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A new database on financial services cooperatives: description and first results

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Abstract

This paper describes the new database of the International Observatory of Financial Services Cooperatives (FSCs) set up by the Desjardins Center for Studies in Management of FSCs located at HEC-Montreal. The database covers 38 FSCs with 70 data fields per year over a period of 8.8 years on average. A cross sectional analysis of the data for 2010 shows significant differences between large and small FSCs, but similar levels of profitability nonetheless. A time series analysis of eight large FSCs over the period 2001-2010, reveals the behavior of four key financial indicators through this turbulent decade.

Keywords

database, cooperatives, financial services, financial characteristics, size.

Introduction

It is a well known fact that financial services cooperatives (FSCs), not being listed on exchanges, are often excluded from major financial databases and that research on them is consequently hampered by this lack of data availability. It is in this context that the Desjardins Center for Studies in Management of Financial Services Cooperatives based at HEC-Montreal has taken the task, several years ago, of setting up the International Observatory on Financial Services Cooperatives (IOFSC). The IOFSC consists of two major parts: a financial database and a virtual library, which complement each other. The virtual library is, as its name suggests, a collection of documents on FSCs, which include their annual reports. The database, on the other hand, consists, of numerical data fields readily available for statistical and econometric processing. Together the database and the virtual library represent a wealth of information to conduct research on FSCs. The purpose of this paper is to describe the content of the database of the IOFSC and to report on the first results of research.

Accordingly, the paper will proceed in two parts. In part one, it will describe the database mainly according to its three dimensions, which are the institutions covered, the data fields used for each institution, and the time dimension, which is the periodicity and historical depth of the data. Also, the distribution of FSCs according to asset size will be examined and the overall economic significance of the FSCs included in the database will be presented. In part two, two types of analysis will be reported. Firstly, a cross section analysis of the 2010 data will contrast the structure and performance of small versus large FSCs. Moreover, the profitability of small and large FSCs will decomposed to identify their relative strengths. Secondly, a time series analysis, over the period 2001-2010, of eight of the largest FSCs will be conducted based on four financial indicators of value creation. The data will show how this turbulent decade affected these major FSCs.

1. Description of the database of the IOFSC

The database of the IOFSC will be described according to its three dimensions, which are the institutions covered, the data fields used for each institution and the time dimension, which consists of the periodicity and historical depth of the data available. Moreover, the distribution of FSCs according to asset size will be examined and the overall economic significance of the FSCs included in the database will be presented.

1.1 The institutions covered in the database

Overall, the database includes 38 Financial Services Cooperatives, based in 26 different countries, which have been grouped in 6 different regions. Figure 1 below shows the distribution of FSCs according to countries and regions. Clearly, the majority (23) are located in Western Europe.

Region	Countries	Institutions
Eastern Europe	4	4
North Africa	1	1
North America	2	6
South America	2	3
Asia	1	1
Western Europe	16	23
Total	26	38

Figure 1: Geographical distribution of institutions (FSCs)

A few words need to be said about the number of institutions included, the German cooperatives DZ and WGZ are reported as separate entities but they are also included in the group BVR. Also, American credit unions which are in the order of 7 500 different organizations could not be included separately, but are integrated as one unit identified as NCUA (National Credit Union Association). This being said, the Navy Credit Union is reported individually, although it is also part of the NCUA. Finally, the data for Sicredi end in 2007. So, these facts taken into account, there are 34 independent FSCs in the database. Annex 1 presents the complete list of institutions included in the database.

1.2 Data fields per institution (FSC)

Seventy different data fields are used to describe a FSC. These are broken down into 6 categories, namely general institutional information, balance sheet, income statement, statement of changes in equity, statement of cash flow and other financial information. Figure 2 below shows the number of data fields for each of these 6 categories of information. Annex 2 presents the complete list of data fields used in the database.

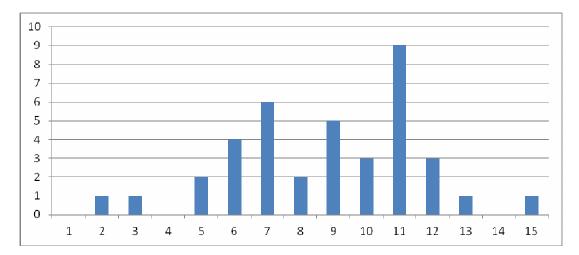
Figure 2: Data fields per institution

GENERAL INSTITUTIONAL INFORMATION	8
BALANCE SHEET	21
STATEMENT OF INCOME	16
STATEMENT OF CHANGES IN EQUITY	7
STATEMENT OF CASH FLOWS	4
OTHER FINANCIAL INFORMATION	14
TOTAL	70

1.3 Time dimension

The time dimension consists of the periodicity and historical depth. The periodicity used in the database is annual. The historical depth varies according to each institution. Figure 3 below shows the distribution of institutions according to the number of years of data available.

Figure 3: Distribution of FSCs by the number of years of data available



As can be seen, the number of years of data varies from 2 years to 15 years with an average 8.8 years per institution. Figure 4 shows the cumulative distribution.

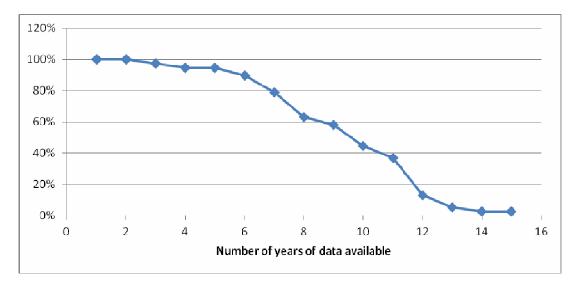


Figure 4: Cumulative distribution of institutions by number of years of data available

This distribution reveals that 5 years of data are available for 95% of institutions in the database, on the other hand only 45% of institutions have 10 years or more of data. Major efforts will be made to complement the database such as to have 10 years of data for most institutions.

1.4 Distribution of institutions according to asset size

The FSCs covered in the database vary considerably in asset sizes, the largest being Credit Agricole from France having 1 730 billion Euro and the smallest Panellinia from Greece having 963 million Euro; the ratio of the largest to the smallest is 1 795 times, which shows the great disparity in sizes. Figure 5 presents the distribution of institutions according to asset size from the smallest to the largest.

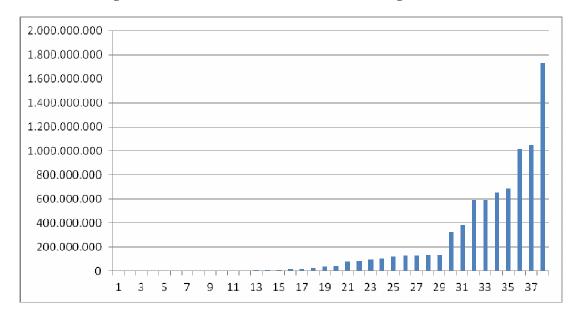


Figure 5: Distribution of institutions according to asset size

Although the wide range of sizes may cause difficulties regarding statistical analysis, at least the data base is representative of the diverse reality of FSCs.

1.5 Economic significance of institutions covered in the database

Figure 6 below summarizes various aggregate measures for the institutions covered in the database. Several measures, be it their 7 750 billion Euro in assets, or their 140 million members or their more than 1 million employees show clearly that FSCs represent a very significant economic force. Moreover, the average total capital BIS ratio of 14% of 24 largest FSCs also demonstrates their financial strength.

Overall, the database of the IOFSC can be viewed as a three dimensional matrix of 38 institutions, each described by 70 data fields over an average historical period 8.8 years. Further examination has shown that it covers a wide spectrum of institutions in terms of size and that taken altogether these institutions constitute a very significant economic force. The paper will now present the first result of our research on this database.

Figure 6: Summary data of FSCs included in the database

Item	Total	Nb Obs.
Number of institutions	38 (34)*	-
Number of institutions-years	335	-
Number of years per institution	8,82	
Total Assets (Thousand Euro)	7 750 963 430	34
Net profit (Thousand Euro)	27 079 284	34
Return On Asset %	0,45%	34
Return On Equity %	6,88%	34
Cost to income ratio %	69,81%	34
Tier 1 capital BIS %	12,93%	20
Total capital BIS %	14,06%	24
Number of employees	1 075 384	26
Number of members	140 817 589	18

^{*}Excluding institutions that are part of other institutions

2. First results of research

Two types of analysis were performed on the database: a cross section analysis on the 2010 data and a time series analysis on the period 2001-2010 on eight large FSCs. The results of these will now be presented.

2.1 Cross section analysis on 2010 data

The cross section analysis tried to examine if there were significant differences either in financial structure or financial performance between small and large FSCs. Looking at the distribution according to asset size, it was decided to divide the FSCs in two groups according to whether they had assets smaller or bigger than 50 billion Euro. This criterion was chosen because of the significant gap between the largest small FSC (ÖVG 46 B Euro) and the smallest large FSC (Cooperative Financial Services UK 81 B Euro), leading to a ratio of 1.76 from one to the other which could be viewed as some kind of «local discontinuity». Also, it created two groups approximately equal in numbers, ie 18 vs 15. Financial structure was mainly characterized by the asset structure, the liability structure and the income structure. Financial performance was mainly characterized by profitability (ROA and ROE), productivity (cost to income ratio, risk as proxied by the provision for loan losses, capitalization and growth). Figure 7 shows the average values of various ratios for the small and large FSCs, together with a t-test on these means.

One must observe that most financial indicators are not significantly different between small and large FSCs as they have been defined. However, four financial ratios show significant differences. The ratio of deposits to assets is 75.8% for small FSCs which significantly greater than the 57.2% for large FSCS, indicating that small FSCs rely more on deposits to finance their assets. It is noticeable that the loan to asset ratios of the two groups are almost identical being 59.0% and 60.3% respectively. The second significant difference lies in the other income to total income ratio, which is 14.5% for small FSCs and 22.97% for large FSCs, showing that larger FSCs have more diversification in their financial services and thus are able to generate a larger share of fee income. The third ratio that differs between the two groups is the ratio of income to assets, which is 6.45% for the small FSCs and 4.43% for the large FSCs showing that small FSCs had a better productivity of assets in 2010. Finally, the two groups also differ in 2010 with regards to asset growth, which was 10.44% for small FSCs and only 5.90% on average for large FSCs.

Figure 7: Differences in financial characteristics of small versus large financial services cooperatives

Size group		Assets < 5	0 B€		Assets > 5	0 B€		Dif	ference	
Financial ratio	Nb	Mean	Std dev	Nb	Mean	Std dev	Absolute	Relative	T-test	Significance
Deposits / Assets	18	75,8%	22,5%	15	57,1%	11,9%	18,7%	24,6%	0,0052	***
Loans / Assets	18	59,0%	15,7%	15	60,3%	16,3%	-1,3%	-2,1%	0,8234	
Net Income / Total Income	17	8,4%	14,0%	15	8,8%	4,2%	-0,4%	-5,3%	0,9029	
Other Income / Total Income	18	14,5%	10,4%	15	23,0%	13,9%	-8,5%	-58,4%	0,0628	*
ROA	17	0,5%	0,8%	15	0,4%	0,2%	0,1%	25,2%	0,5528	
ROE	17	7,3%	9,0%	15	6,1%	3,4%	1,2%	15,9%	0,6272	
Provision for Credit Losses (BS) / Loans	13	3,1%	2,8%	10	3,0%	3,1%	0,1%	1,8%	0,9654	
Provision for Loan Losses (IS) / Loans	17	0,9%	1,2%	15	0,5%	0,5%	0,4%	44,3%	0,2240	
Asset growth	18	10,4%	11,6%	15	4,9%	5,9%	5,5%	52,7%	0,0903	*
Total Income growth	18	0,4%	11,6%	15	-5,3%	12,6%	5,7%	1 387,6%	0,1939	
Tier 1 capital ratio (BIS)	8	11,7%	2,1%	14	11,4%	3,0%	0,3%	2,6%	0,7854	
Total capital ratio (BIS)	10	13,5%	2,6%	14	13,7%	3,2%	-0,1%	-1,1%	0,9039	
Equity / Assets	18	7,9%	3,6%	15	6,3%	1,8%	1,6%	20,0%	0,1087	
Cost / Income	18	67,2%	24,9%	15	66,0%	6,9%	1,2%	1,7%	0,8524	
Income / Asset	18	6,4%	4,2%	15	4,1%	1,5%	2,3%	36,4%	0,0400	**

Levels of significance: *** 1%, ** 5%, * 10%

We conclude noticing that there were no significant differences between the two groups relative to the cost to income ratio or the return on equity ratio, leaving us to conclude that both groups had similar profitability. However, we now turn to examine profitability in more details.

Figure 8 presents the well known Dupont decomposition of return on equity as the product of three ratios namely: net income to total income, total income to assets and assets to equity. Statistically, none of these four ratios are significantly different between the two groups. Nonetheless, we have shown the relationships between the values for the groups in the fourth column of the table. Summarizing the situation, one could say that the small FSCs had a slightly better ROE mainly because of their better asset productivity and despite their lower leverage. Overall, one could conclude that both groups achieved quite similar profitability for their members, although with different combinations of factors.

Figure 8: Decomposition of profitability with the Dupont model

Data for 2010	<50G€	>50G€	
Nb Institutions	18	15	
Net income / Total income	8,37%	8,81%	<
Total income / Total assets	6,45%	4,10%	>
Net income / Total Assets (ROA)	0,54%	0,36%	>
Total assets / Equity	12,66	15,83	<
Net income / Equity (ROE)	7,31%	6,15%	>

Altogether the comparison of small and large FSCs on the data of 2010 showed that there were some significant differences between the two, namely with regards to the liability structure, the income structure, the productivity of assets and asset growth. Relative to profitability, both groups achieved basically similar values, but using different combination of factors, larger FSCs using more leverage in general. Overall, this leads us to believe that both groups of FSCs have different business models but deliver similar financial performances to their members.

2.2 Time series analysis 2001-2010 of eight large FSCs

To perform a time series analysis over the period 2001-2010, eight large FSCs were selected. Figure 9 below identifies them.

Figure 9: List of eight large FSCs selected for time series analysis

No	Name	Symbol	Assets
1	Crédit Agricole	CA	1 730
2	Bundesverband der Deutschen Volksbanken und Raiffeisenbanken	BVR	1 017
3	National Credit Union Association	NCUA	698
4	Rabobank	RABO	652
5	Crédit Mutuel	CM	591
6	Raiffeisen Bankgruppe	RZB	136
7	Desjardins	DJRDS	129
8	Grupo Banco Popular	GBP	129

^{*}Assets measured in billion Euro.

To analyze their financial evolution, four key financial indicators linked to value creation were chosen, namely: return on equity (ROE), provision for loan losses (PLL), total capital ratio (BIS) and asset growth. Figure 10 and 11 show respectively the means and the standard deviations of the four financial indicators over the period 2001-2010.

The decade can be roughly divided in three phases: before, during and after the financial crisis. Before the crisis, high levels of asset growth were achieved (16.1% in 2005) and also of return on equity (11.5% in 2006). During the crisis of 2008 and immediately after, the lowest ROE was reached (3.8% in 2008), the lowest rate of growth (2.1% in 2009) and the highest level of provision for loan losses (1.0% in 2009). The year 2010 can be considered as the beginning of the recovery. FSCs have pushed their total capital ratio to its highest value at 13.5%, return on equity has improved at 7.6%, provision for loan losses have decreased to 0.6%, but asset growth have remained low at 2.2%. Thus, the impact of global financial conditions on these eight large FSCs shows a clear and strong pattern.

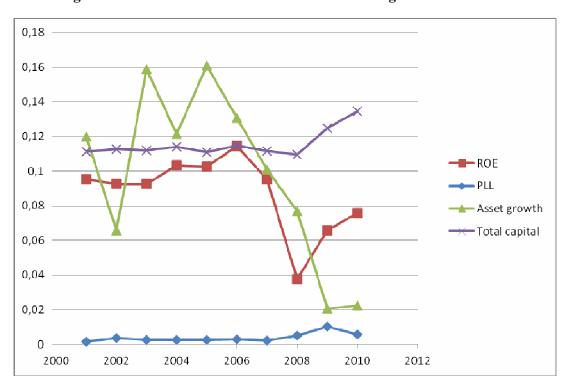


Figure 10: Means of 4 financial indicators for 8 large FSCs 2001-2010

Moreover, it is interesting to examine also the dispersions of values from the mean along this economic cycle. Before the crisis, dispersion from the mean was highest in 2003 for asset growth and in 2006 for return on equity. On the contrary dispersion was low with regard to provision for loan losses and the total capital ratio. In 2010, after the crisis, dispersion from the mean is now low for return on equity and asset growth, but is relatively high for provision for loan losses and the total capital ratio. Thus, a reversal can be observed in dispersions from before to after the financial crisis.

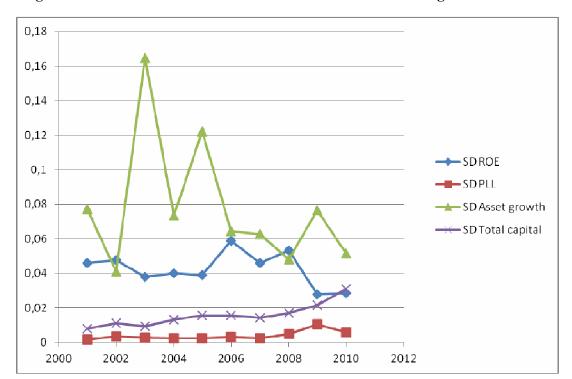


Figure 11: Standard deviations of 4 financial indicators for 8 large FSCs 2001-2010

Conclusion

The database which is part of the International Observatory on FSCs provides a unique resource to conduct research. With 38 institutions described by some 70 data fields over an average period of 8.8 years, the database covers a wide range of cooperative institutions from all over the world. The database is continuously updated and will continue to grow both in terms of the number of institutions covered and of historical depth.

Preliminary analysis of the data has shown that in 2010 there were significant differences both in the structure of liabilities and the structure of revenue between small and large FSCs. However, although the two groups seem to have different business models, both were able to deliver similar performances in terms of return on equity to their members.

Also, the time series analysis of eight large FSCs during the 2001-2010 period, revealed that after the financial crisis of 2008, these FSCs are in a recovery process with increasing return on equity, decreasing provisions for loan losses, increasing total capital ratio significantly but maintaining a rather low rate of asset growth.

Further research will explore how FSCs can be grouped in homogeneous sets using clustering techniques. Finally, canonical correlation analysis will be used

to examine the potential relationships between financial structure and financial performances of FSCs.

Overall, the new database of the IOFSC is offering promising opportunities to conduct research on FSCs and eventually better understand the uniqueness and contribution of these institutions to the financial system.

Reference

International Observatory of Financial Services Cooperatives

http://observatoire.coopfinance.hec.ca/index.html

Annex 1: Financial Services Cooperatives included in the database of the OIFSC

					Assets
Institution	Country	Region	Last year	# years	(Tho Euro)
Crédit Agricole	France	Western Europe	2010	11	1 730 846 000
BPCE	France	Western Europe	2010	3	1 048 442 000
BVR	Germany	Western Europe	2010	9	1 020 313 000
NCUA	USA	North America	2010	11	689 519 175
Rabobank	Netherlands	Western Europe	2010	12	652 536 000
Credit Mutuel	France	Western Europe	2010	9	591 309 000
Norinchukin	Japan	South-East Asia	2010	10	590 818 333
DZ Bank	Germany	Western Europe	2010	10	383 464 000
Cresol	Brazil	South America	2010	2	326 491 713
RZB	Austria	Western Europe	2010	11	136 496 764
Banco Popolare	Italy	Western Europe	2010	5	135 155 672
UBI Banca	Italy	Western Europe	2010	6	130 558 569
Grupo BP	Spain	Western Europe	2010	11	130 139 846
Desjardins	Canada	North America	2010	15	126 199 546
Raiffeisen	Switzerland	Western Europe	2010	9	106 671 759
WGZ Bank	Germany	Western Europe	2010	9	94 081 300
Op-Pohjola	Finland	Western Europe	2010	12	83 969 000
CFS	UK	Western Europe	2010	7	80 866 828
OVAG	Austria	Western Europe	2010	11	46 464 844
Halkbank	Turkey	Eastern Europe	2010	10	36 577 450
Navy	USA	North America	2009	13	28 415 620
Groupe BP	Morocco	North Africa	2010	11	19 325 297
Grupo CA	Portugal	Western Europe	2010	5	14 224 102
Vancity	Canada	North America	2010	12	10 598 612
ICBPI	Italy	Western Europe	2010	11	6 894 937
Landshypotek	Sweden	Western Europe	2010	6	6 727 360
Raiffeisen	Luxembourg	Western Europe	2010	6	5 868 354
CCB	Cyprus	Western Europe	2010	6	4 507 005
BPS Bank	Poland	Eastern Europe	2010	7	4 143 912
Meridian	Canada	North America	2010	7	3 927 281
Sicredi	Brazil	South America	2007	8	3 242 451
BCCL	Argentina	South America	2010	8	2 764 835
SDA	Denmark	Western Europe	2010	7	2 037 947
Banque CPH	Belgium	Western Europe	2010	11	1 824 086
Alterna	Canada	North America	2010	7	1 587 809
CCB	Bulgaria	Eastern Europe	2010	11	1 168 310
Dezelna	Slovenia	Eastern Europe	2010	7	1 024 341
Panellinia	Greece	Western Europe	2010	9	963 744

Annex 2: Data fields of the database of the IOFSC

GENERAL INSTITUTIONAL INFORMATION	
Number of members	Number of managers
Number of clients	Number of primary units
Number of elected directors	Number of service centers
Number of employees	Number of automated teller machines (ATM)
Unit of account	
BALANCE SHEET	STATEMENT OF INCOME
Cash and equivalents (\$)	Interest income (\$)
Securities and other investments (\$)	Interest expense (\$)
Total net loans (\$)	Net interest income (\$)
Land, buildings and equipment (\$)	Other income (\$)
Intangible assets and goodwill (\$)	Total income after interest expense (\$)
Other assets (\$)	Provisions for credit losses (\$)
FSC's total assets (\$)	Non-interest expense (\$)
Total deposits (\$)	Operating income (\$)
Provisions (\$)	Income taxes (\$)
Subordinated debt (\$)	Net income before extraordinary item (\$)
Other borrowings (\$)	Extraordinary item (\$)
Other liabilities (\$)	Net income before non-controlling interest (\$)
Minority interests (\$)	Non-controlling interest (\$)
FSC's total liabilities (\$)	Net income available to members and
The stotal facilities (4)	shareholders (\$)
Preferred shares (\$)	Patronage allocations (\$)
Members' and other shareholders' capital (\$)	Sponsorships, donations and scholarships (\$)
Retained earnings (\$)	STATEMENT OF CHANGES IN EQUITY
Reserves (\$)	Issuance of preferred shares (\$)
Other elements of the capital (\$)	Issuance of ordinary shares (\$)
Equity (\$)	Variation of share capital (\$)
Liabilities and equity (\$)	Variation of retained earnings (\$)
OTHER ELEMENTS	Variation of reserves (\$)
Investments and loans	Other variation (\$)
Residential mortgage loans (\$)	Variation of equity (\$)
Personal loans (\$)	STATEMENT OF CASH FLOWS
Business loans (\$)	Cash flows from operating activities (\$)
Investments and loans in other financial institutions (\$)	Cash flows from financing activities (\$)
Cumulative provision for credit losses (\$)	Cash flows from investing activities (\$)
Deposits	Net variation of cash and cash equivalents (\$)
Individual deposits (\$)	RATIOS
Business deposits (\$)	Capitalization
Deposits from other financial institutions (\$)	Tier 1 capital ratio (BIS) (%)
Capitalization	Total capital ratio (BIS) (%)
Tier 1 capital (BIS) (\$)	Profitability
Total capital (BIS) (\$)	Return on equity (ROE) (%)
	Productivity ratio (%)
	1 roductivity ratio (70)

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