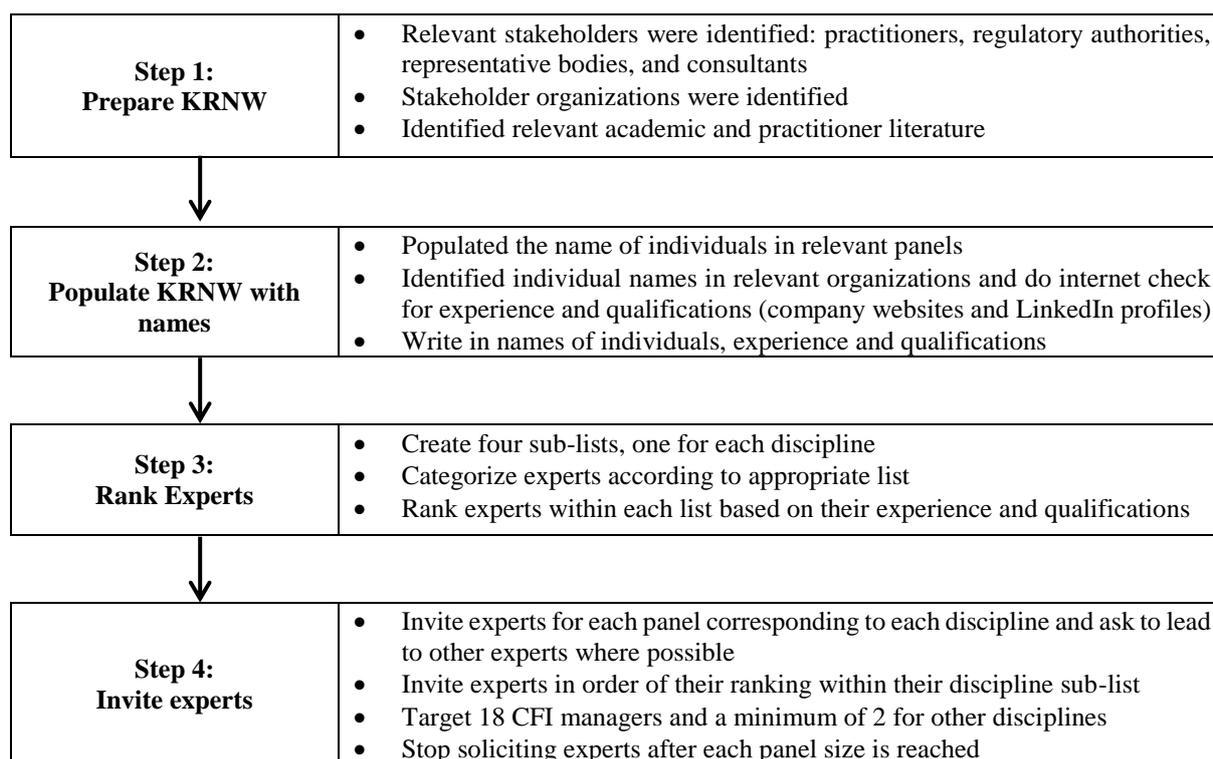


Figure 7.2: Procedure for selecting experts (adapted from Okoli and Pawlowski, 2004)

Our experts are quite mature, averaging 44.7 years old with 10.8 years working experience in the CFI sector. Their self-rating averaged 8.3 out of 10 in terms of their knowledge of CFIs compared to 3.7 in agricultural co-operatives, which is the most dominate co-operative type in South Africa. Most experts had Masters degrees, Bachelor's degrees and diplomas, except for

four with post-secondary school certificates, but on average they had 14.9 years CFI sector experience.

7.4.3 Data collection procedures

7.4.3.1 Questionnaire design

Besides questionnaire quality control checks among researchers and pilot testing, the data collection procedures were reviewed and guidance provided by the Senior Research Consultant of the University of Stellenbosch Business School and then by its Departmental Ethics Screening Committee. Following the advice of Okoli and Pawlowski (2004) and Delbecq et al. (1975), the first questionnaire was emailed to experts the very day they gave their consent to participate, feedback was also via email to aid communication records. Although explained to experts telephonically, experts were required to read and sign an informed consent declaration which explains the study and their rights. The questionnaires contained a maximum of six questions to avoid overburdening experts considering their time constraints but also to try to get the best use of their knowledge. In order to minimize expert fatigue, data collection ran for two and half months with panelists given seven days to respond with reminders towards last two days. It took on average two weeks per round. In the last round, fatigue was evident as it took three weeks to receive feedback. At the end of the study we shared our findings report with the experts as an acknowledgement of and in thanks for their participation.

7.4.3.2 Administration procedure

Following the recommendations of Okoli and Pawlowski (2004), the administration of the ranking-type Delphi involved three general steps: (1) brainstorming of factors; (2) narrowing down the original list to the most important ones; and (3) rounds of ranking important issues. However, other studies (see Worrell et al., 2013) modified the brainstorming to allow for a seed of factors generated from literature. Our brainstorming comprised open-ended questions giving leeway to our knowledgeable experts to give their opinions freely. Our study followed the procedure outlined in Figure 7.3. Round I questionnaire was sent on the 15th May 2017 on the very day each expert agreed to participate. To make the study more inclusive, there was an Afrikaans translated version of the questionnaire throughout the rounds for non-English speaking participants. All the issues generated by experts in Round I were put into a spreadsheet and coded independently by two researchers into core themes to reduce the number of similar responses from experts as per guidance from Miles and Huberman (1994).

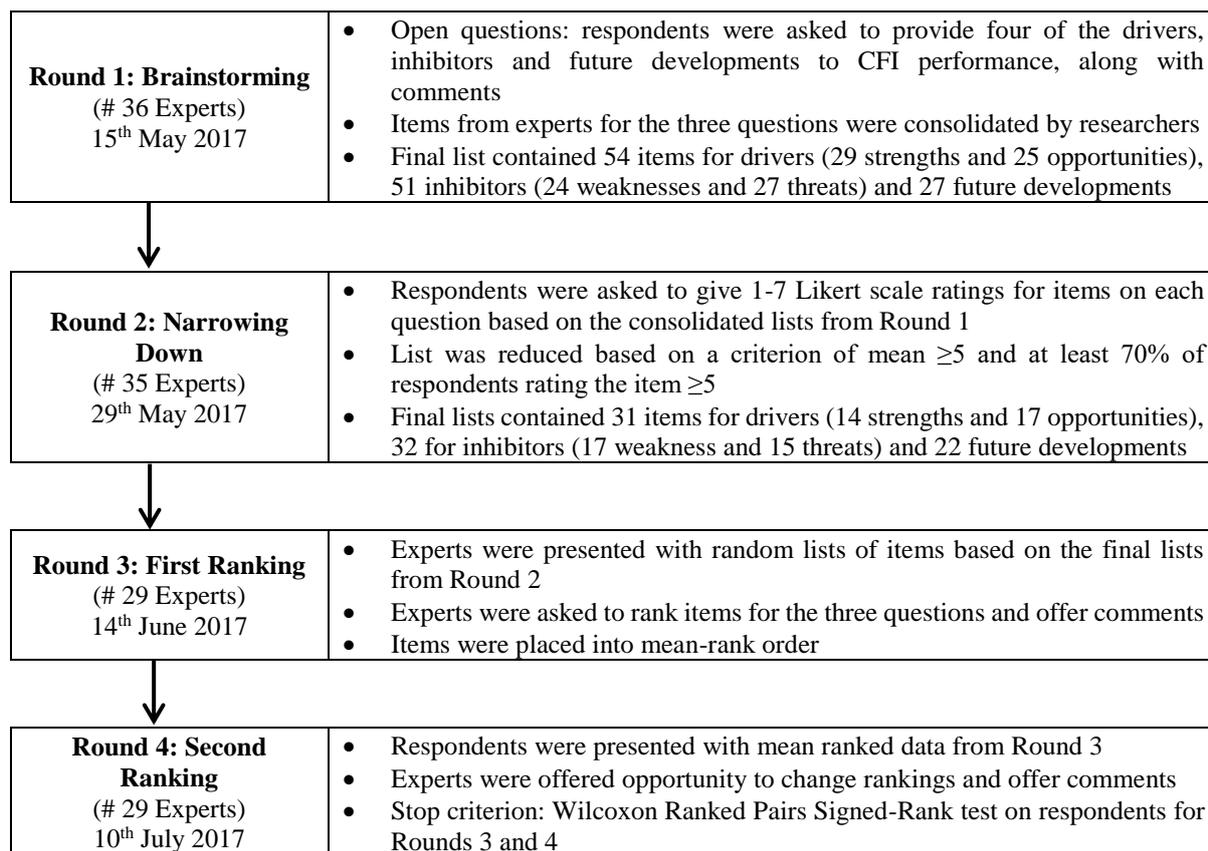


Figure 7.3: Process flow of the Delphi study followed

The questionnaire for Round II was sent to panelists on the 29th May 2017 for narrowing down through the use of 1 (strongly disagree) to 7 (strongly agree) (where 4 = neutral) Likert scale rating the issues according to their importance (drivers), their impact (inhibitors) or priority of implementation (future developments). The Likert scale assists in identifying issues that are regarded as important, thus reducing the long list. Following Barnes and Mattsson (2016), two criteria were used to measure the importance of the issue: firstly, the issue should have been rated as important (i.e. ≥ 5) by at least 70% of the panel, and secondly, should have a mean score of not less than 5.00. One expert opted out.

Experts were presented with random-order items in their categories that received consensus in Round II for their ranking in Rounds III and IV according to their importance (drivers), impact (inhibitors) and importance (future developments). Experts were also given an option to justify their rankings. The questionnaire for Round III was sent on the 14th June 2017, and six experts opted out due to fatigue. The mean scores were calculated for the remaining 29 experts, resulting in sending the questionnaire for Round IV on the 10th July 2017. Experts were presented with the group average scores and their initial individual rankings from Round III for each item and requested to reconsider their rankings considering the average ranking of

others. All the 29 experts responded in Round IV. We then use the Wilcoxon Ranked Pairs Signed-Rank Test recommended for Delphi studies to assess convergence across two rounds (Kalaian and Kasim, 2012; von der Gracht, 2012).

7.5 DATA ANALYSIS

The overall results are mixed but show strong evidence that experts were able to reconsider their rankings whilst some items did not change significantly. From Tables 7.2a to 7.2e below the Z statistic values indicate that our experts' round IV rankings were statistically different from round III rankings, indicating that experts collectively revised their rankings in round IV. The asymptotic p-value (2-tailed test) of less than 0.05 or 5% indicate a significant change in the rankings in round IV compared to round III, whilst an asymptotic p-value of more than 0.05 or 5% indicates insignificant change (not significantly different from zero). This indicates that there is little change in the responses from the two consecutive rounds (Kalaian and Kasim, 2012). In summary, issues with a Z score close to or above -2.000 had their asymptotic p-value less than 0.05 or 5%, indicating a significant change over the two rounds. There was no significant change on 34 out of 85 items (40%) considering the p-value of above 0.05, whilst the ranking of 51 items changed significantly across rounds (60%) with a p-value of less than 0.05. On 34 issues with insignificant change, experts had relatively similar views already and, in some cases, they decided to maintain their views regardless of differences in their views with some justifying their rankings. We decided to stop further rounds for two reasons: there was little evidence from experts that they would change their rankings further after a telephone discussion with some. Secondly, the long response times in the last round were seen as signals of fatigue which could compromise the quality of our findings in further rounds. The complete issues raised in Round I have been removed to keep this article at reasonable length, however they are available on request.

Given the overview interpretation of the results above, results on strengths in Table 7.2a below are mixed as six items did not change significantly: an indication that the experts had relatively similar views already, and in some cases, they decided to maintain their views regardless of differences in their views. The ranking of eight items changed significantly from the two consecutive rounds as some experts reviewed their rankings downwards considering the ranking of others.

Table 7.2a: Wilcoxon Ranked Pairs Signed-Rank Test for Rounds III and IV – Strengths

Item	Z	Asymp. Sig. (2-tailed)	Result (at p<0.05)
Pooling more savings together for on-lending to members	-2.375	0.018	IV<III
Able to strengthen the community bond for development	-2.492	0.013	IV<III
Improved savings culture through CFI formal mechanisms	-2.327	0.020	IV<III
CFIs are creating community businesses through A2F	-0.492	0.623	No change
Easy access to credit for CFI members compared to banks	-0.847	0.397	No change
CFIs are meeting community financial needs at low cost	-0.071	0.944	No change
CFIs are pooling capital together for on-lending profitably	-2.156	0.031	IV<III
Members enjoy ownership and control of CFIs effectively	-1.131	0.258	No change
Competitive pricing of loans compared to moneylenders	-1.992	0.046	IV<III
Improving financial literacy among CFI members	-2.530	0.011	IV<III
Positive economic impact as members' well-being improves	-2.071	0.038	IV<III
Growth in membership and savings from organized groups	-1.175	0.240	No change
Helping to fight the debt trap caused by moneylenders	-2.816	0.005	IV<III
Capacity building support from CBDA on CFI governance	-1.944	0.052	No change

Table 7.2b below indicates that there were no significant changes on all items in the top five opportunities: altogether seven items changed and 10 remain significantly unchanged. The only issue that did not change completely was “Help members out of moneylenders’ debt trap” with a Z statistic of zero (0.000) and an asymptotic p-value of 100%. However, there was a strong realization that “Free capacity building from CBDA and the Banking Sector Education and Training Authority (BankSETA) can be further exploited to enhance performance, whilst the re-ranking of “Favorable legislation allowing registration as a cooperative bank (CB) or secondary cooperative bank (SCB)” did not change significantly among other issues.

Table 7.2b: Wilcoxon Ranked Pairs Signed-Rank Test for Rounds III and IV – Opportunities

Item	Z	Asymp. Sig. (2-tailed)	Result (at p<0.05)
Ability to diversify financial services to meet member needs	-0.946	0.344	No change
CFIs create opportunity for the community to own their bank	-1.334	0.182	No change
CFIs are expanding by incorporating informal savings clubs	-1.793	0.073	No change
Adopting financial technology to improve efficiencies	-1.753	0.080	No change
Able to reduce poverty, unemployment, and social inequality	-0.912	0.362	No change
Potential expansion market to the unbanked	-2.386	0.017	IV<III
Improving discipline in the community on financial matters	-1.969	0.049	IV<III
Potential to dominating in financial excluded areas	-1.026	0.305	No change
Improved governance of the CFI as member are owners	-2.555	0.011	IV<III
Avoid exploitative neoliberal bank charges	-2.003	0.045	IV<III
Opportunity to receive social grants on behalf of members	-1.904	0.057	No change
High interest rates on savings	-2.243	0.025	IV<III
Possibility of issuing transactional cards for convenience	-1.755	0.079	No change
Free capacity building from CBDA and BankSETA	-2.371	0.018	IV<III
Help members out of moneylenders’ debt trap	0.000	1.000	No change
Ability to create a middle class through improved A2F	-3.077	0.002	IV<III
Favorable legislation allowing registration as a CB or SCB	-1.357	0.175	No change

In Table 7.2c below, only four weaknesses did not significantly change whilst experts significantly revised their ranking on 13 issues downwards giving their justifications. Experts

reconsidered remarkably their ranking of “Unattractive premises appealing to middle and upper class” followed by “Weak membership and savings growth” and “Weak corporate governance structures”.

Table 7.2c: Wilcoxon Ranked Pairs Signed-Rank Test for Rounds III and IV – Weaknesses

Item	Z	Asymp. Sig. (2-tailed)	Result (at p<0.05)
Low adoption of technological banking systems	-2.263	0.024	IV<III
CFIs have weak capital base which cannot absorb credit risk	-1.409	0.159	No change
Low managerial skills to lead CFIs profitably and sustainably	-2.077	0.038	IV<III
Poor marketing of the CFI concept to the greater public	-2.325	0.020	IV<III
Lack of strong cooperative movement, the sector is fragile	-2.392	0.017	IV<III
Poor savings culture among members	-2.405	0.016	IV<III
Lack of participation on the National Payment System (NPS)	-2.508	0.012	IV<III
Inability to retain talent through competitive market salaries	-1.122	0.262	No change
Weak membership and savings growth	-2.675	0.007	IV<III
CFIs are banking with banks so risk losing members	-0.271	0.786	No change
Weak corporate governance structures	-2.692	0.007	IV<III
Weak risk management systems	-2.257	0.024	IV<III
Tight cash flow positions	-2.616	0.009	IV<III
Low innovation to develop appropriate financial products	-2.043	0.041	IV<III
Poor activism by members in the governance system	-2.524	0.012	IV<III
No deposit insurance guarantee protection to members	-1.057	0.291	No change
Unattractive premises appealing to middle and upper class	-2.812	0.005	IV<III

Our experts did not significantly change their rankings as nine items remain significantly unchanged in Table 7.2d below whilst six threats significantly changed.

Table 7.2d: Wilcoxon Ranked Pairs Signed-Rank Test for Rounds III and IV – Threats

Item	Z	Asymp. Sig. (2-tailed)	Result (at p<0.05)
Stagnant membership growth due to poor public perception	-2.494	0.013	IV<III
Failure rate of CFIs is high affecting community confidence	-1.543	0.123	No change
Wrong perception that CFIs are for the poor only	-2.207	0.027	IV<III
Policymakers have interest in banks, not giving CFI attention	-0.282	0.778	No change
High unemployment affecting ability to save	-0.768	0.443	No change
Economic challenges affecting savings	-2.38	0.017	IV<III
Competition from loan sharks over-indebting members	-0.849	0.396	No change
Weak performance of the economy affect savings	-1.367	0.172	No change
High cost of banking system which CFI will not afford	-2.68	0.007	IV<III
Competition from informal schemes and pyramid schemes	-1.615	0.106	No change
Competition from commercial banks on member savings	-0.341	0.733	No change
Inability to attract qualified staff due to poor perception	-1.995	0.046	IV<III
No special tax rate for social enterprises such as CFIs	-2.814	0.005	IV<III
High insolvency of CFIs	-1.692	0.091	No change
Lack of deposit insurance to attract middle and upper-class	-1.219	0.223	No change

In Table 7.2e below, the ranking of 17 out of 22 future developments changed significantly, which suggests that our experts are more concerned with the sector’s future therefore giving it much attention by reconsidering their previous rankings after learning from each other. “Strengthening of the National Association of CFIs in South Africa (NACFISA) to advocate

for CFIs agenda” had its ranking significantly changed with the highest Z statistic of -3.066 and the lowest p-value, indicating that experts seriously reconsidered the importance of having an effective sector association.

Table 7.2e: Wilcoxon Ranked Pairs Signed-Rank Test for Rounds III and IV – Future Developments

Item	Z	Asymp. Sig. (2-tailed)	Result (at p<0.05)
Adoption of technology to improve convenience, efficiencies	-2.371	0.018	IV<III
Effective publicity of CFIs real social impact in communities	-1.156	0.248	No change
CFI specific qualifications for the leadership and staff	-2.398	0.016	IV<III
Improve transparency through internal and external audits	-1.18	0.238	No change
Enabling CFIs to participate in the NPS to appeal to all	-2.803	0.005	IV<III
Improving corporate governance structure through training	-2.497	0.013	IV<III
Creating a common national CFI brand such as Volksbank	-2.028	0.043	IV<III
Diversification of financial services that appeal to all	-2.67	0.008	IV<III
Improving member’ saving culture through financial literacy	-2.807	0.005	IV<III
National campaigns to encourage people to join local CFIs	-1.602	0.109	No change
CFIs financial sustainability to attract stakeholder interest	-2.668	0.008	IV<III
Improving CFI location appearance to appeal to all	-2.209	0.027	IV<III
National CFI sector strategy to guide players	-0.365	0.715	No change
Tax exemption status for CFIs as they are social enterprises	-2.214	0.027	IV<III
Rebranding CFI concept to appeal to all classes	-2.379	0.017	IV<III
Targeting organized groups to boost membership	-2.371	0.018	IV<III
Gvt entities to also save in CFIs as juristic members	-1.547	0.122	No change
Strengthening the NACFISA to advocate for CFIs agenda	-3.066	0.002	IV<III
The establishment of SCB to act as CFIs’ bank of last resort	-2.032	0.042	IV<III
Strengthening capital base through member contributions	-2.057	0.040	IV<III
Performing economy and political stability are necessary	-2.081	0.037	IV<III
CFIs to contribute for the deposit insurance protection	-2.176	0.030	IV<III

7.6 RESULTS AND DISCUSSION

To understand the current forces driving or hindering performance we employed the ranking-type Delphi technique by engaging 36 CFI experts who identified alternative strategies using the SWOT analysis developed by Kotler (1988). The hybrid Delphi-SWOT method proved to be effective in properly understanding the current sector issues and suggesting alternative futures. We find the panel size to be appropriate in effectively identifying and discussing important issues.

In this section, we detail the study findings considering the final rankings of the mean score (x) in Rounds III and IV as shown in Tables 7a-7e. All issues are ranked based on Round IV mean scores, starting with the lowest mean score, that is, ranked as the most important in descending order. Mean scores in Round IV are lower than Round III: an indication that collectively experts revised their rankings downwards considering the opinion of others as expected in a Delphi study (Dalkey and Helmer, 1963; Linstone and Turoff, 1975). The standard deviation (SD)

illustrates how divergent the experts' opinion are from the shared common view (x). As shown across all the tables, in Round IV the SD was lower than in Round III: an indication that our experts were moving towards consensus. The same also applies to the standard error (SE), which in Round IV reveals that the sample mean (x) is moving closer to the population mean, and points towards attaining consensus.

Our discussion of the results is supported by qualitative comments from experts when validating propositions, whilst analyses are aligned to the factors identified from the literature review. Experts did revise some of their rankings in Round IV as revealed by the Wilcoxon Tests. Drivers, inhibitors and future developments are discussed separately below.

7.6.1 Drivers of CFIs' performance

The identified drivers (strengths) to CFI formation and performance are quite diverse. However, from Table 7.3a below the major drivers seem to be leveraging on social capital to eradicate poverty. Members are motivated to "Pooling financial resources together" (1st) so that they can lend back to members profitably (7th), in a social way where "members enjoy ownership and control of the CFI effectively" (8th) and are thereby "able to strengthen the community common bond for social development" (2nd) through "improved savings culture" (3rd) to "help fight the debt trap caused by moneylenders" (13th). Social capital is regarded as the tie that binds in co-operative finance as members are comfortable working with people they know better (Frame et al., 2002; McKillop and Wilson, 2015). These findings are similar to what Catturani et al. (2016) found in Italy.

Economic factors also rank highly, as "CFIs are creating community businesses through improved access to finance" (4th) as there is "easy access to credit for members compared to commercial banks" (5th) for the economically marginalized. Moreover, there is more "competitive pricing of loans than from moneylenders" (9th) which have "positive economic impact as members' well-being improves" (11th). This means CFI lending is more ethical than exploitative. The economic factors support the dual objective of CFIs which is to achieve economic and social mission (Jones and Kalmi, 2015; Périlleux and Szafarz, 2015). The "growth in membership and savings from organized groups" (12th) such as rotating savings and credit associations (ROSCAs) or Stokvels as they popularly known is South Africa, workers unions and associations seem to drive outreach due to strong social bonds. This is unsurprising for South Africa where there are an estimated 800,000 Stokvels, given the historical background where black people were denied access to formal banking facilities during the

apartheid era (DTI, 2012). “Capacity building support from CBDA on CFI governance and trainings” (14th), although important, is lowly ranked as driving performance.

Table 7.3a: Mean rank of Rounds III and IV final ranking – Strengths

Rank	Item	III			IV		
		x	SE	SD	x	SE	SD
1	Pooling more savings together for on-lending to members	4.28	0.67	3.63	3.45	0.54	2.93
2	Able to strengthen the community bond for development	6.72	0.91	4.88	5.10	0.67	3.60
3	Improved savings culture through CFI formal mechanisms	6.17	0.67	3.63	5.31	0.54	2.89
4	CFIs are creating community businesses through A2F	5.86	0.69	3.69	5.62	0.51	2.73
5	Easy access to credit for CFI members compared to banks	6.21	0.74	3.98	5.86	0.67	3.60
6	CFIs are meeting community financial needs at low costs	5.86	0.60	3.23	6.07	0.57	3.08
7	CFIs are pooling capital together for on-lending profitably	7.10	0.68	3.64	6.14	0.55	2.95
8	Members enjoy ownership and control of CFIs effectively	6.55	0.71	3.82	6.34	0.65	3.48
9	Competitive pricing of loans than from moneylenders	7.28	0.73	3.92	6.66	0.70	3.76
10	Improving financial literacy among CFI members	8.72	0.70	3.76	7.52	0.58	3.14
11	Positive economic impact as members’ well-being improves	8.28	0.71	3.84	7.52	0.63	3.42
12	Growth in membership and savings from organized groups	8.90	0.68	3.64	8.21	0.56	3.00
13	Helping to fight the debt trap caused by moneylenders	9.69	0.73	3.96	8.59	0.67	3.61
14	Capacity building support from CBDA on CFI governance	9.79	0.79	4.28	8.76	0.80	4.31

As per Table 7.3b below, unexploited potentials (opportunities) for CFIs performance are dominated by social, governance and economic drivers. On the social front is an “opportunity for communities to have ownership of the institution serving them if fully harnessed” (2nd). There are opportunities to reach out to more people sharing the common bond in “informal savings clubs” (3rd) and in unbanked or underbanked markets (6th). There are economic opportunities in improving “financial discipline in communities” (7th), “help members out of moneylenders/loan sharks’ debt trap” (15th) as CFIs “avoid exploitative neoliberal bank charges” (10th) through paying “high interest rate on savings than banks” (12th). CFIs have great scope to “diversify financial services to meet members’ needs” (1st) and heal social and economic ills given their “ability to reduce poverty, unemployment, and social inequality” (5th). This is important for South Africa given the brutal colonial era that ended in 1994 leaving an unequal society with black people in extreme poverty. Rwanda made great progress in using cooperatives to contribute to conflict recovery, peace-building, re-building relationships, restoring trust and encouraging cooperation along ethnic groups after the 1994 genocide (Okem, 2016). Opportunity is also on “improving governance as members are owners” (9th) provided governance rights are exercised, similar to what Jones (2008) find in UK.

Table 7.3b: Mean rank of Rounds III and IV final ranking – Opportunities.

Rank	Item	III			IV		
		x	SE	SD	x	SE	SD
1	Ability to diversify financial services to meet member needs	3.62	0.77	4.14	3.00	0.57	3.08
2	CFIs create opportunity for the community to own their bank	5.52	0.68	3.64	4.93	0.53	2.85
3	CFIs are expanding by incorporating informal savings clubs	6.41	0.90	4.87	5.41	0.64	3.44

4	Adopting financial technology to improve efficiencies	7.41	0.87	4.68	6.45	0.76	4.08
5	Able to reduce poverty, unemployment, and social inequality	7.03	0.96	5.16	6.66	0.81	4.34
6	Potential expansion market to the unbanked	8.10	0.87	4.71	6.86	0.75	4.04
7	Improving discipline in the community on financial matters	9.07	0.81	4.34	8.10	0.65	3.52
8	Potential to dominating in financial excluded areas	8.79	0.83	4.45	8.24	0.76	4.07
9	Improved governance of the CFI as members are owners	8.86	0.55	2.97	8.24	0.50	2.67
10	Avoid exploitative neoliberal bank charges	9.24	0.96	5.16	8.45	0.93	4.98
11	Opportunity to receive social grants on behalf of members	9.76	0.97	5.21	8.59	0.88	4.73
12	High interest rates on savings	9.69	0.85	4.57	8.66	0.71	3.81
13	Possibility of issuing transactional cards for convenience	9.45	0.86	4.65	8.66	0.76	4.08
14	Free capacity building from CBDA and BankSETA	10.31	0.97	5.22	8.76	0.85	4.57
15	Help members out of moneylenders' debt trap	9.10	0.88	4.72	8.86	0.82	4.42
16	Ability to create a middle class through improved A2F	10.97	0.98	5.25	9.14	0.80	4.30
17	Favorable legislation allowing registration as a CB or SCB	9.86	0.68	3.66	9.31	0.56	3.02

Great opportunities are technological factors through “Adopting financial technology to improve efficiencies” (4th) enabling the “possibility of issuing transactional cards for financial services convenience” (13th). Improved innovative financial access coupled with other interventions can “create a middle class through enhanced productivity” (16th). This is supported by the findings of Frame and White (2004) that technological change has impacted dramatically on the economics of financial services provision, design and delivery. Technology enhances the bottom-line, that is, profitability either through increased revenue from service charges or lower processing costs. Policy opportunities are “free capacity building from CBDA and BankSETA” (14th), and “favorable legislation environment allowing registration of CFIs from FSCs and SACCOs to Co-operative Banks and Secondary Co-operative Banks” (17th). Furthermore, technology will position CFIs as a channel of receiving monthly government social grants for 17-million people (11th).

7.6.2 Inhibitors of CFIs' performance

The inhibitors to CFI performance are split into internal (weaknesses) and external (threats). The major inhibitors are technological, economic, governance, social and perception factors. In Table 7.3c below, the major internal weakness is “low adoption of technological banking systems” (1st). Related is “lack of participation on the National Payment System” (7th) which limits the interaction between CFIs and other formal financial players. The low technology diffusion is resulting in “low innovation to develop appropriate financial products” (14th). Some said that “Lack of operations automation place wrong perceptions in people to think CFIs are for the poor only”, and “The adoption of IT in operations enables financial innovation to offer easily accessible financial services”. However, Frame and White (2004) find that high set-up costs, redundancy of existing legacy systems and lack of suitable information technology skills are inhibiting factors, particularly in CFIs.

The second ranked weakness is “weak capital base which cannot absorb more credit risk.” This puts CFIs on “tight cashflow positions” (13th). Governance factors are third due to “Low managerial skills to lead CFIs profitably and sustainably”, as some rely on untrained voluntary labour. Similarly, is “Inability to retain talent through competitive market salaries” (8th) due to weak balance sheets. There are also “weak corporate governance structures” (11th), made worse due to “poor activism by members in the governance system” (15th). Lack of members’ activism and board oversight “weakens risk management systems” (12th) which exposes CFIs to solvency risk. Some experts said that “members [most of the times] they do not exercise their voting powers when not happy with CFI governance, they just withdraw their investments and membership”, and “In addition to training directors, members training is essential to exercise their governance rights”.

Perception factors are fourth due to “Poor marketing of the CFI concept to the greater public” resulting in “weak membership and savings growth” (9th) as CFIs have “unattractive premises to appeal to the middle and upper classes” (17th). This is opposite to what McKillop et al. (2011) found in Great Britain in the period 2003-2009 where although the number of credit unions dropped, membership increased by 300,312 (59.6%) from 503,838 to 804,150 due partly to trained staff and refurbished premises, which increased their attractiveness to potential members. “No deposit insurance guarantee protection to members” was ranked second from last.

Table 7.3c: Mean rank of Rounds III and IV final ranking – Weaknesses.

Rank	Item	III			IV		
		<i>x</i>	SE	SD	<i>x</i>	SE	SD
1	Low adoption of technological banking systems	5.79	0.98	5.30	4.90	0.83	4.46
2	CFIs have weak capital base which cannot absorb credit risk	5.90	0.94	5.04	5.28	0.80	4.29
3	Low managerial skills to lead CFIs profitably & sustainably	6.86	0.85	4.56	5.76	0.69	3.73
4	Poor marketing of the CFI concept to the greater public	6.86	0.72	3.89	5.97	0.56	2.99
5	Lack of strong co-operative movement, the sector is fragile	7.79	1.03	5.54	6.17	0.91	4.91
6	Poor savings culture among members	7.90	0.98	5.27	6.28	0.77	4.15
7	Lack of participation on the National Payment System	8.00	1.00	5.37	6.31	0.70	3.79
8	Inability to retain talent through competitive market salaries	7.14	0.97	5.25	6.48	0.79	4.26
9	Weak membership and savings growth	9.10	0.96	5.16	7.21	0.78	4.20
10	CFIs are banking with banks so risk losing members	7.48	0.85	4.56	7.59	0.79	4.26
11	Weak corporate governance structures	9.21	0.87	4.70	7.72	0.77	4.17
12	Weak risk management systems	8.86	0.88	4.76	7.72	0.77	4.14
13	Tight cash flow positions	9.72	0.89	4.79	8.38	0.81	4.35
14	Low innovation to develop appropriate financial products	10.11	0.90	4.86	8.90	0.83	4.46
15	Poor activism by members in the governance system	10.14	0.86	4.63	8.93	0.78	4.19
16	No deposit insurance guarantee protection to members	9.48	1.00	5.38	9.00	0.88	4.72
17	Unattractive premises to appeal to the middle & upper class	10.83	0.95	5.13	9.00	0.84	4.50

Apart from internal inhibitors, CFIs face external threats as detailed in Table 7.3d below. The sector is being affected by poor perception. “Stagnant membership growth due to poor public perception” (1st) “that CFIs are there to serve the poor only” (3rd). Perceptions result in the “inability to attract qualified staff” (12th) which affects performance. These sentiments are shared with McKillop et al. (2011) who found that credit unions’ penetration in the UK was becoming difficult due to perceptions that they were poor people’s banks; therefore, advocate for further deregulation to attract membership from a wider cross-section of the society. The fourth major threat is that “Policymakers have interest in commercial banks, not giving CFIs attention.” More related to policy inhibitors is “Lack of special tax rate for social enterprises such as CFIs” (13th). One respondent said, “CFIs are being treated as for-profit business-like banks whose objective is profits maximizing, whereas CFIs’ surpluses are ploughed back for communities’ development.” However, a recent study by Chang et al. (2016) reveal that tax exemption status in the US seems not to benefit members but inefficiencies. Ranked fifth is economy-related being “high unemployment affecting ability to save” which is currently estimated at 27.7% (SARB, 2017: 24) due to “Economic challenges affecting savings” (6th and 8th).

Table 7.3d: Mean rank of Rounds III and IV final ranking – Threats.

Rank	Item	III			IV		
		x	SE	SD	x	SE	SD
1	Stagnant membership growth due to poor public perception	6.03	0.70	3.77	4.83	0.50	2.67
2	Failure rate of CFIs is high affecting community confidence	5.41	0.84	4.52	4.93	0.74	3.97
3	Wrong perception that CFIs are for the poor only	6.38	0.81	4.34	5.72	0.73	3.92
4	Policymakers have interest in banks, not giving CFI attention	5.79	0.79	4.24	5.79	0.72	3.89
5	High unemployment affecting ability to save	6.34	0.84	4.53	5.83	0.72	3.86
6	Economic challenges affecting savings	7.18	0.85	4.60	5.89	0.67	3.63
7	Competition from loan sharks over-indebting members	6.79	0.74	4.00	6.48	0.68	3.66
8	Weak performance of the economy affect savings	7.17	0.83	4.45	6.62	0.74	3.97
9	High cost of banking system which CFI will not afford	8.03	0.81	4.37	6.72	0.64	3.42
10	Competition from informal schemes and pyramid schemes	7.28	0.90	4.87	6.86	0.79	4.26
11	Competition from commercial banks on member savings	7.24	0.78	4.22	7.07	0.70	3.77
12	Inability to attract qualified staff due to poor perception	8.07	0.88	4.73	7.17	0.84	4.50
13	No special tax rate for social enterprises such as CFIs	8.72	0.91	4.90	7.21	0.79	4.24
14	High insolvency of CFIs	8.79	0.80	4.29	7.86	0.66	3.53
15	Lack of deposit insurance to attract middle and upper-class	10.24	0.82	4.40	9.76	0.81	4.35

Other economic factors are many competing financial services providers, mostly targeting the employed or government social grant recipients. Seventh is “Competition from loan sharks is over-indebting members” (7th). These are consistent with Koku and Jagpal’s (2015) findings that payday lenders in US are pushing the working class into a debt-trap due to astronomically high interest rates. One expert said “due to low financial literacy [some] members borrow again from loan sharks at excessive rates, therefore, failing to make meaningful savings as they get

stuck in a debt trap, making financial literacy training necessary especially in worker-based CFIs.” Ranked tenth is “Competition from informal and pyramid schemes”, as members are easily tempted to invest in get-rich-quick schemes that are sold as “can’t lose” propositions which will inevitably collapse. Our experts ranked “Competition from commercial banks on member savings” eleventh: although people lack access to credit facilities they are attracted to traditional banks due by the good ambience compared to CFIs.

7.6.3 Future developments to drive CFIs’ performance over the next 10 years

From Table 7.3e below, our experts provided the largest and most diverse set of factors of the most important strategic propositions over the next decade. The propositions highly suggested are those that are technological, marketing, human, policy, environmental and economic in nature. Technology as an enabler was ranked first: “Technology adoption to improve convenience and efficiencies.” Ranked fifth was “Enabling CFIs to participate on the national payment system to appeal to all”, which would enable “Diversification of financial services that appeal to all” (8th). An expert said “use of banking system will enable CFIs to effectively monitor member savings behavior, easy loan portfolio monitoring and reduce operating costs.”

This is followed by CFI brand awareness campaigns through “Effective publicity of CFIs real social impact in communities” (2nd). Another way to position CFIs is “Creating a common national CFI brand” (7th). Ranked tenth is “National campaigns to encourage people to join local CFIs”. Similarly, the need for “Improving CFI location appearance to appeal to all” (12th) and “Rebranding CFI concept to appeal to all classes” (15th) are seen as areas to enhance growth. This is consistent with Attuel-Mendès et al. (2014) recommendations in the Austrian case that credit unions have to pay attention to the identity they create and disseminate through their communication. One participant suggested that: “There is need for the establishment of a common CFI brand such as Volksbank in Germany, recognized as a single identity, yet owned mutually and co-operatively by their members in each village or town.” Thereafter, “Target organized groups to boost membership” (16th).

The third most ranked in the top ten are people factors given that strategy implementation requires competent people. Ranked third is the need for “CFI specific qualifications for the leadership and staff” and “Improving corporate governance structure through training” (6th). Ranked fourth is the need to “Improve transparency through internal and external audits” which is crucial to improve members’ confidence on savings safety. One expert said “There is need to enforce minimum university qualifications on co-operative banking for CFI leadership

similar to those from a university in Kenya [The Co-operative University of Kenya].” A survey by Fullbrook (2015) on a sample of 145 US credit unions reveal that although in principle directors are volunteers, in larger credit unions they are compensated. Credit unions that compensate their boards perform, on average, better than those that do not. That does not mean compensation causes better performance, but at least it does not seem to have large adverse effects. He recommends that boards maintain skills diversity and conduct board evaluations to identify areas of improvement. In nascent countries like South Africa, CFI volunteerism is still strong making board compensation debatable compared to mature countries where there is high commercialization. The need for “Improving members’ savings culture through financial literacy training” was ranked in the top ten.

Table 7.3e: Mean rank of Rounds III and IV final ranking – Future developments.

Rank	Item	III			IV		
		x	SE	SD	x	SE	SD
1	Technology adoption to improve convenience & efficiencies	6.21	0.98	5.30	4.38	0.53	2.83
2	Effective publicity of CFIs’ social impact in communities	5.79	1.25	6.70	5.14	1.05	5.68
3	CFI specific qualifications for the leadership and staff	7.48	1.13	6.07	5.76	0.89	4.82
4	Improve transparency through internal and external audits	7.31	1.18	6.38	6.07	0.89	4.80
5	Enabling CFIs to participate in the NPS to appeal to all	9.55	1.17	6.28	6.76	0.73	3.92
6	Improving corporate governance structure through training	9.38	1.21	6.51	6.93	0.70	3.79
7	Creating a common national CFI brand such as Volksbank	8.38	1.24	6.66	7.07	1.02	5.50
8	Diversification of financial services that appeal to all	9.72	1.16	6.23	8.03	0.94	5.04
9	Improving member’ saving culture through financial literacy	10.59	1.04	5.58	8.93	0.96	5.18
10	National campaigns to encourage people to join local CFIs	10.31	1.21	6.50	9.07	0.98	5.28
11	CFIs financial sustainability to attract stakeholder interest	10.93	1.13	6.08	9.17	1.00	5.39
12	Improving CFI location appearance to appeal to all	11.28	1.23	6.63	9.48	0.94	5.05
13	National CFI sector strategy to guide players	11.55	1.18	6.34	9.55	1.01	5.42
14	Tax exemption status for CFIs as they are social enterprises	11.34	1.33	7.17	9.66	1.20	6.47
15	Rebranding CFI concept to appeal to all classes	11.38	1.10	5.94	9.76	0.90	4.85
16	Targeting organized groups to boost membership	10.86	0.97	5.21	10.00	0.94	5.06
17	Gvt entities to also save in CFIs as juristic members	11.38	1.21	6.49	10.48	1.08	5.81
18	Strengthening the NACFISA to advocate for CFIs agenda	12.97	1.31	7.05	10.69	1.06	5.71
19	The establishment of SCB to act as CFIs’ bank of last resort	12.41	1.12	6.06	11.59	1.07	5.74
20	Strengthening capital base through member contributions	13.41	1.34	7.23	12.03	1.16	6.26
21	Performing economy and political stability are necessary	13.52	1.24	6.69	12.10	1.08	5.83
22	CFIs to contribute for the deposit insurance protection	14.69	1.14	6.15	13.79	1.12	6.02

Ranked below the top 10 are the need to achieve “Financial sustainability to attract stakeholder interests” (11th). This is vital given the high failure rate of CFIs: to win confidence there is need to ensure the institutions have permanency. In the context of microfinance programs, Schreiner (2000) mentioned that unsustainable programs might help the poor now, but they will not help the poor in the future because the program will be long gone. This suggest that even if CFIs are non-profit maximizers they need to preserve and grow their capital by making surpluses. The suggested “National CFI sector strategy to guide players” (13th) is crucial to provide guidance to players in addition to regulatory oversight from CBDA to ensure their permanency.

Although “Tax exemption status for CFIs as social enterprises” is ranked 14th it has an average mean-ranking of 9.66 making it a necessary priority. To show government’s commitment to the CFI agenda as a matter of policy “Government and its entities should become CFIs juristic members” (17th). One expert mentioned that “this will become necessary if CFIs themselves have proven to be sustainable and their local communities restore confidence in them.” Most of the environment factors were ranked low though important. One such is the need for “Strengthening the NACFISA to advocate for CFIs agenda.” One panelist said: “A more vibrant and effective [national] association of CFIs is needed to push for certain agendas, currently we have a weak, fragile CFI sector as the national association is inactive.” Ireland and New Zealand are examples of countries with well-functioning trade associations contributing to the developing higher standards of credit unions and spearheading technology adoption (see Sabbald et al., 2002).

Other future developments include “The establishment of a Secondary Co-operative Bank (SCB) to act as CFIs bank of last resort” (19th). This is to ensure CFIs do business with co-operative businesses to strengthen the co-operative movement. “Strengthening capital base through member contributions” (20th) as capital contributions and savings are currently low for meaningful lending. The need to have “Performing economy and political stability” (21st) are seen as vital to maintain the social fabric essential for CFIs existence. Whilst the need for “CFIs to contribute for the deposit insurance protection” was ranked last, it is nevertheless vital to safeguard the hard-earned savings of the poor. In the US, Ireland and New Zealand, deposit insurance mechanisms are improving members’ confidence and stability of credit unions (see Sabbald et al., 2002).

7.6.4 Strategy development for CFIs’ high-performance by 2030

Following Vidgen et al. (2017) the analysis shown in Table 7.4 below indicates that, based on an average rank per category, ‘technology’, ‘people’ and ‘marketing’ are the most important future developments to move the sector to high performance. Although most of the items fit comfortably in one area, some may be in more than one such as “Diversification of financial services that appeal to all” under technology also fits in marketing, but from experts’ comments diversification is possible with the adoption of technology as an enabler. While the absolute number of technology issues is low, all three items are ranked highly in importance (an average value of 4.7), with “Adoption of technology to improve convenience and efficiencies” ranked first as the most important future development.

Table 7.4: Strategic focus for the next 10 years.

Category	Rank/Average	Item	Rank
Technology (3)	1 (4.7)	Technology adoption to improve convenience and efficiencies	1
		Enabling CFIs to participate in the NPS to appeal to all	5
		Diversification of financial services that appeal to all	8
People (4)	2 (6.0)	CFI specific qualifications for the leadership and staff	3
		Improve transparency through internal and external audits	4
		Improving corporate governance structure through training	6
		CFIs financial sustainability to attract stakeholder interest	11
Marketing (6)	3 (10.3)	Effective publicity of CFIs real social impact in communities	2
		Creating a common national CFI brand such as Volksbank	7
		National campaigns to encourage people to join local CFIs	10
		Improving CFI location appearance to appeal to all	12
		Rebranding CFI concept to appeal to all classes	15
		Targeting organized groups to boost membership	16
Culture (2)	4 (14.5)	Improving members saving culture through financial literacy	9
		Strengthening capital base through member contributions	20
Policy (3)	5 (14.7)	National CFI sector strategy to guide players	13
		Tax exemption status for CFIs as they are social enterprises	14
		Government entities to also save in CFIs as juristic members	17
Environment (3)	6 (19.7)	Strengthening the NACFISA to advocate for CFIs agenda	18
		The establishment of SCB to act as CFIs' bank of last resort	19
		CFIs to contribute for the deposit insurance protection	22
Economic (1)	7 (21.0)	Performing economy and political stability are necessary	21

People issues are ranked highly in importance (an average value of 6.0), indicating the need for quality human capital to lead organizations with excellency. Although the marketing category has six issues, which is more than any category, on average the items are ranked high slightly above 10, making perception transformation and brand visibility important priorities, while the culture category contains only two items averaging 14.5 followed by three policy issues averaging 14.7. Environment and economic issues were ranked low, averaging 19.7 and 21.0 respectively, as CFIs lack much control on them, especially economic and political developments. To move the sector forward there is need to have strategies on technology, people, marketing, culture shift, policy engagement, environment and economic which can be consolidated into a grand strategy. These strategies can be further grouped into internal and external strategies (priorities). The internal priorities are issues within the control of CFIs (technology, people, marketing and culture issues), while CFIs can influence external priorities (policies, environment and economic issues).

From our study, CFI performance is being driven by social capital, economic empowerment, enabling policies, members' self-governance and some outreach from organized groups, while inhibitors are forcefully impacting the growth and performance through poor sector perception, low technology adoption, low outreach, poor governance, low economic performance and some unfavorable policies. However, there is still a future for the sector given 22 future

developments that can be explored to unlock value: of these, 15 strategic options are within the control of CFIs whilst seven can be influenced collectively to improve performance. The sector's future is to be driven by technology innovation, having competent people, CFI marketing, members' culture transformation, enabling policies, conducive operating environment and a performing economy.

Our study results can be summarized in Figure 7.4 below showing performance of CFIs being a coevolution of different forces affecting each other at the same time. The width of the arrows reflects the response weights, with the largest being the most important.

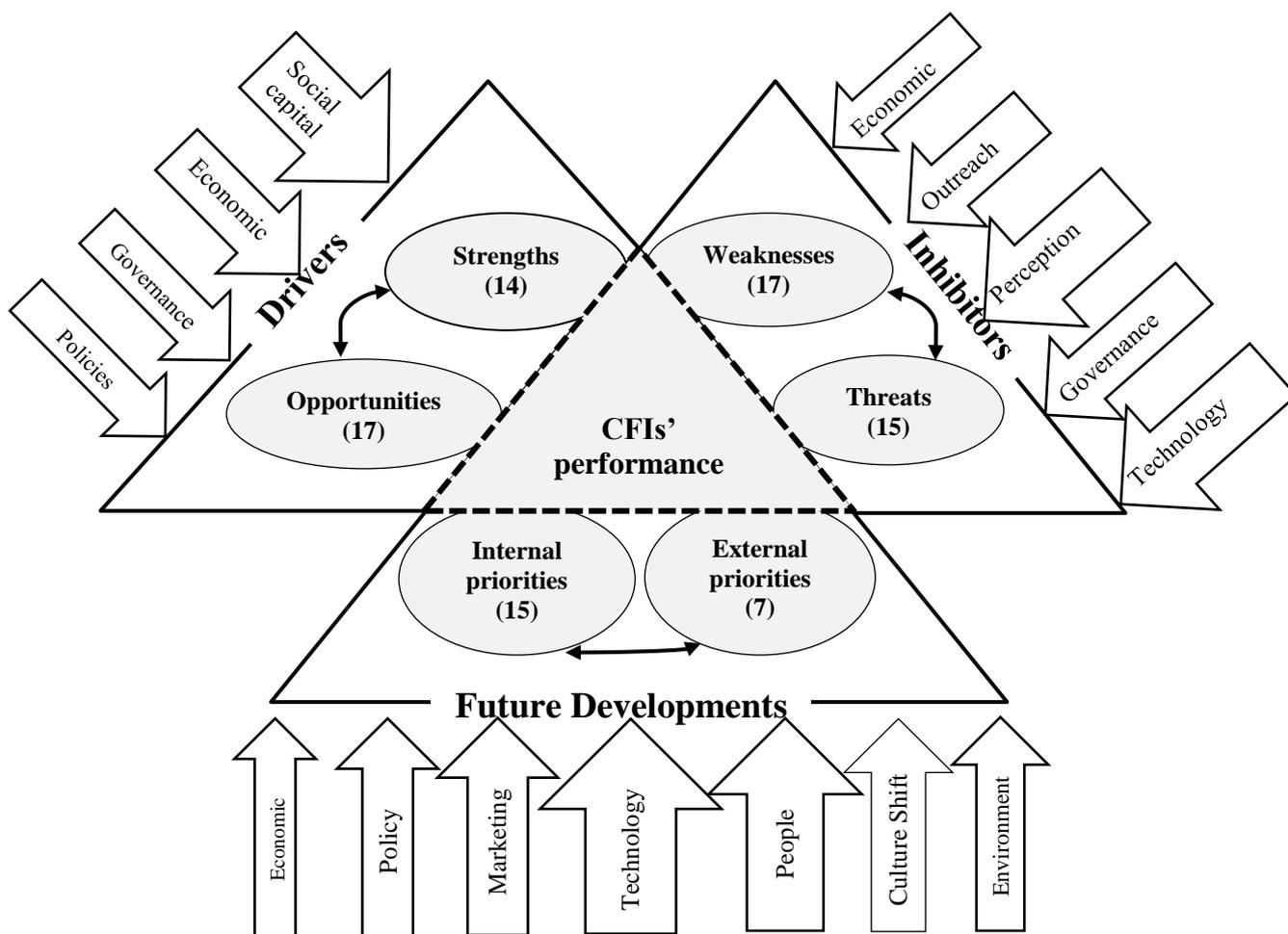


Figure 7.4: CFI performance ecosystem with arrow width indicating level of importance

7.7 SUMMARY AND CONCLUSIONS

This paper explores the CFI performance drivers and inhibitors as well as future alternatives to achieve high performance growth of the sector. The major contribution of this study has been the identification of drivers and inhibitors of CFI performance. From the identified issues, it

becomes clear that the sector is at a crossroads facing diverse issues which require collective stakeholder efforts to move the sector forward. As can be seen in Figure 7.4, the major drivers for CFI formation and performance are social ties and the need for economic empowerment followed by outreach from organized groups and the members' need for organization self-governance. Given the social networks in stokvels, the common bond is strong, making it easier for the formation and growth of CFIs. Given the history of South Africa characterized by exclusion, CFIs are seen as one of the instruments for economic empowerment through improved access to financial services. Members feel equally empowered to govern their CFI without the dominance of certain individuals. Although policies do not appear to be more important in driving performance, they do provide an enabling regulatory environment for the formation and performance of CFIs.

On the other hand, negative perceptions of the sector and low technology adoption has been identified as the biggest inhibitors to CFI performance. CFIs are not currently viewed as an alternative banking solution for a cross-section of the society but for the poor. Negative perceptions hinder them from penetrating affluent market segments, a situation worsened by low technology adoption which would enable them to offer members cost-effective diversified financial solutions. Further outreach is also affected by the poor appreciation of the CFI concept and its value proposition. Whilst poor governance structures and practices and restrictive policies seem to have moderate impact on performance, however when left unattended they will have a huge effect. The sector needs to address deficiencies in corporate governance, technology and negative perceptions as a matter of urgency to attract a mixture of membership from the broader population.

The second objective was to identify strategies that can be implemented to position CFIs in *where to play and how to play* going into the future as it is the future that remains uncertain and important. Our experts managed to clearly identify and agree on seven strategic alternatives to focus on in the next decade in the following order: technology, people, marketing, culture shift, policy, environmental and economic. These strategies should be implemented in their order of importance as ranked by experts. Since technology was identified as the second most inhibitor to performance, it is ranked as the most urgent priority for implementation followed by having competent human capital from the board of directors to floor staff. Perception transformation can be achieved through effective marketing and brand awareness campaigns to the entire country. Economic fortunes are unlikely to improve quickly given the current drought in its third year in South Africa, high unemployment, weakening exchange rates and

rising food prices. However, the resignation of president Jacob Zuma on the on the Valentine's Day in 2018 might restore some confidence in the economy given the loss of confidence by the investing community in his leadership. Early signals are that, the day after he resigned, the South African rand rallied to R11.66/US\$, levels last seen in more than two and half years, with a similar trend also witnessed on the stock market. Recently, a team of four respected financial heavyweights was appointed to head an ambitious investment drive and reforms aimed at attracting at least US\$100 billion in new foreign direct investments over the next five years. Environmental issues such as having a vibrant NACFISA and setting up a deposit insurance scheme are unlikely to be achieved soon. The implications might be that the sector will remain unattractive to the middle-class, and policies advocacy is difficult given an ill-funded association body. There is need to pay attention to these issues including having a lender-of-last resort for liquidity support. However, culture transformation is likely to require more effort to build better capitalized and more responsive CFIs which are member-centric through targeted financial literacy programs. Beyond 10 years culture transformation and environmental issues are likely to be more vital given their role in building a resilient sector.

The Delphi method and SWOT analysis can separately lead to limitations. However, the hybrid Delphi-SWOT method leads to a more efficient approach for integrating subjective judgments with complex multi-criteria problems. Having mentioned that, as in any Delphi study, the outcomes reflect the experts involved. That is why a panel selection is key in a Delphi study and the current study paid much attention to that through the rigorous selection of experts. In addition, the outcomes also strongly reflect the important position of the Delphi process managers to make the right questions and the right interpretations between the rounds and present the final results. The researchers are knowledgeable in using the Delphi techniques, managing complex surveys and in operational research, making them well equipped to effectively carry out the study. Although our final results were mixed, they did have a significant component of CFI management participants, as they are the most engaged and knowledgeable group available on the subject matter. Nevertheless, this does appear to be offset by the other sub-panels of experts in the study, and overall the issues raised appear to be quite broad and representative.

In the aftermath of the global financial crisis, CFIs provide a fundamental perspective on how proper financial intermediation should be conducted in a non-speculative way after most bank customers were disappointed by investor-owned banks. The recent call for more ethical and socially responsible banking considers the balanced needs of society, the environment and the

economy, and positions CFIs to play an important role going into the future. To play this increasing role, CFIs will need to understand their performance drivers and inhibitors and develop alternative strategic options to achieve sustainable growth. However, technology, quality human capital, effective marketing and culture shift are of paramount importance in this competitive environment characterized by rapid financial innovation. In addition, sustainable CFI development requires an appropriate and adaptive regulatory framework that ensures members' funds are safeguarded to promote confidence in the CFIs movement. In contrast, too strict policies may stifle CFI performance, while too lax an environment is also detrimental as it may lead to CFI failures and place the movement as a whole in jeopardy.

The study findings have relevance to CFI practitioners, governments, development agencies, researchers, regulators and policymakers, who have interests in promoting access to financial services to enhance inclusive economic participation. The identification of performance drivers and inhibitors provide insights for stakeholders' attention to weaken the inhibitors and maximize drivers for better performance. We recommend three areas for further study leveraging on what we now understand. Firstly, consider doing a case study on the best and worst performing CFIs to understand what differentiates performance. Secondly, would be to split CFIs into different types such as professional association or worker-based, rural-based and community-based CFIs, and study them separately as performance drivers and inhibitors might not be homogenous. This will enable accurate identification of specific issues and strategies rather than general recommendations which might not apply to different common bonds. Lastly, in-depth member interviews to understand CFI value proposition for better informed outreach strategies.

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CHAPTER EIGHT

SUMMARY, CONCLUSION AND IMPLICATIONS OF KEY FINDINGS¹⁵

8.1 INTRODUCTION

This research is a collection of empirical research papers which have examined four thematic areas – sustainability, efficiency, productivity and qualitative performance drivers – in the co-operative financial institutions in South Africa. The whole thesis comprises eight publishable chapters of which four are empirical papers. Chapters One, Two and Three focus on the introduction, global overview, and a historical perspective and overview of co-operative movement in South Africa respectively. These chapters set the stage for empirical investigations. The first three empirical papers utilized an up-to-date dataset of CFIs' audited financial statements obtained from the Co-operative Banks Development Agency (CBDA) covering the reporting financial years 2009/2010 to 2016/2017.

The first empirical paper, in Chapter Four, specifically examined the level of financial sustainability in the CFI industry and its major determinants in the provision of financial solutions to the poor, the marginalized and local communities. In Chapter Five, the research examined the social and financial efficiency and identifying sources of inefficiency. Chapter Six extended the efficiency study to cover the performance dynamics over time (productivity) to identify areas of performance regress and progress and tested whether there are other factors influencing the industry's productivity. The last empirical analysis in Chapter Seven investigated the qualitative drivers and inhibitors of CFI performance by engaging with the co-operative finance experts and coming up with growth strategies to turnaround the industry for high performance. The final chapter of the thesis summarizes the findings of the empirical chapters and discusses managerial and policy implications of the findings. This enables the thesis to outline the major contributions made by the empirical findings and discusses the limitations and areas for future research.

8.2 SUMMARY OF KEY FINDINGS

In this section, the overview and key findings of each of the empirical chapters are summarized in sequence. Inasmuch as our results validate some previous empirical research findings, some differences exist. Our findings highlight key areas that require urgent attention of co-operative finance practitioners and policy makers in order to improve the performance of CFIs for their

¹⁵ An article based on this chapter, "*Promoting financial co-operatives a circular economy scheme for community development: A South African perspective*" is under review by the *Journal of Retailing and Consumer Services*.

meaningful contribution to the broad economic agenda of improving access to financial services, poverty reduction and sustainable community development in the South African economy.

8.2.1 Global overview of CFIs and the South African perspective

The first global overview chapter reveals trends that give evidence that CGIs do matter in the world economy as they address some of the market failures and help reduce exploitation of economically active poor people and marginalized communities from scarce and expensive financial services. CFIs are gaining global attention as a source of sustainable and ethical finance since the recent 2008/2009 global financial crisis with its membership, savings and assets increasing massively due to their resilience to the financial crisis than mainstream banks. Their reputation was further enhanced when the United Nations declared year 2012 as the International Year of Co-operatives, putting it on the global agenda of policy makers and economists. It is unsurprising that credit unions have a significant penetration rate of 13.55% whilst it is as high as 40% in Ireland, the US, Canada, France, Korea, Germany, Italy and the Caribbean. Surprisingly, Africa has the lowest penetration despite having a high prevalence of credit market failures and financial exclusion and strong social capital. Some argue that there are many informal rotating savings and credit associations (ROSCAs) active in the economy. On the African continent, Kenya is the only financial co-operative market in the transition stage, with a penetration rate of 13% and membership of slightly above 6 million, whilst the rest of African countries are still in the nascent stage of development.

Our study shows that South Africa has the lowest penetration rate in the world of 0.06% despite the long history of its co-operative movement which dates back to the early 1890s. The post-apartheid government put in place some enabling policies and incentives to promote the formation of co-operative businesses. However, government grants and donations had negative consequences as co-operatives were being formed as conduits to benefit from government funding resulting in a high failure rate and unsustainable enterprises. From 2010 to 2017 CFIs and CFI membership dropped by nearly 50%. However, South African CFIs have great potential to make a meaningful contribution to the societal and financial well-being of its members. Surprising, CFIs, particularly those that are rural or township-based, are mobilizing members savings and investing them in financial investments rather than lending back to their communities to stimulate local community development. All these raise the question of the financial sustainability of South African CFIs to aid local economy development.

8.2.2 Financial sustainability of CFIs in South Africa

The study starts by providing a motivation of why sustainability is important for social enterprises such as member-owned financial institutions and why financial sustainability is of paramount importance over other forms of sustainability. Using CFIs financial information for eight years, our results indicates that FSS and OSS indices average 0.913 and 1.027 below the expected minimum performance of 1.00 and 1.10 respectively. The difference between these indices indicates that our sample CFIs are receiving grants and donations to fund some of their operations. In summary, the FSS index indicates that the industry is not financially sustainable.

Further analysis at a disaggregate level reveals that rural-based FSCs are the least sustainable with an FSS index of 0.825, followed by township/city-based SACCOs at 1.005, whilst cooperative banks perform better on average with an index of 1.056. Our third level of investigation reveals that the major significant driver of CFIs financial sustainability is profitability measured as ROA, followed by investments-to-assets ratio, loans-to-assets ratio and growth in deposits. Our results identified grants, credit risk and cost-to-income ratio as having a negative impact on CFIs' financial sustainability. Surprisingly, interest rate and age have no influence on our sample CFIs in the period under study. Analysis by sub-sample again reveals that ROA and cost-to-income ratios influence have an influence in both FSC and SACCOs but portfolio yield was found to make a positive contribution to FSS of SACCOs as most of their assets (57%) are in loans. However, there is no significant impact on FSC financial sustainability as only 37% of their assets are in loans, with 45.4% in investments. Given these different asset allocations, investment-to-assets contribute significantly to the financial sustainability of FSCs rather than to SACCOs, whilst loans-to-investment ratio drive SACCOs' financial sustainability with no impact on FSCs.

Our documented evidence requires swift enhancement in efficiencies to reduce operating costs, credit risk and grants reliance whilst improving revenue generation through product diversification and embracing new innovative delivery channels that reduce transaction costs. The adoption of mobile money and strengthening of social ties will contribute to cost structure reduction, whilst at the same time adopting or strengthening the group lending approach to reduce the high credit risk. In addition, members need to be motivated and committed to work together for their individual and common benefit as co-operative enterprises are as strong as their members make them. Since the ultimate objective of financial sustainability is to help CFIs contribute effectively to the social impact of their members, one will wonder whether they are able to achieve their dual objectives of social and financial efficiency.

8.2.3 Social and financial efficiency of CFIs

The main objective of our study was to understand how financial co-operatives are attaining their dual objectives of social and financial efficiency. The study employed the bootstrapping data envelopment analysis (DEA) method to estimate the level of social and financial efficiency of our sample financial co-operatives. The results of the study indicate the average overall bias-corrected efficiency score was 44.8%, meaning that our CFIs are 55.2% inefficient or are producing 55.2% less outputs (loans, investment, financial revenue and outreach) given the level of inputs they currently use. Decomposing the overall efficiency into social and financial efficiency reveals that our CFIs are just 8.9% efficient, meaning their social impact is minor as there is a huge 91.1% social inefficiency given the level of resources currently being used. Only 12 of the DMUs are efficient above 50% which constitute only 5.8% of total CFIs, whilst the financial efficiency score averages 38.4% leaving 61.6% inefficiency in financial outputs, with 72 DMUs (35%) being efficient above 50%. Overall, only eight DMUs are socially and financially efficient above 50% which is less than 4% of the 206 observations.

Our results confirm that, for social enterprises such as financial co-operatives to achieve their social objectives they need to meet their financial goals first, that is, being financially sustainable. Further analysis results suggest that ROA, average savings per member and FSS have a significant positive contribution to efficiency. The allocation of nearly 38% of assets to financial investments reduces the chances of members having access to much needed credit to finance their economic activities that can contribute to improved incomes and help them to gradually escape from the trap of low productive and poverty. This asset allocation strategy works against the motives of CFIs which is to mobilize local savings and circulate them in their communities to promote sustainable local development. The current case is that the savings of the poor are flying away to the cities and earning a low rate of return of 8.5% as compared to 33.4% from loans which also affects financial efficiency. In addition, outreach is very low. Membership of CFIs has been on a decline over the years from nearly 60,000 in 2011 to around 30,000 in 2017, which is nearly a 50% reduction. However, financial efficiency although low has been improving from 31.6% in 2010 to 45.3% in 2017 whilst social performance declined from 12.3% in 2010 to 10.8% in 2017. Given these dynamics, the study finds it interesting to investigate the total performance dynamic over time (productivity).

8.2.4 Productivity change in CFI performance

In an endeavour to understand the total performance dynamics of the CFI industry in South Africa the study employed the DEA Malmquist Productivity Index to identify and understand

how the industry performance is regressing and progressing over time, and secondly, to understand the sources of that productivity change. Empirical findings show productivity regress of 3.9% annually, driven by the inability of CFIs to adopt industry best practices as shown by TECH regress of 12.3%, although TCH progressed by 9.1% annually. Worryingly, TFPCH has been on a decrease over the years since the period 2012-2013 without any sign of stagnation or rebound. On a balanced panel of 15 CFIs there was a productivity decline of 0.2% annually emanating from TECH regress whilst there was much progress in TCH. By CFI type, only CBs had an annual productivity gain of 3.2%, whilst SACCOs and FSCs experience TFPCH decline of 6.8% and 3% respectively, driven mainly by TECH (PTECH and SECH). Overall, the CFI industry needs to improve its managerial acumen, and scale optimization for full resources utilization especially in SACCOs and FSCs.

The bootstrap second stage regression results suggest that financial sustainability is very important in driving productivity growth and technological advancement in CFIs. Younger CFIs appear to be experiencing better productivity progress than mature ones, the same as in technological advance but not at a significant level. Growth in members also revealed as having positive influence on technological and productivity progress but not a significant level in the study period.

8.2.5 Qualitative performance drivers, inhibitors and the future of CFIs

Chapter Seven investigated the performance drivers and inhibitors in South Africa's CFIs by employing the Delphi method combined with SWOT analysis to gather experts' opinion and formulate informed growth strategies. Many issues were generated by our 36 experts over four rounds. The results of the survey suggest that the industry is suffering more from internal challenges than external threats. The major drivers identified are related to social capital, self-governance, need for economic empowerment and enabling policy environment, whilst inhibitors are low outreach, poor concept perception, deteriorating economic performance, poor governance and low technological diffusion in operations to enhance efficiencies and reduce operating costs.

The study also managed to identify future developments that need to be implemented for the growth of the industry. Six of the suggested strategy interventions are within the control or influence of the industry management: adoption of technology, quality leadership, marketing or CFI concept visibility, culture shift, environment and policy intervention to position the industry for sustainable growth. The study ended with a CFIs performance ecosystem that

contributes to the scholarly knowledge by identifying key drivers, inhibitors to performance and growth strategies to achieve high-performance growth.

8.2.6 Synthesis, implication of the findings and recommendations

The key results of the various chapters are synthesized in this section to highlight important areas that require managerial action to significantly improve the performance of the member-owned financial institutions to contribute meaningfully to their economic and social well-being. Our empirical research found out that the challenges affecting the CFI industry in South Africa are more internal than external. The findings reveal that financially unsustainable practices, managerial inefficiency, scale inefficiency, low technology diffusion, poor industry perception and weak supporting institutions are the major challenges hindering performance.

Financial sustainability challenges in the industry have a ripple effect on the attainment of social and environmental goals. First and foremost, management need to manage CFIs on a cost-recovery basis by charging market-based rates and finding cost-effective ways of delivering financial services to its members. This means the CFIs should be managed with a long-term view as a going concern by growing and preserving its capital base. In addition, management need to reduce their dependency on grants, by avoiding complacency or market-distortions with low priced credit from donor funding. The industry also needs to diversify its income streams by broadening financial product offerings by being an intermediary in insurance, funeral cover and payment services on behalf of its members which will also benefit from a range of services to help them cope with life shocks.

Critical managerial inefficiencies as evidenced by our findings are rampant and reducing them requires competent, qualified and experienced leadership. These skills can be developed by enrolling for college or university qualifications for management to be better equipped to provide effective leadership as most of the challenges are as a result of deficiencies in managerial capabilities or failure to reduce resource wastages. Addressing managerial challenges will enhance the ability of the CFIs to operate closer to their optimum capacity and attract more members as visible social and financial performance give potential members confidence to trust the organization with their hard-earned savings. Management should implement innovative technological and social ways to reduce their cost-to-income ratio which currently averages 143%, cost-per-member of R1,617 and credit risk at 10.1%. The cost structures are unsustainable and are a signal for potential insolvency. The adoption of new technologies as a means of improving operations and efficiency in resource utilization will

reduce operating costs. In theory CFI costs should be lower than those of traditional banks due to the existence of social capital which is hypothesized to reduce information asymmetry, transaction costs and default risk in people sharing the same common bond. Secondly, the group lending approach needs to be considered for community-based CFIs to mitigate against default risks.

Social or scale inefficiency in our sample is attributable to the small size of CFIs in terms of total members and savings. The situation is worsened as 38% of total assets is being invested in financial investment with only 48% circulating in local communities as loan disbursed back to members. The approach will negatively impact financial sustainability as annual returns on investments are 8.5% lower than the loan portfolio yield of 33.4% although there is a default risk of 10.1%. In the process members might not see the value proposition as they are denied loans to start or expand their economic activities. To eliminate the incidence of resource under-utilization in the industry, CFIs should reduce the amount they allocate into investments to not more than 10% for liquidity support purpose and lend back as much as possible. As already recommended in Chapter 7, the industry should reach out to the affluent section of the society for cost-hybridization of their long-term savings to be lent to the poor. This can be achieved when management provides a fair savings interest rate and the industry is financially sustainable. In addition, innovative channels such as mobile money and appropriate banking platforms that enhance efficiencies will assist in maintaining up-to-date financial records of members for timeous decisions.

Perception transformation in the mind of potential middle and working-class members that CFIs are the poorest people's bank will affect further growth. Achieving this requires not only an active campaign to potential members to improve the appreciation of what CFIs stand for and their value proposition but also support by their financial sustainability to win their confidence. As part of providing complete financial solutions, financial literacy programs are necessary for members to effectively manage their personal and household finances.

Strengthening of supporting institutions should be of importance to policy makers and industry management. Our research findings reveal that NACFISA, the representative body of the industry, is currently inactive, ill-structured and lacks a strong voice to advocate for the industry. Such lack of industry co-ordination is making the industry fragmented in terms of how to effectively engage with government agencies or policy makers. The situation is made worse due to a legal dispute between the CBDA and NACFISA where the CBDA was refusing

to accredit NACFISA as the representative body for the cooperative banking sector. Recently (May 2018) the Appeals Board of the Cooperative Banks settled the matter in favour of NACFISA to be registered by the CBDA as the legitimate representative board of CFIs in South. This is a welcome development at a time when major policy and regulatory developments in sector are taking place without the collective voice of the sector being heard. However, with such a strained relationship will have a short- to medium-term impact to effectively engage and co-ordinate for the growth of the industry. In addition, the industry needs to establish a secondary co-operative bank (SCB) to act as a bank-of-last-resort to the industry, where CFIs can put their financial investments knowing that such investments can be lent out to other CFIs experiencing short-term liquidity challenges. This will enhance the co-operative culture to be well established, making it easy again to attract other diverse co-operative enterprises to bank with CFIs. However, to effectively achieve this CFIs need to be technologically connected through the national payment systems to improve members convenience to financial solutions.

8.2.7 Contribution and limitations of the study

Overall, this thesis extends the literature focused on performance of member-owned community financial institutions. To the best of the author's knowledge, this thesis presents the first comprehensive assessment and evaluation of the co-operative finance industry in South Africa. The investigation and analysis undertaken in this thesis makes some major contributions to the empirical literature on co-operative financial institutions in the following ways.

First, the analyses in the thesis contribute to prior studies that examine performance in the broader context as well as prior studies that examine co-operative financial institutions efficiency and sustainability (see Martínez-Campillo and Fernández-Santos, 2017; Amersdorffer et al., 2015; Piot-Lepetit and Nzongang, 2014; Hartarska et al., 2012; Marwa and Aziakpono, 2015; Martínez-Campillo et al., 2016; Cull et al., 2007). These studies show that CFIs which are financially sustainable are better able to achieve good social performance as well. To be able to achieve these dual objectives, these studies recommend that operations be cost-effective through efficient delivery channels in the intermediation process. However, these studies did not examine the case of South African CFIs as their financials are not in the MIX database which is usually utilized by researchers conducting studies in this area. The findings of this thesis reveal that the CFI industry performance in South Africa is very low.

Second, the findings from this study also provide a better understanding of the *status quo* in terms of productive efficiency and evidence needed for making informed policies and decisions to achieve high performance growth of the industry so that it makes meaningful economic, social and environmental returns to its members and their communities. The study identified areas of strategic change starting with strong managerial competencies to effectively drive other important strategic options.

Third, a survey investigation through engaging co-operative finance experts provided better qualitative insights through gathering additional information that financial statements cannot reveal. This improved further our understanding of the operating environment and how it is contributing to the performance we are currently witnessing (Mushonga et al., 2018). Previous studies limited their analysis and based their recommendations on the findings generated from modelling the financial information only. Obtaining empirical evidence through quantitative and qualitative methods makes this study's contributions and recommendations holistic, unique and easily acceptable by management, practitioners and policy makers as they were actively engaged throughout the study. This increases the chances of the recommendations made by this study being implemented rather than it being seen as "*another academic research*" which will end up on the shelf and not on the tables of decision makers. Hence, the conclusions drawn from the empirical analysis are not limited to the secondary data only.

Despite the contributions enumerated above, this study suffers from certain limitations. Due to inadequate observations for co-operative banks on a sub-sample by legal status, a regression analysis could not be performed on them to understand what drives their financial sustainability. Hence, the conclusions drawn from empirical analysis are limited to an aggregate level and to the two sub-samples of FSCs and SACCOs only. Secondly, due to non-disclosure and classification of non-performing loans the current study employed the loan loss provisions in the balance sheets over gross loan portfolio as a proxy for credit risk. This could have over- or under-estimated the level of credit risk the industry is facing. The third limitation relates to the sample period. Due to data limitations, comparative analysis of the period before and after the CBDA supervision and regulation could not be undertaken. This could have been useful to assess the impact of the implementation of the regulation on the performance of the financial co-operatives across periods. Finally, the findings and recommendations from this research relates only to South African co-operative financial institutions. Hence, extrapolation of the findings to other financial co-operatives industries in Africa may be limited due to the

differences in operating environment, culture, historical background, development and regulatory framework.

8.2.8 Area for future research

The empirical analysis undertaken in this research seeks to serve as a catalyst to stimulate further academic inquiry into the co-operative finance industry. Future research should consider doing a comparative research pre- and post-CBDA regulation if five years pre-CBDA financial statements can be received from individual CFIs to properly appreciate the impact of regulation on their performance. This will enable regulatory specific recommendations to be drawn. Secondly, a case study on the best and worst performing CFIs could identify and understand the qualitative attributes that distinguish their performance and what worst performers can learn from that. Finally, the analysis employed in this paper could also be replicated for the agricultural co-operatives in South Africa, and markets in the nascent stage of development, learning as much as possible from the Kenyan market which is already in the transitional phase of development.

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