The Co-operative Credit Union Movement of Trinidad and Tobago

AN EVALUATION OF ITS FINANCIAL PERFORMANCE

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Overview

Stylised Facts

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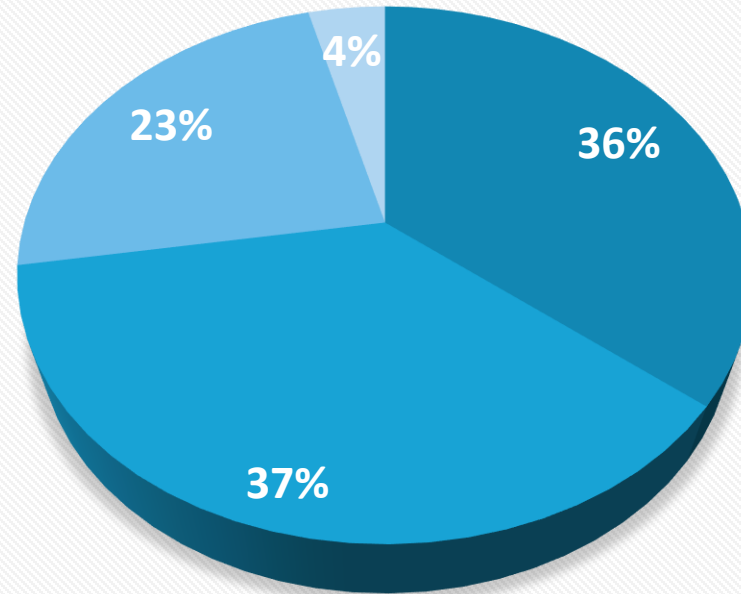
Conclusions

Stylised Facts

Credit Unions vis-à-vis the Financial System

Type of Institution	2005	2010	2011	2012
Central Bank	1	1	1	1
Commercial Banks	6	8	8	8
(Number of Branches)	(119)	(133)	(133)	(135)
Finance Companies and Merchant Banks	12	11	11	10
Trust and Mortgage Finance Companies	6	7	7	7
Development Banks	2	2	2	2
Credit Unions	129	131	131	131
Insurance Companies	59	31	33	31
Thrift Institutions	3	3	3	2
National Insurance Board	1	1	1	1
Trinidad and Tobago Stock Exchange	1	1	1	1
Trinidad and Tobago Unit Trust Corporation	1	1	1	1
Deposit Insurance	1	1	1	1

Credit Unions vis-à-vis the Financial System

Institution	2005	2010	2012
Central Bank	17.42%	22.77%	20.47%
Commercial Banks	28.71%	35.72%	36.58%
Nonbank Financial Institutions	11.73%	3.86%	2.78%
Credit Unions	**3.12%**	**3.18%**	**3.02%**
Life Insurance Companies	10.75%	8.94%	11.16%
Occupational Pension Funds	11.86%	9.78%	10.50%
Development Banks	1.09%	1.28%	1.24%
Thrift Institutions	0.03%	0.03%	0.03%
National Insurance Board	6.66%	6.65%	7.01%
Unit Trust Corporation	8.21%	7.23%	6.89%
Deposit Insurance Corporation	0.41%	0.55%	0.61%

Size and Concentration Characteristics 2012

Legend:
- Small (Under $10M)
- Medium ($10M to $99.9M)
- Large ($100M to $499M)
- Very Large ($500M & Over)

Pie chart values: 36%, 37%, 23%, 4%

Size and Concentration Characteristics 2012
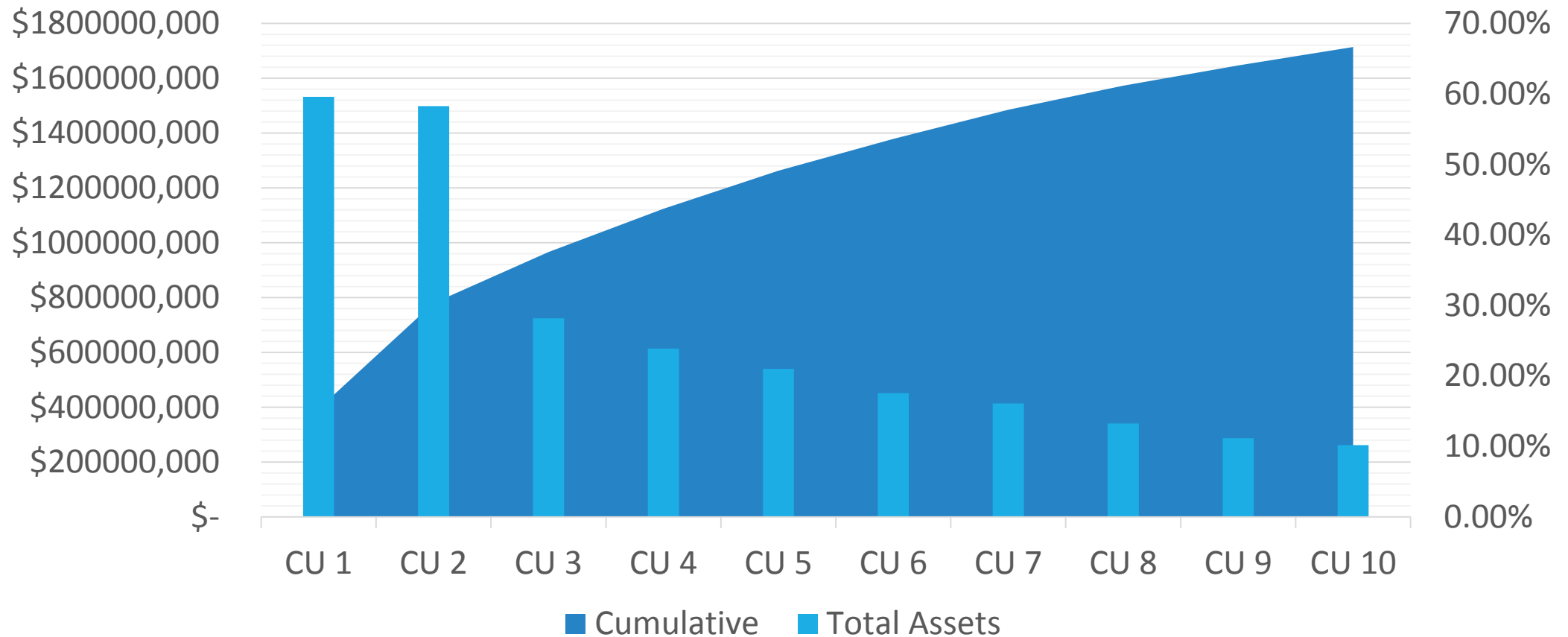
Financial Performance

P	• Protection
E	• Effective Financial Structure
A	• Asset Quality
R	• Rate of Return
L	• Liquidity
S	• Signs of Growth

Protection - Solvency (Net Value of Assets/Total Shares & Deposits)

Period	Standard of Excellence	Sector	CU 1	CU 2	CU 4	CU 5	CU 6	CU 9	CU 10	CU 11	Sample Average
Structural Adjustment (1990 - 1994)	≥ 111%	1	1	0	0	1	0	1	1	1	1
Economic Stabilisation (1995 - 2003)		1	1	0	1	1	1	1	1	1	1
Rapid Growth (2004 - 2008)		1	1	1	1	1	1	1	1	1	1
Economic Decline (2009 - 2012)		1	1	1	1	1	0	1	1	1	1

Effective Financial Structure – Institutional Capital

Period	Standard of Excellence	Sector	CU 1	CU 2	CU 4	CU 5	CU 6	CU 9	CU 10	CU 11	Sample Average
Structural Adjustment (1990 - 1994)	≥ 10%	1	1	0	1	1	1	1	0	1	1
Economic Stabilisation (1995 - 2003)		1	1	0	1	1	1	1	0	1	1
Rapid Growth (2004 - 2008)		1	1	0	1	1	1	1	1	1	1
Economic Decline (2009 - 2012)		1	0	0	1	1	1	1	1	1	1

Asset Quality – Loan Delinquency

Period	Standard of Excellence	Sector	CU 1	CU 2	CU 4	CU 5	CU 6	CU 9	CU 10	CU 11	Sample Average
Structural Adjustment (1990 - 1994)			1	1	0	1	0	0	1	1	0
Economic Stabilisation (1995 - 2003)	≤ 5%		0	1	0	1	0	0	1	0	0
Rapid Growth (2004 - 2008)			0	1	1	1	1	1	0	0	1
Economic Decline (2009 - 2012)			0	0	1	1	0	1	0	1	0

Liquidity - Liquid Assets - ST Payables / Total Deposits

Period	Standard of Excellence	Sector	CU 1	CU 2	CU 4	CU 5	CU 6	CU 9	CU 10	CU 11	Sample Average
Structural Adjustment (1990 - 1994)			1	0	0	1	0	0	0	0	0
Economic Stabilisation (1995 - 2003)	15-20%		1	0	0	1	1	1	0	0	1
Rapid Growth (2004 - 2008)			1	0	0	1	1	1	0	0	1
Economic Decline (2009 - 2012)			1	0	1	1	1	1	0	0	1

Literature Review

Theoretical Literature Review

Credit Unions are member owned financial cooperatives

Established among individuals having a common bond

Social and financial inclusion

"Not for profit, not for charity but for service

Theoretical Literature Review

"[the] very existence of credit unions presents problems for the economist's standard way of thinking. Individuals are supposed to maximize utility and firms are supposed to maximize profits, but in credit unions we have an entity that looks like a firm, but which does not appear to be a profit maximiser." **Gambs (1981, p552-553)**

Theoretical Literature Review

Early Literature

P.F. Smith (1971)

- Balancing members' interests
- Focus on the attainment of equilibrium in the distribution of benefits among borrowers and saver
- *"…accommodate(s) the largest number of borrowers at the lowest rate and…. Provide(s) outlets for the largest number of savers at the highest rate"* **Smith (1971)**

Contemporary Literature

Worthington (2004)

- Pre-existing ideological imperatives constrained
- Focus on cost minimization
- *"Increased competition from the entry of new market participants (e.g. mortgage specialists, insurance companies, etc.), has meant that management and regulators have increasingly shaped the objectives of credit unions towards a more commercial orientation"* **Worthington (2004)**

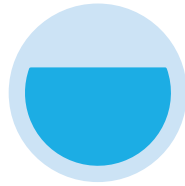# Development Typology, Ferguson and McKillop (1997,2000)
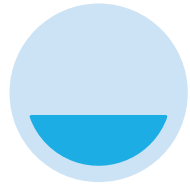
Nascent

Small Asset Size

High levels of structural and conduct regulation

Tight Common Bond

Heavy reliance on volunteers

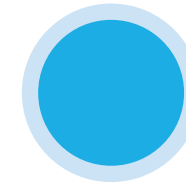Basic savings and loans products

Transition

Large asset size

Evolving regulatory and supervisory frameworks

Less common bond restrictions

Higher levels of product diversification

Less reliance on volunteers

Greater emphasis on efficiency and growth

Mature

Large asset size

Undergone structural and conduct deregulation

Increased prudential regulation

Loose common bond

Diversified product portfolios

Professionalisation of senior management

Adoption of electronic technologies

Deposit Insurance Scheme

Empirical Literature Review

Author(s)	Methodology	Sample	Main Findings
Croteau (1956)	Financial Ratio Analysis	103 US Credit Unions,1956	US credit unions exhibit increasing returns to scale
Adrien (1996)	Financial Ratio Analysis	80 OECS Credit Unions	Evidence in support of the existence of scale economies in credit unions of the OECS
Worthington (2000)	Data Envelopment Analysis	200 Australian credit unions, 1997	Most cost efficiency associated with allocative efficiency. Average credit union faced costs 30%> than what would be considered efficient based on observed best practice
Frame and Coelli (2001)	Stochastic Frontier Analysis	44 US credit unions, 1992-1997	91% are cost efficient, with those credit unions investing a greater proportion of their assets in the credit union stabilization fund being most efficient. Cost efficiency declines after the imposition of safety and soundness measures introduced by the regulator in 1995.

Methodology and Results

Methodology

Area	Selection
Sample	Panel dataset of 8 credit unions of the large and very large categories over the period 1989-2012
Objective Function	Cost Minimisation
Frontier Efficiency Measurement Approach	Translog Stochastic Cost Frontier Approach
Specification of Inputs and Outputs	Intermediation Approach

Translog Stochastic Cost Frontier

$$\ln TC_{it}^* = a_0 + \sum_{i=1}^{N} \alpha_i \ln P_{it}^* + \sum_{y=1}^{N} \alpha_y \ln Q_{yt} + \frac{1}{2} \sum_{i=1}^{N} \sum_{j=1}^{N} \beta_{ij} \ln P_{it}^* \ln P_{jt}^* + \sum_{i=1}^{N} \sum_{y=1}^{N} \beta_{iy} \ln P_{it}^* \ln Q_{yt} + \frac{1}{2} \sum_{y=1}^{N} \sum_{z=1}^{N} \beta_{yz} \ln Q_{yt} \ln Q_{zt} + u_{it} + v_{it}$$

Where t = 1, …, T time periods and i= 1,…, N credit unions.

input prices and output quantity are represented by P_{it} and Q_{it}

$TC_{it}^* = TC_{it}/P_{kt}$, $Pit^* = P_{it}/P_{kt}$ and $P_{jt}^* = P_{it}/P_{kt}$

u_{it} and v_{it} represent the cost efficiency term and the disturbance term.

Input Output Specification

Variable	Name	Definitions
Cost	Total Cost	Total operating and interest expenses
loans	Unclassified Loans to Members	Sum of personal, vehicle, property and other loans
invest	Total Investments	Sum of short-term investments and long-term investments
psav	Price of Deposits	Interest paid on members' deposits divided by members' deposits
pcap	Price of Capital	Sum of physical capital expenditures divided by net book value of total office premises and equipment
plab	Price of Labour	Total personnel expenses divided by the total number of full time employees

Maximum Likelihood Estimates of the Single Input Single Output Translog Cost Function

Variable	Parameter	Estimate	Std. Error	Pr(>|z|)	Sig
(Intercept)	α_0	0.7958	1.1654	0.4947	
log(loans)	α_1	-1.1784	0.3911	0.0026	**
log(plab/psav)	α_2	2.7087	0.7398	0.0003	***
I(0.5 * log(loans)^2)	β_{11}	0.2308	0.0465	0.0000	***
I(log(loans) * log(plab/psav))	β_{12}	-0.2583	0.0671	0.0001	***
I(0.5 * log(plab/psav)^2)	β_{22}	0.3114	0.1074	0.0037	**
sigmaSq	σ^2	0.2308	0.0792	0.0036	**
gamma	γ	0.8230	0.0349	0.0000	***
mu	μ	0.8716	0.3398	0.0103	*
time	t	0.0172	0.0036	0.0000	***
log likelihood value: 11.83374					
mean efficiency: 0.3245972					

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					

Likelihood Ratio Test of the Single Input Single Output Translog Cost Frontier

Model 1: OLS (no inefficiency)						
Model 2: Error Components Frontier (ECF)						
	#Df	LogLik	Df	Chisq	Pr(>Chisq)	
1	7	-113.414				
2	**10**	**11.834**	**3**	**250.5**	**0.00**	*******

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						

Results

	1990	1995	2000	2005	2010	2012
Mean	**0.3920**	**0.3801**	**0.3505**	**0.3212**	**0.2924**	**0.2644**
CU 1	0.3580	0.3454	0.3140	0.2831	0.2528	0.2236
CU 2	0.3169	0.3044	0.2737	0.2437	0.2148	0.1872
CU 4	0.6095	0.5990	0.5722	0.5443	0.5155	0.4858
CU 5	0.2526	0.2408	0.2119	0.1845	0.1586	0.1345
CU 6	0.2853	0.2731	0.2431	0.2142	0.1866	0.1606
CU 9	0.6017	0.5911	0.5639	0.5358	0.5067	0.4768
CU 10	0.2999	0.2875	0.2572	0.2277	0.1995	0.1727
CU 11	0.4119	0.3994	0.3679	0.3364	0.3051	0.2744
Maximum	0.6095	0.5990	0.5722	0.5443	0.5155	0.4858
Minimum	0.2526	0.2408	0.2119	0.1845	0.1586	0.1345
St. Dev	0.1312	0.1319	0.1331	0.1334	0.1328	0.1313

Likelihood Ratio Tests of Constrained Translog Cost Frontier

	#Df	LogLik	Df	Chisq	Pr(>Chisq)	
Model 1: cobbDouglasHOM1						
Model 2: translogHOM1						
1	7	106.553				
2	10	11.834	3	189.44	0.00	***

Model 1: translog1						
Model 2: translogHOM1						
1	10	51.009				
2	10	11.834	0	78.35	0.00	***

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Conclusions

Conclusions

Credit Unions investigated demonstrated unmistakeably the capacity to protect members' deposits.

The financial structure of credit unions investigated revealed a gradual change in asset composition over the twenty three year period. The proportion of assets held as loans gradually decreased while the proportion of assets held in long-term financial investments progressively increased.

Conclusions

Though the sample of credit unions faced challenges in maintaining short-term investment liquidity in the structural adjustment period, the average for the sample during the periods of stabilisation, rapid growth and decline demonstrated that these credit unions had the capacity to respond to member-client withdrawal and disbursement demands.

Average levels of delinquency only met the prudential criteria during the period of rapid growth, which was indicative of the countercyclical relationship between delinquency and the economic cycle.

Conclusions

Over the period 1989 – 2012, the average large or very large credit union faced costs 33%> than what would be considered efficient based on observed best practice

Through improvements in management, the increased usage of computers in credit union operations, the adoption of electronic technologies and increased hiring of qualified personnel, the levels of efficiency of the credit unions increased steadily over the 24 year period.

Thank you!

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