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Size and Sector Effects in the Performance of Agricultural Cooperatives: The Case of Georgia

ISET MA Program in Economics
Policy Institute

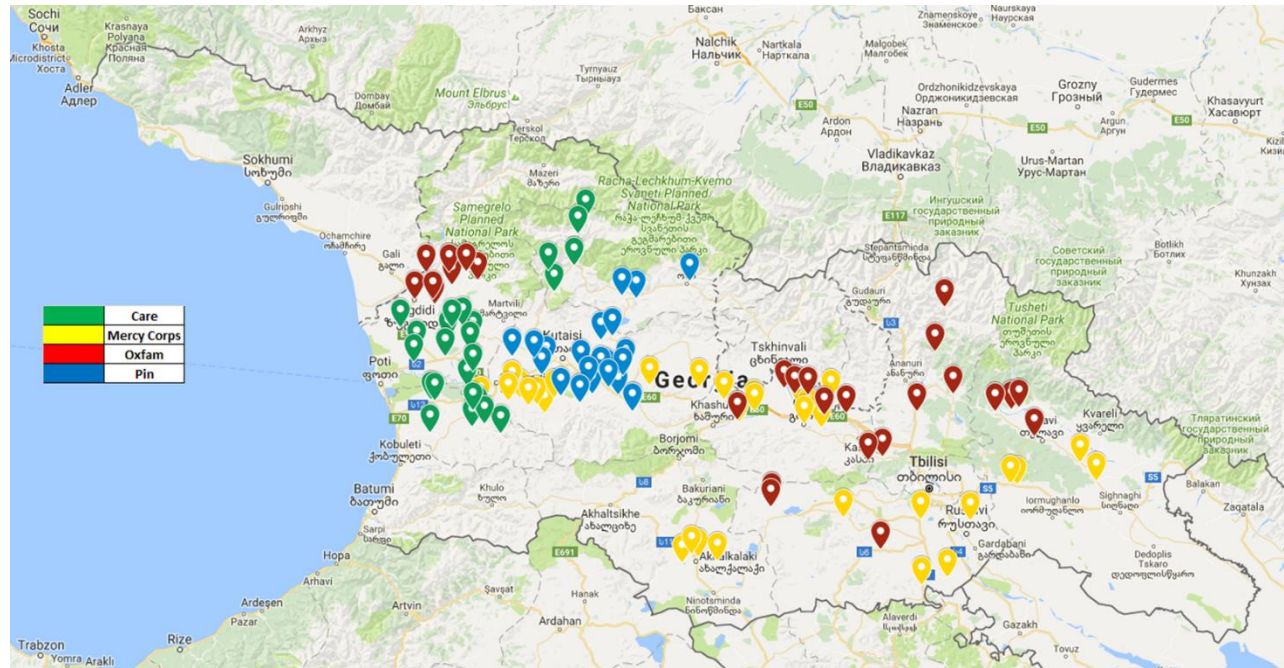
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at **ISET** Policy Institute

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Introduction

- Georgia is a small country with the total population of 3.7 million (Geostat, census 2014);
- Employment in agriculture was about 47% in 2015, though the share of agricultural output in total GDP was 9.2% in the same year (Geostat);
- According to the 2014 Census of Agriculture, there are 574.1 thousand agricultural holdings in Georgia:
 - 2,200 - legal entities (average farm size is 49.1 ha)
 - 571,900 - households (with the average farm size of 1.2 ha).

Introduction

- July 2013, elaborated Law on Agricultural Cooperatives;
- Established the Agricultural Cooperative Development Agency (ACDA) under the Ministry of Agriculture of Georgia;
- For now, there are **1650** registered agricultural cooperatives in Georgia;
- Besides state, the agricultural cooperative development is supported by European Commission to Georgia (**ENPARD project** – European Neighborhood Programme for Agriculture and Rural Development);
- In addition, some particular sub-sectors of agriculture have been supported by the government: dairy, beekeeping and hazelnut cooperatives (ACDA, 2016); In addition, gov't encourages enlargement of cooperatives.

Objectives of the Study

- To identify if there are important size and sector effects in the financial performance of agricultural cooperatives in Georgia.
 - Inspired by Lerman and Parliament (1991)

General Goal of the Research:

- Track the development of ENPARD supported cooperatives;
- Understand what works (and what doesn't) with regard to supporting the development of cooperatives.

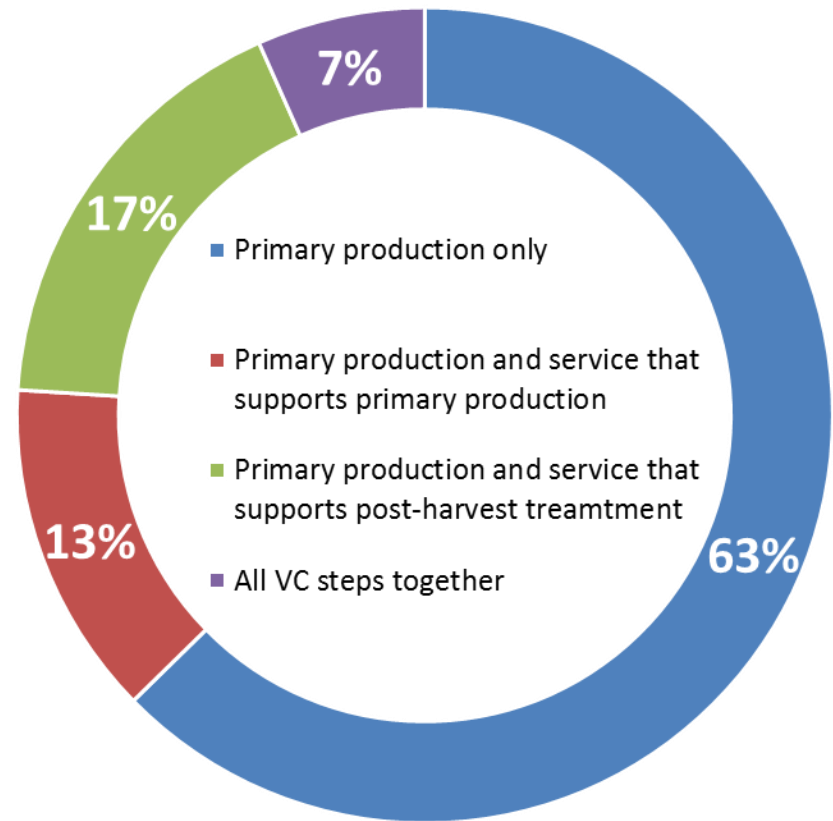
Method and Data

- This work is based on the database collected from the ENPARD supported cooperatives. The project is implemented by four consortia of International Non-Governmental Organizations: Care, Oxfam, Mercy Corps and People in Need (PIN).
 - The questionnaire was developed with the involvement of all consortia
 - Each consortium collects data by itself and submit to ISET
- We analyzed cross-section data (2015) of **75** cooperatives which got support (financial and technical) under ENPARD project (either in 2014 or in 2015 – very new established cooperatives)

Method and Data

- Among 75 cooperatives top sub-sectors are:
 - Apiculture (14)
 - Potato (9)
 - Viticulture (8)
- Average number of members per cooperative is **9.72**
- Biggest cooperative has 32 members and the smallest - 3 members

Cooperative Involvement in the Value Chain



Method and Data

In order to measure financial performance of cooperatives we calculated financial ratios measuring:

- efficiency
- profitability

Efficiency	$\text{Turnover Ratio} = \frac{\text{Total Income}}{\text{Total Assets}}$
Profitability	$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}}$

Method and Data

Main Statistics of the Instruments Used for Calculating Financial Ratios

	Minimum	Mean	Median	Maximum	Total Amount	# of Cooperatives
Net Income	(25,000)	20,547	13,000	151,305	1,611,645 (70,595)	67 (8)
Total Income	0	77,573	25,000	2,318,200	5,817,972	75
Total Assets	5,000	87,525	72,651	632,601	6,564,365	75

Note: calculations are made in Georgian Lari (GEL). 1 USD = 2.4 GEL (30/10/2016)

Method and Data

We divided agricultural cooperatives in two groups, based on asset value:

- small
- large

Also, we formulated three groups in terms of sector:

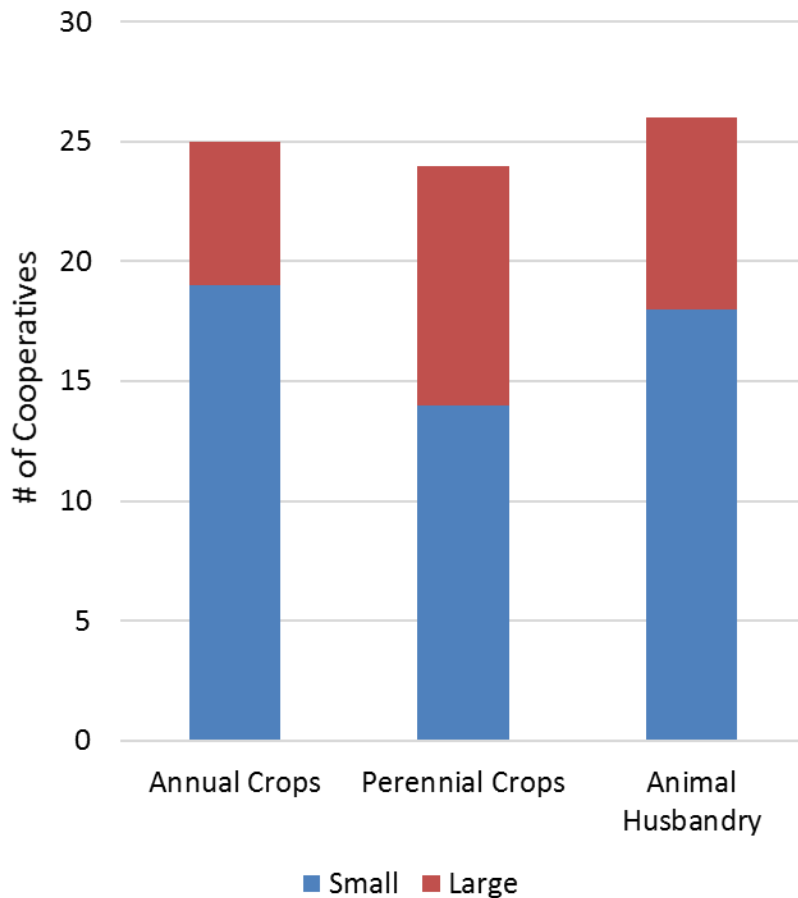
- annual crops
- perennial crops
- animal husbandry

Differentiation by Size	# of cooperatives
Small	51 (68%)
Large	24 (32%)
* As a threshold we used mean value of total assets calculated with agglomerative cluster analysis	

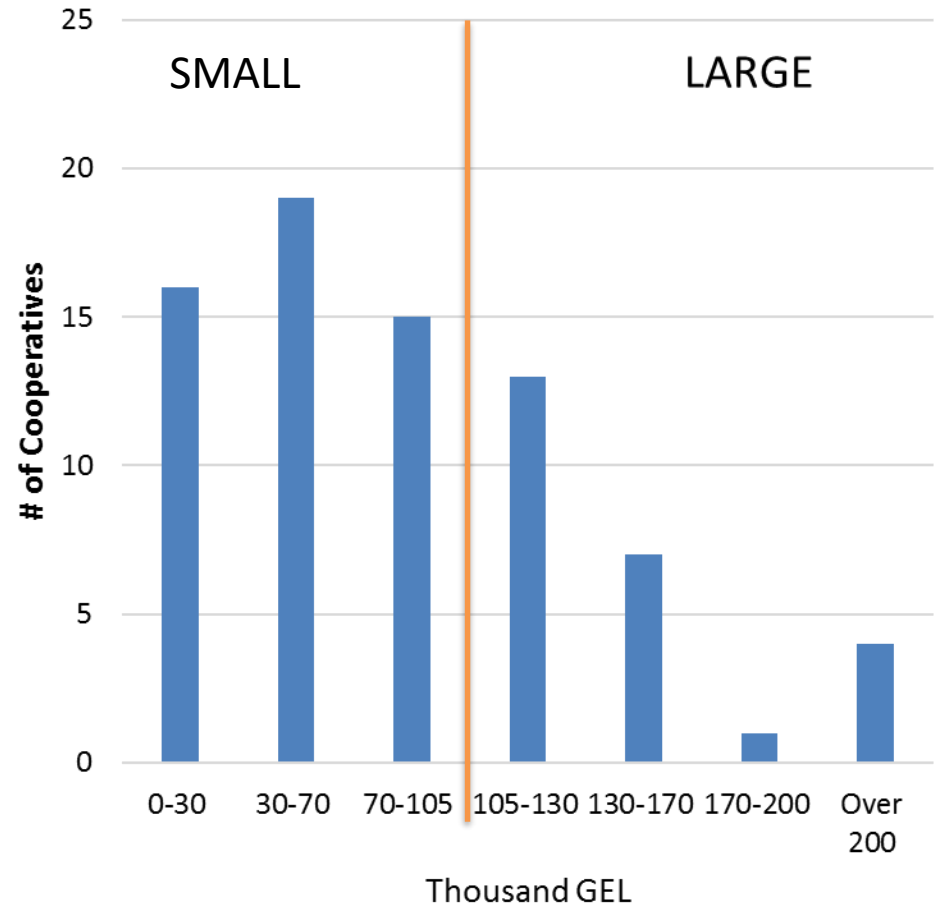
Differentiation by Sectors	# of cooperatives
Annual Crops	25 (33%)
Perennial Crops	24 (32%)
Animal Husbandry	26 (35%)

Method and Data

Distribution of Cooperatives by Sector and Size



Distribution of Cooperatives by Assets



Results – Size Effects

Kruskal-Wallis rank test of mean financial ratios of cooperatives by size

Ratio		By Size		Chi-square statistic	Prob. > Chi-square
		<i>Mean Score</i>			
		Small (51)	Large (24)		
Efficiency	Turnover Ratio	40.7	32.3	2.4	0.119
Profitability	ROA	42.5	28.4	6.9	0.009

Results – Sector Effects

Kruskal-Wallis rank test of mean financial ratios of cooperatives by size

Ratio		By Sector			Chi-square statistic	Prob. > Chi-square
		<i>Mean Score</i>				
		Annual Crops	Perennial Crops	Animal Husbandry		
Efficiency	Turnover Ratio	47.4 *** *	29.0 ***	37.3 *	8.7	0.013
Profitability	ROA	47.5 ***	27.3 ** ***	38.8 **	10.6	0.005

*at the 10% level of significance by the Kruskal-Wallis test

**at the 5% level of significance by the Kruskal-Wallis test

***at the 1% level of significance by the Kruskal-Wallis test

Conclusions

Size Effect by Assets:

- “small firm effect” works in terms of profitability – small cooperatives are MORE profitable than large ones;
 - This is in line with Lerman and Parliament (1991)
- Efficiency between small and large cooperatives was NOT found to be significantly different;
 - Lerman and Parliament (1991) found significant difference on behalf of large cooperatives (though most surveyed cooperatives were service cooperatives in their dataset)

Size Effect by Number of Members:

- The size effect by (mean and/or median) number of members per cooperative was NOT found to be significantly different;

Conclusions

Sector Effect:

- The three large categories of sub-sectors are clearly differentiated by efficiency and profitability;
- Annual crops have the highest efficiency and profitability (in most cases statistically different), followed by animal husbandry and perennial crops;
 - This might be explained because perennial crops take more time before giving full harvest than annual crops

Recommendations

- Do NOT necessarily focus on enlargement (by asset value and members) of cooperatives, while small cooperatives enjoy higher profitability; And there is NO evidence for differences in efficiency yet;
 - In the future, Georgian cooperatives might reach the point at which they start to benefit from economies of scale (Some empirical literature provides evidence for existence of “economies of scale” for agricultural cooperatives);
 - Focus MORE on service cooperative development.
- Although the annual crops are NOT (yet) export-oriented products, their financial performance is better than perennials (e.g., viticulture); so, orientation on domestic market has a high potential at this stage (still a big room for import-substitution, not self-limiting yet)

References

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Data sources:

- Agricultural Cooperative Development Agency (ACDA), 2016.
- National Statistics Office of Georgia (Geostat), 2016.
- ISET & ENPARD consortia - Annual Cooperative Survey, 2016

Thank you!

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