



The European Union
for Georgia

ENPARD: Support to Agriculture
and Rural Development

Size and Sector Effects in the Performance of Agricultural Cooperatives

ENPARD I Consortia Joint Closure Event

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Objectives and Data

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)

Data used in the Study

- 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, People in Need (PIN) and UNDP Adjara.
- For analysis we used average figures of 2014-2017 years.

Method

We divided agricultural cooperatives in two groups, based on **asset value** and **number of members**:

- small
- large

Also, we formulated **TOP** eight sectors:

- apiculture
- berry
- cereals
- dairy
- hazelnut
- potato
- vegetable
- viticulture

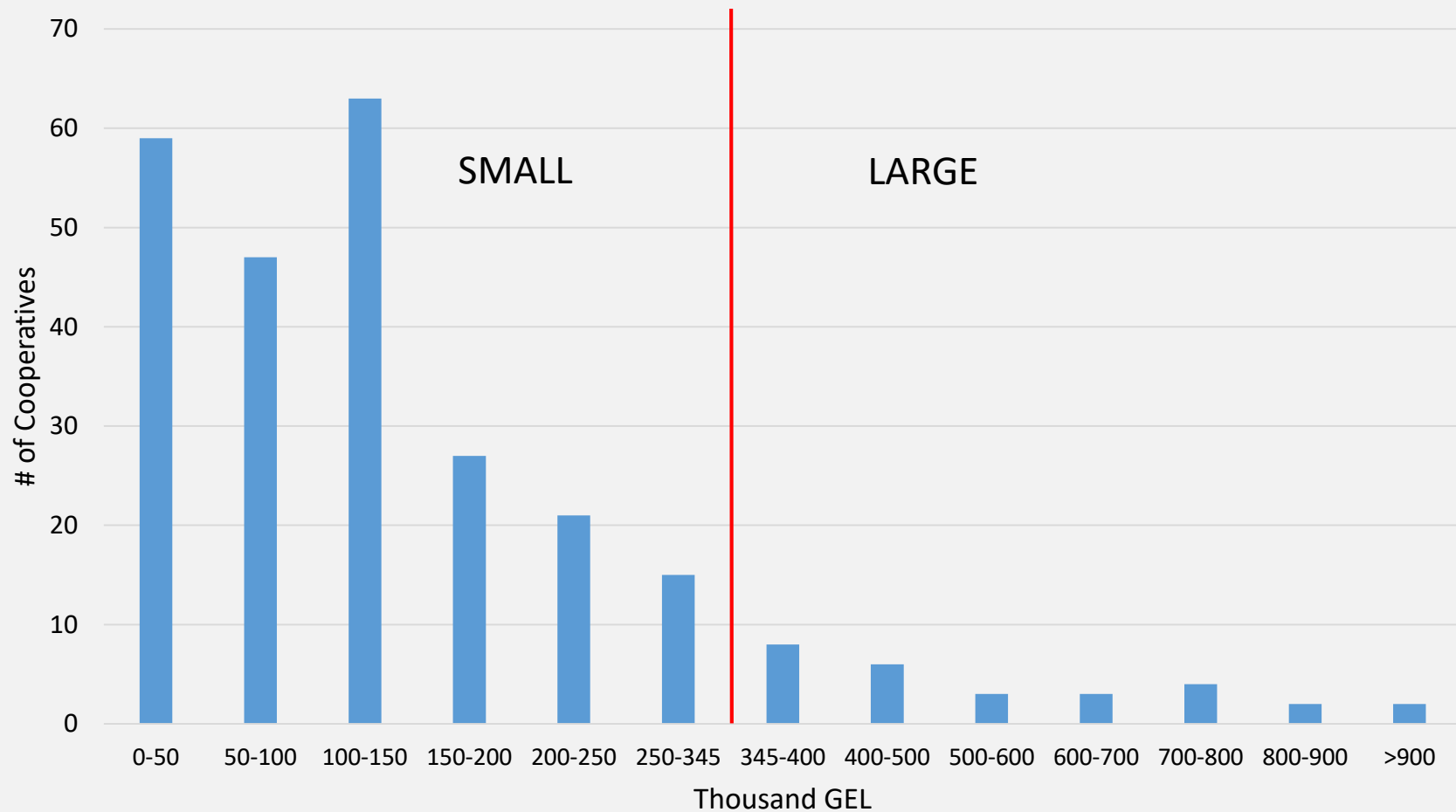
In order to measure financial performance of cooperatives we calculated financial ratios measuring:

- efficiency
- profitability

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

Small and Large Cooperatives (by ASSETS)

Distribution of Average Value of Assets



Results – Size Effect by ASSETS

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

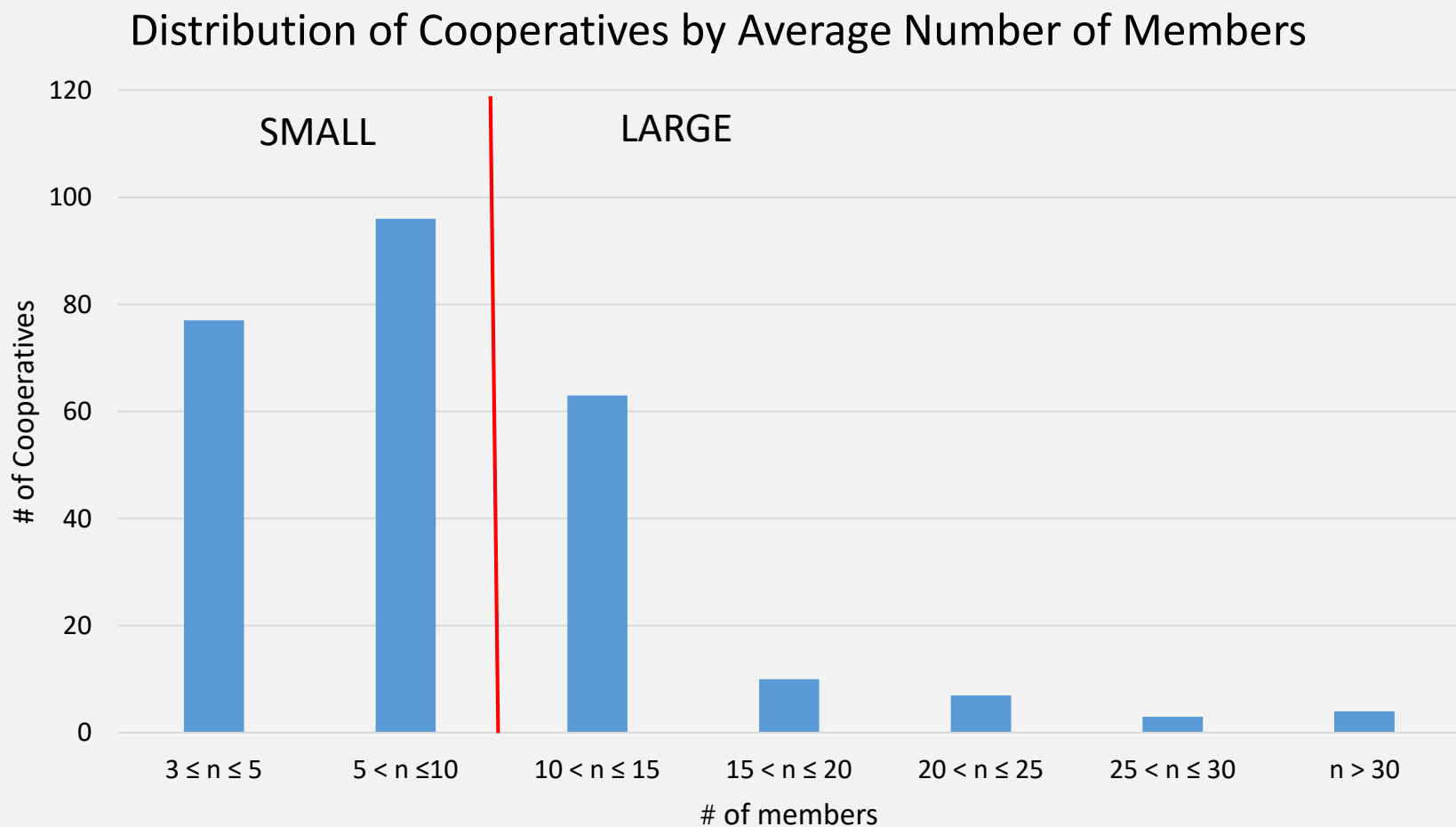
Ratio		By Size			
		Mean Score		Chi-square statistic	Prob. > Chi-square
		Small	Large		
Efficiency	Turnover Ratio	6.5	2.5	5.333	0.0209 **
Profitability	ROA	6.5	2.5	5.333	0.0209 **

*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

Small and Large Cooperatives (by MEMBERS)



Note: As a threshold we used mean value of number of members with agglomerative cluster analysis

Results – Size Effect by MEMBERS

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

Ratio		By Size			
		Mean Score		Chi-square statistic	Prob. > Chi-square
		Small	Large		
Efficiency	Turnover Ratio	5.25	3.75	0.750	0.3865
Profitability	ROA	5.75	3.25	2.083	0.1489

*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

Results – Sector Effect

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

Ratio	By Sector									Chi-square statistic	Prob. > Chi-square
	Mean Score										
	Apiculture	Berry	Cereals	Dairy	Hazelnut	Potato	Vegetable	Viticulture			
Efficiency	Turnover Ratio	23	4.75	16.5	16.75	9	28	20.5	13.5	17.907	0.0124 **
Profitability	ROA	26.75	7.75	12.75	18.75	10.25	17.75	24.75	13.25	14.599	0.0415 **

*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 Value of 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)
- Small cooperatives were found more efficient than large ones;
 - This is NOT in line with Lerman and Parliament (1991)

Size Effect by number of MEMBERS:

- Cooperatives with small number of members (less than 11) are little bit more efficient and profitable than large ones. However, this was NOT found to be significantly different.

Recommendations on Size

Size Effect by Value of ASSETS:

- Do NOT necessarily focus on enlargement of cooperatives, as small cooperatives enjoy higher profitability and efficiency;

Size Effect by number of MEMBERS:

- Do NOT necessarily focus on increasing members per cooperative, as there is NO evidence for differences in terms of member size in cooperatives;
- 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);

Recommendations in General

- Focus more on service cooperative development (and **value chain development**), but ensure the members of cooperatives are well aware of cooperative organizational structure and benefits of cooperation (bottom-up approach).

References

Literature:

- Lerman, Z., & Parliament, C. (1991). Size and industry effects in the performance of agricultural cooperatives. *Agricultural Economics*, Volume 6, Issue 1, pp. 15-29.

Data sources:

- ENPARD consortia - Annual Cooperative Survey (2014 – 2017).



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Thank you!

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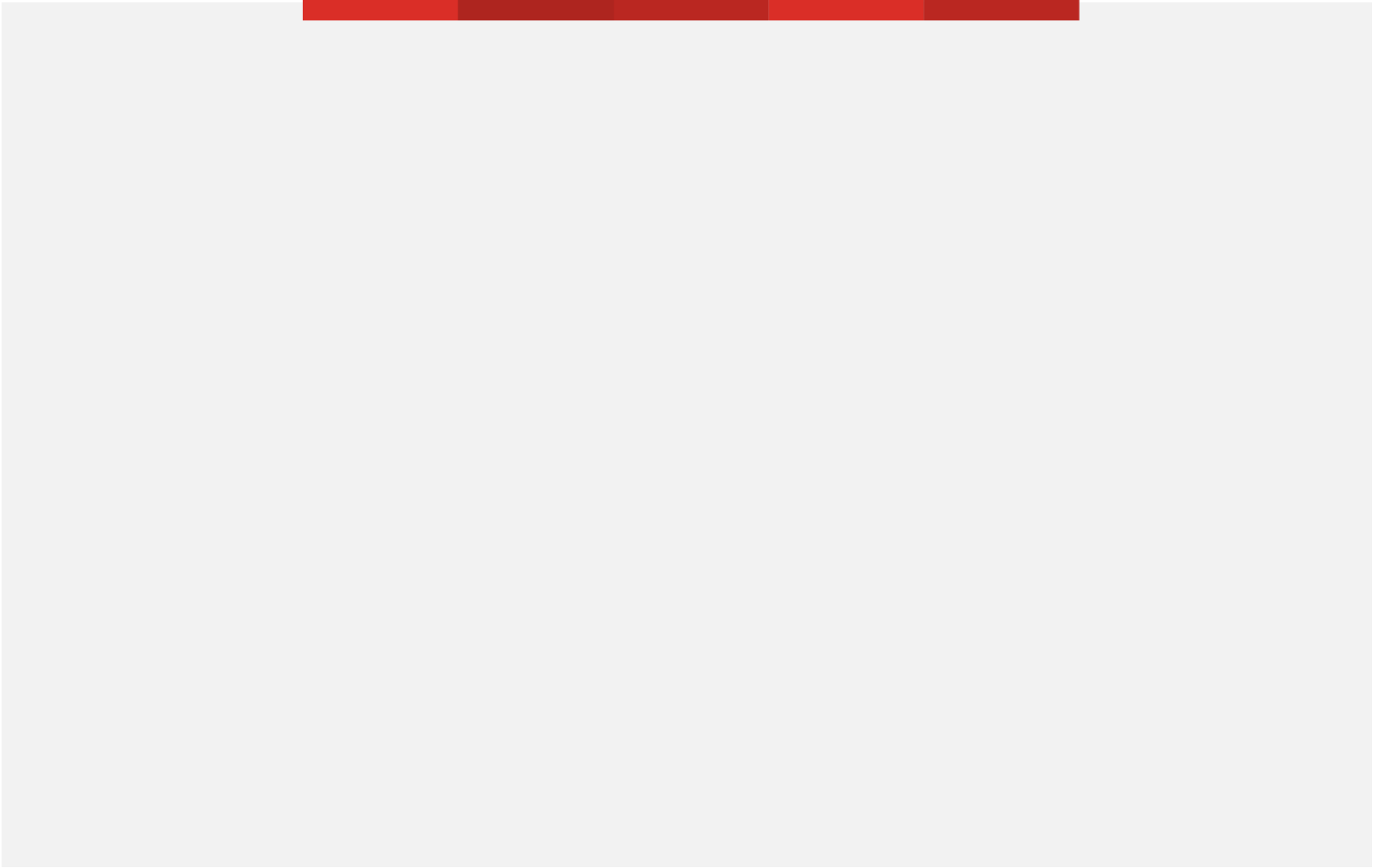
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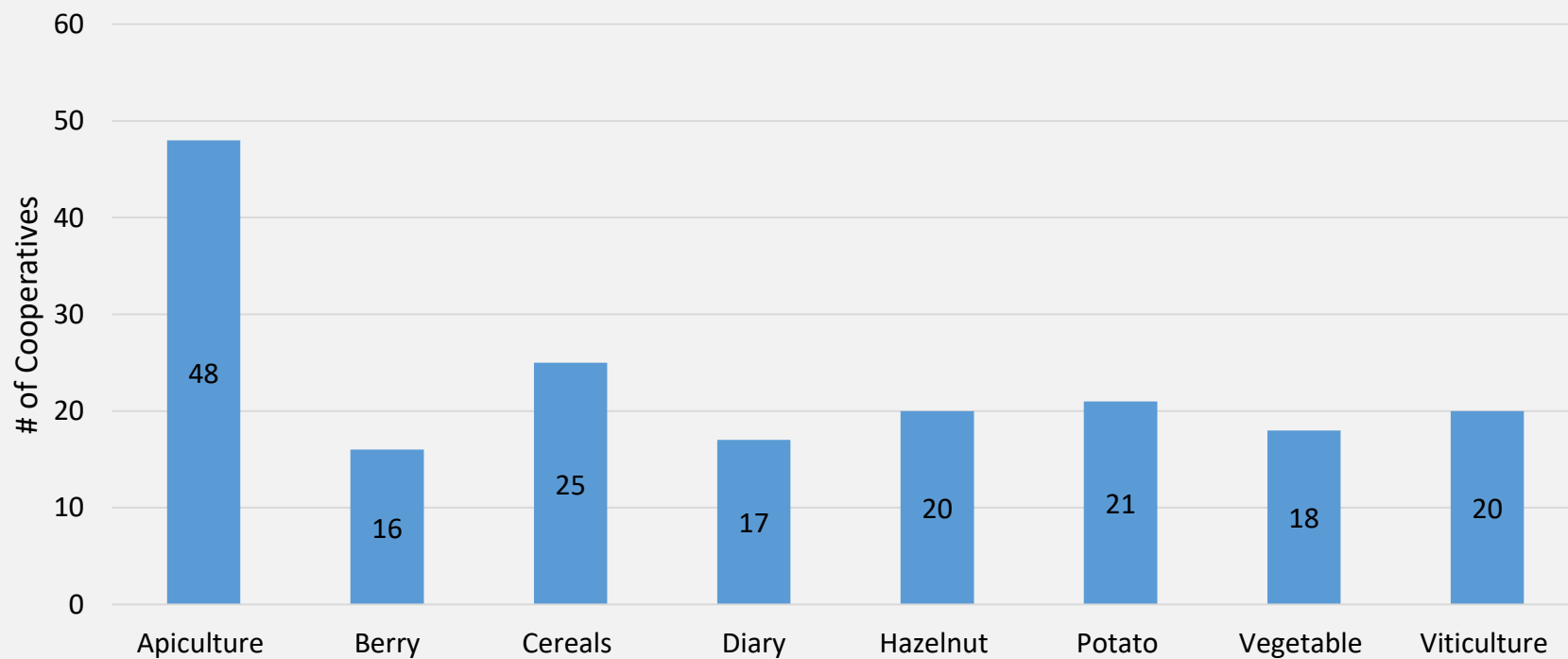


Back-up slides



Data

Distribution of Cooperatives by Sector



Conclusions – Size Effect by Sector

Out of top eight sub-sectors, we found the statistically different results in two of them, in particular:

☐ **Hazelnut:**

- Large (asset value no less than 245 thousand GEL) hazelnut cooperatives are more efficient, than small ones;

☐ **Potato:**

- Large (members more than 10) potato cooperatives are more efficient and profitable, than small ones;