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FACULTY OF TROPICAL AGRISCIENCES

"Constraints and opportunities of small farmers' market access in post-Soviet countries – case study of Georgia"

PHD THESIS STATEMENT

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LIST OF ABBREVIATIONS

EU	European Union
GDP	Gross Domestic Product
WTO	World Trade Organization
CIS	Commonwealth Independent States
WFO	World Food Organization
FAO	Food Agriculture Organization
USD	United States Dollar
UNDP	United Nation Development Program
VECM	Vector Error Correction Model
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
DCFTA	Deep and Comprehensive Free Trade Area
ICT	Information communication & Technology
NAFTA	North American Free Trade Agreement
ENPARD	European Neighbourhood Programme for Agriculture and Rural Development
SDC	Swiss Agency for Development and Cooperation
CDA	Czech Development Agency
ADAC	Agency for Development of Agricultural Cooperatives
NIE	New Institutional Economics
VAR	Vector Autoregression Model
UN	United Nation
EC	European Commission
ADF	Augmented Dickey Fuller Test
SC	Schwarz Criterion
HQ	Hannan-Quinn
IC	Information Criterion
LM	Lagrange Multiplier
ARCH	Autoregressive Conditional Heteroscedasticity
GEL	Georgian Lari
NGO	Non- Governmental Organization

ABSTRACT

Today, regional and foreign trade is inevitable for a geographically small country like Georgia where resources and markets for sustainable and economic growth are limited. The role of agricultural exports in the economic performance of Georgia was clearly demonstrated by the experience of the collapse of the national economy after independence from the Soviet Union, when Georgian farmers lost the export potential to former Soviet Union countries. As one of the tools, which struggles to re-start agricultural production and trade, in recent years, Georgian countryside experiences abrupt increase in number of agricultural cooperatives that are being established as a result of joint endeavor of international programs and Georgian government. For local farmers, who typically hold small plots of fragmented land, cooperatives are promoted as a tool for better market access and consequently increase of income and poverty reduction. The crucial product, with traditionally highest potential for exports is wine. Georgia, a country located between Caspian Sea and Black sea is also known as cradle of wine. Country's wine industry wants to diversify the markets and expand the export potential.

The proposed dissertation thesis will evaluate the Constraints and opportunities of small farmers' market access in Georgia. The whole research is based on econometric time series techniques Granger causality, Co-integration test, Gravity Model, Probit Model, and first-hand experience through personal interviews of authors with members of cooperatives. The results from the research will have important implications for policy-makers in order to implement appropriate growth and development strategies of agriculture and to agricultural trade.

Key Words

1. INTRODUCTION:

Why Georgia?
Georgia is potentially attractive location for foreign investors including both developed and developing nations. There was huge development of agriculture products which were exported to Russia. After the collapses of relation between Georgia and Russia, now they are trying to establish the new contact and trading partner with EU members. Georgia has competitive advantage and big potential to export wine, tea and other products. EU wants to open the free trade zone with Georgia and provides several agricultural development funds to increase competitiveness of Georgian farmers. At the same time the new Georgian government is trying to re-start relationship with Russia. All the farmers are hoping the borders with Russia will open again. There will be the interesting scenario to know the opening of borders with Russia works well or with EU? The distance market will be effective through operation with gravity model. Georgia is the country of destination to analyze the political scenario and foreign trade.

Georgia was affected by twin crisis of war with Russia and followed by economic crisis in 2009. Recent government economy reform helped Georgia to grow its economy and to maintain macroeconomic stability. Bilateral trade between EU and Georgia also increased. EU exported more to Georgia compared to imports and their bilateral trade total amounted to € 2.2 billion in 2011 (Delegation EU, 2012).

Agriculture market in Georgia

Georgia has untapped business opportunity in agriculture, the rainfall pattern and number of micro climates support for the production of wide variety of agricultural products. Recently, the share of agriculture in the total GDP declined, the reason was mainly privatization of land and loss of the Russian market. Although, agriculture remains an important but its contribution to GDP, foreign exchange earnings, employment generation and poverty reduction moved to decline (EU development aid, 2011).

Different international organizations are interested in the agriculture development of Georgia. In order to achieve those donor support and to with improved responsiveness for reforms, country needs to find out the key determinants to support the agriculture trade (with EU, Russia and other countries).

Georgia has profound potential in agriculture goods and services. The country employs 80 % of its people in the agriculture sector. Georgia has an opportunity for handicraft industry, Ayurvedic medicine, and wine and tea products. Thus, research will analyze the product with high export potential, which is also called as identification of geographical indication. Agriculture sector is characterized by low productivity and weak competitiveness in Georgia. Nearly, half of the population income is derived from agriculture sector. Georgia exports accounts only one third of

the imports and the contribution of agriculture sector to GDP is only 10 %. Georgia is traditionally renowned for the quality of its agricultural production and cuisine.

The bilateral agreement was signed between EU and Georgia. A bilateral agreement was signed between the European Union and Georgia on 14 July, 2011 for the protection of their respective "Geographical Indications". A geographical indication is a distinctive sign used to identify a product as originating in the territory of a particular country, region or locality where its quality, reputation or other characteristic is linked to its geographical origin (WTO, 2013). The main purpose of this agreement is to improve the condition of bilateral trade, promote the quality in food chain analysis and to support the sustainable rural development. Georgia is harmonizing its legislation with the international standards on the Appellations of Origin through this agreement. This agreement allows producers to invest on specific qualities of good on which reputation, recognition and protection is built.

Georgia needs to trade and integrate to the world economy for overall economic development. After becoming the member of WTO in 2006, Georgia is moving on further more steps like opening the market in 2006, reducing 90 % tariff to 0 %. The number of tariffs is low on agriculture products. Georgia has also signed the number of free trade agreements with Turkey, Ukraine, Belarus, and Kazakhstan. Georgia trades its 28% to EU. Furthermore, EU and Georgia have signed agreement on deep and comprehensive free trade area. This type of free trade agreement provides the opportunity for competitive and business environment in Georgia. The results from this study might help Georgia to implement a trade policy for agricultural growth. In addition, the results of clarifying the links between agriculture and economic growth might contribute to the crucial political debate in which Georgia is locked between the superpowers of the EU and Russia and trade is high on the political agenda of foreigner relations.

The government has announced that they want to see trebling of wine export in Georgia. Georgia has natural advantage with a wide diversity of 500 unique vitis vinifera, wine grapes, and low cost labor, low chemical and water applications including a unique and authentic food/wine/hospitality culture. Similarly, Georgia is second among the 13 major wine exporting countries in terms of comparative advantage (Anderson and Neigen, 2011).

Therefore, country's wine industry wants to diversify the markets and expand the export potential. The present study critically analyses the determinants of wine products exports in the world. The approaches begin with the analysis of global wine trade and the determinants of global bilateral trade and subsequent estimates of Georgia's export potential in wine products. The tool used for this is gravity trade model. If they wants to diversify the markets of wine in international level than the decision is taken on the national level. This question for to identify the main factors of international trade can only answered by gravity model of international trade. Similarly, the dependence on Russian market can create the disruption in wine trade of Georgia. The exports in this market are volatile and vulnerable. Hence, the threat can be increased in future. Therefore, Georgian wine industry needs to reduce the dependence and diversify the wine

in new market. It is necessary to identify the potential and key factors which can influence the wine export of Georgia. Before identifying the key factors, it is essential to get market access and even exports for small farmers in Georgia. Increasingly, the international donors, governments and scholars agree that underperformance of agricultural sector can be effectively addressed, among other measures, by revival of support to membership based organizations, such as cooperatives, producer organizations or associations of small farmers (Government of Georgia, 2013; Sumelius et al., 2013; United Nations, 2010; Wanyama et al., 2008; World Bank, 2008). International Agricultural cooperatives bring advantage of economy of scale, thus, reduce the unit costs of inputs and services by pooling capital, know-how and resources, and develop market power by utilizing transaction cost-economizing effect of family farms (Valentinov, 2007). Similarly, For local farmers, who typically hold small plots of fragmented land, cooperatives are promoted as a tool for better market access and consequently increase of income and poverty reduction. Georgia, similarly like other countries of Commonwealth of Independent States (CIS) and Central and Eastern Europe states, has a long tradition of cooperatives already in the 19th and at the beginning of the 20th century (Lerman and Sedik, 2014a). Especially for poor farmers, cooperatives can be drivers of increased income and general poverty reduction (Verhofstadt and Maertens, 2014). Agricultural cooperatives bring advantage of economy of scale, thus, reduce the unit costs of inputs and services by pooling capital, knowhow and resources, and develop market power by utilizing transaction cost-economizing effect of family farms (Valentinov, 2007). Through horizontal integration farmers can improve product and service quality, reduce risks, address common problems, develop new market opportunities or expand existing contracts (WFO, 2013). Small-scale agricultural producers can moreover benefit from coordinated access to natural resources, information, technologies, credit, training or contracts. They can also improve security of land-use rights, which is very important especially in Georgia, where land reform is still incomplete (FAO, 2012a). The importance of support of small farmers' cooperatives was also highlighted by the United Nations' (2012) International year of cooperatives in 2012.

The main research question of this Ph.D. dissertation is to what extent the agricultural growth and development can be expected in post-Soviet country like Georgia? What are the main enabling factors? The thesis will analyze the question from three different perspectives and at three different levels – 1. At macroeconomic level of agricultural exports (Georgia was traditionally agricultural export oriented country under former Soviet Union times), 2. At the product level of the most promising agricultural product – Georgian wine, which still keeps good recognition in the regional and international markets and 3. At the micro level of individual small farmers groups as a primary engine of agricultural development and growth. Based on this mix of different findings conclusions and recommendation will be drawn for the near future of Georgian rural development. This Ph.D. Thesis Statement is setting up aims and methodology approaches for the research as well as providing literature review of issues related with

agriculture and engine for economic growth (Chapter 2.1), Wine export potential in Georgia (Chapters 2.2) and Role of Cooperatives for Small Farmers in Western Georgia (Chapter 2.3). Agriculture market and wine export in more general terms are captured in this introduction but will be reviewed in bigger depth in the final thesis which will be also expanded by the subchapters on land and economic growth. The PhD Thesis Statement is also introducing the initial results of the relation between economic growth and agriculture growth and the internal and external factors crucial for decision of small Georgian farmers to trade their individual preferences.

2. LITERATURE REVIEW

2.1 Role of Cooperatives for better market access of Small Farmers in Western Georgia

Georgia, similarly like other countries of Commonwealth of Independent States (CIS) and Central and Eastern Europe states, has a long tradition of cooperatives already in the 19th and at the beginning of the 20th century (Lerman and Sedik, 2014a). However, during the Soviet era, the original idea of bottom-up self-help small farmers associations dramatically changed from voluntary marketing, service or credit cooperatives to production collective farms. (Lerman and Sedik, 2014b). These kolkhozes were centrally controlled extended arms of official state policy, poorly managed and the participation was compulsory (Couture et al., 2002). Break-up of the Soviet Union resulted in collapse of collectivised agricultural system whereas cooperatives of any type in Georgia almost ceased to exist (ENPARD, 2015; Ministry of Agriculture of Georgia, 2014). Several authors (for example ENPARD, 2015; Gardner and Lerman, 2006; Lampi, 2012) show that until today cooperatives continue to be negatively associated with the Soviet-era collective farms and farmers and general public still feel distrust and opposition to them in the form of so called "mental block". Many farmers do not perceive difference between state-controlled old collective production-type kolkhozes and modern member-owned, controlled and used farmers' groups which serve mainly as agricultural marketing cooperatives (Lerman and Sedik, 2014b; EC and FAO, 2012). Gardner and Lerman (2006) literally write: "The use of the word "co-operative" in Central and Eastern Europe will not only create the wrong impression, it will also create barriers to progress." But traditional grassroots organizations and informal institutions were developing spontaneously in Georgia long time before the socialist Soviet times and strong social cohesion exists in parallel to any formal institutions. For example Lampi (2012) analysed farmers' cooperation and inter alia describes that Georgian society typically consists of strong informal networks; such as common herding Naghin system which has a long history in hilly areas. Preconditions for cooperation and institutional creation can be studied also with the use of concept of the social capital. Analysis of bonding and bridging constructs of social capital in Georgian environment is thoroughly provided for example in research of Buschmann (2008) or USAID Georgia (2011b). Based on their findings, we can learn that there are extremely strong bonding ties in Georgia which indicate close relationships among family, relatives and friends. On the other hand, bridging capital representing willingness to cooperate with strangers is relatively low. This basically predetermine tendency to rely on acquaintances in matter of small business rather than cooperation with members of broader society in institutionalized way. The first organized efforts to revive the cooperative sector and boost modern agricultural cooperatives in Georgia appeared in 2012 with the assistance of international organizations and donor community. First organizations aiming to support horizontal integration of farmers included USAID, OPTO International, the Swiss Agency for Development and Cooperation (SDC), Denmark's Development cooperation (DANIDA) or Czech Development Agency (CzDA) which all started individual projects and wider programs on rural livelihood

improvement through promotion of cooperatives (FAO, 2012b; Millns, 2013). Only few cooperatives were established without any donor support. Most of the recent development in cooperative's sector has been driven by international projects with donor contributions ranging from 5,000 to 120,000 EUR (Millns, 2012). By far, the biggest recent programme for agricultural sector development with cooperation component is EU European Neighbourhood Programme for Agriculture and Rural Development (ENPARD). Consortium of four nongovernmental organizations – CARE International, Mercy Corps, OXFAM and People in Need plans to establish about 160 agricultural cooperatives in 45 districts during five-year period of 2013-2018. In addition, UNDP works in the same field within the ENPARD programme in autonomous area Adjara. Total EU budget of 52 million EUR is used for direct support for cooperatives' formation, for direct support of national agricultural budget, technical assistance and for strengthening the capacity of national and regional state institutions (ENPARD, 2015; FAO, 2012b; Millns, 2013). Importance of horizontal integration of small farmers in the form of cooperatives has been gradually recognized also by Georgian government that took several important steps toward the development of enabling environment. Ministry of Agriculture of Georgia adopted Strategy for Agricultural Development for the period 2014-2020 which provides basic framework for promotion of cooperatives within the specific strategic measure 1.6 "Support the development of farmer group organizations". The document envisions revision and update of legislation, creation of campaign on awareness rising, provision of specialised extension services and facilitation of special incentive tools including matching grant contributions and possibilities for tax exemptions (Ministry of Agriculture of Georgia, 2014). In 2013, based on recommendation of FAO and EU, the Georgian National Parliament adopted the Law of Georgia on Agricultural Cooperatives which together with older Law on Entrepreneurs create basic legal framework. In the same package, there were several amendments to related legislation for agricultural cooperatives' tax exemptions and grants provision (Government of Georgia, 2013). At the same time, the Agency for Development of Agricultural Cooperatives (ADAC) has been newly established (ENPARD, 2015). Joint effort of international donors and national government led to unprecedented growth of agricultural cooperatives in the country. While in the mid of the 2014 only 100 agricultural cooperatives were registered at the ADAC, one year later the number was ten times higher (Misheladze, 2015). However, one of many challenges of sound and sustainable growth of Georgian agricultural cooperatives' sector is number of members per cooperative, when average number decreased during 2014-2015 period from 10 to 6. This is extremely low number for efficient business-oriented organization enabling economies of scale for small farmers. Therefore, the political debate on increasing the threshold of minimum number of members from 5 to 11 has just started. Moreover, some authors (see for example Millns, 2013) together with development specialists conclude that the majority of cooperatives have about 50% of passive members who register just in order to fulfil the obligatory quotes on number of members set by donors. Key founding members sometimes take over the management and control of cooperatives which lead to limited compliance with democratic principles, nontransparent decision-making and creation of individual investor-

owned firms masked as cooperatives (Fulton and Giannakas, 2007; Lampi, 2012). Dominance of leading members is evident for example from unequal distribution of shares in favour of few individuals. Among other major problems of institutionalized cooperation Lampi (2012) sees improper understanding of the role and potential benefits of modern agricultural cooperatives, the lack of good examples of functioning producers' organizations and also farmers' limited experience in open market economy. Technical assistance from international donor projects and governmental support in terms of facilitating favourable environment should be provided to overcome these difficulties, concludes Lampi. Lerman and Sedik (2014a) belief that due to the legacy of the past agricultural cooperatives and mainly modern service cooperatives should be promoted. Capacity building through cooperative development centres could also help the cooperatives to operate properly. Organizational problems faced by Georgian cooperatives, as for example lack of management competencies and experiences among members of the Board of directors or poorly developed governing principles are documented in Baramidze (2005) or Millns (2012; 2013). Abrupt increase in inefficient small cooperatives most likely indicates that decision to establish producer group has been driven by expectation of financial support of any sort and potential access to capital or trainings, rather than by selfinitiative, proper business vision or community-based need for collective action built on sound economic grounds. These cooperatives, which register themselves with only motivation to qualify for financial support, are called "false" or "sleeping" cooperatives and represent likely threat to the whole Georgian cooperative sector. Their commercial and financial sustainability after termination of projects is highly questionable (Lerman and Sedik, 2014a; Millns, 2013). FAO (2012b) concludes that only less than 20% of cooperatives established with heavy guidance and dependence on donors showed significant activity after project termination. In Georgian context, there is an example of five agricultural cooperatives created by the Czech government intervention which did not survive more than one year after the termination of the project (Černá et al., 2012). Analysing patterns and similarities among newly created Georgian cooperatives might provide some understanding on likelihood of their survival. With this in mind we conceived our first objective. 3 Theoretical framework First scientific research on agricultural cooperatives used neoclassical theory paradigm to analyse efficiency of cooperatives by traditional marginal analysis (Ortmann and King, 2007). The cooperatives were studied under the assumptions about frictionless exchange process in which adjustment and transaction costs are zero, property rights are perfectly specified and costless and information are costless as well (North, 2009; Royer, 1999; Royer, 2014). But the theory showed to be ill-suited for cooperative studies and furthermore failed to explain other objectives of cooperatives as maximizing of welfare and meeting joint needs of members. This fundamental deficiency caused reconsideration of cooperatives as specific forms of economic formal institutions (Royer, 2014); for general institutional economy see for example North (2009). Three distinct but related general theories have been developed in order to analyse similar specific organizational forms and their relationships within the market system. They are Transaction cost economics, Agency theory, and Property rights theory, collectively labelled as New Institutional Economics (NIE) or neo-institutional economics as

they focus on economic institutions and institutional constraints rather than firms. Most of recent researches built on these three methods when dealing with cooperatives(Royer, 1999). In this research, we also rely substantively on this theoretical framework when studying factors influencing creation of institutions. The concept of institutions was firstly developed by Ronald Coase who asked why most of the economic activity is carried by formal institutions and not individual actors if, under assumptions of neoclassical theory, only market perfectly allocates resources. Main idea of his findings provoked extensive debate over the prevailing economic theory at that time. He found out that transactions are inefficient and expensive in a real world of imperfect information and "when it is costly to transact, institutions matter" (North, 2009; Royer, 1999). Costs of transacting are the costs of organizing and transacting exchanges. They consist of the costs of measuring the attributes of the good or service that is being exchanged, including search and information costs, bargaining and decision costs, and the costs of defining, protecting and enforcing property rights and policing and enforcing agreements (North, 2009; Ortmann and King, 2007). High transaction costs should therefore motivate farmers to coordinate business within a cooperative instead on interacting on spot market where all the farmers and buyers compete. Individual farmers face information asymmetry because they have difficulties to obtain the information about prices on the market, assess the quality of the production and compare their output with similar products on the market. Also, time problem accompanying production of perishable goods put farmers into unfavourable situation against buyers when enforcing agreements can be very expensive and demanding (North, 2009; Ortmann and King, 2007; Royer, 1999). Thus, participation of farmers in the cooperative may increases economic efficiency because it lower their transaction costs. For parties involved, institutions also play crucial role because they prevent the opportunistic behaviour of individuals (Nilsson, 2001). Formation of cooperatives of small farmers can be studied efficiently through the theoretical framework of institutional economics, where factors like interaction of farmers, mutual trust, social capital, presence of leader, existence of common rules or sanctions, or existence of external market incentives play crucial role. In most general meaning, institutions can be defined as humanly devised constraints that shape human interaction. By providing structure to everyday life they reduce uncertainty. The fundamental question here is - when convergence of different interest arises in cooperation and creation of institutions? Robert Axelrod (1984) dealt with this issues in his famous book "The Problem of Cooperation" which started with the question "Under what conditions will cooperation emerge in a world of egoists without central authority?" In the frame of standard prisoner's dilemma game, he held computer tournament to find out that tit-for-tat is winning strategy after all (Axelrod, 1984). Applications of Game theory therefore shows that individuals would usually start to cooperate and partially trade their selfish preferences with altruistic motives when the game is repeated, when there is a higher ratio of costs to benefits, when there is only small number of players and when players possess complete information about the others and potential benefits derived from cooperation (Hardin; 1982, Margolis; 1982, Schofield; 1985). So, in accordance with behavioural assumptions, individual's action depends not only on the motivation but also on the ability to decipher the environment which influences

the player. Why some farmers decide to act cooperatively and what are their incentives for such behaviour is the main subject matter of this research. Various studies use this theoretical framework and focus on identification of main factors influencing establishment of cooperatives through this lens. For example Garnevska et al. (2011) in her work investigated two cases of farmer cooperatives in Northwest China to find out that stable legal environment, a dedicated initiator and leader, government financial and technical support, farmers' understanding and participation in cooperative activities and appropriate external support from professional NGOs are the key factors for the successful development of farmer cooperatives. While Garnevska et al. (2011) used qualitative methods and more macro-economic attitude in her research, several other authors examined the topic via quantitative microeconomic approaches. Pascucci and Gardebroek (2010) studied inter alia factors of cooperatives' formation on the case of Italian farmers. Among individual factors showing significant positive impact on farmers' decision to become a member of cooperative they rank following: high concentration of cooperatives relative to number of private processors, location of farms in the area where the local economy is dominated by agricultural activities, settlement in more remote mountainous areas where agriculture is most relevant activity, lower specialization of farmers, on-farm processing, more modern and viable farms and higher inclination to agricultural and social related networking. Zheng et al. (2011) under one objective of the research also presented factors that affect farmers' behaviours in joining Chinese agricultural cooperatives. As a result of binary probit analysis, they classify higher education level, high agricultural production costs, sales difficulties, the lack of labour during busy times, future planting plan to enlarge operation and anticipated risks of agricultural production as having significant positive impact on membership in cooperatives. Authors found out that producers of cash crops, vegetables and fruits have a higher likelihood to join cooperatives than grain farmers. Negatively influencing significant factors are larger size of planting area and low current prices of agricultural production. Ogunleye et al. (2015), Nkurunziza (2009) and Nugussie (2010) focus more specifically only on socio-economic and organizational factors affecting farmers' participation in horizontal integration in Africa. Ogunleye et al. (2015) conducting research in Nigeria consider management and leadership problems, limited memberships, insufficient fund and low level of education as the main problems influencing against participation in cooperatives. On the other hand, Nkurunziza (2009) found different conclusions on African example from Rwanda. Author identifies interestingly higher education level as the main constrain hindering cooperation of coffee farmers. At the same time, female headed households and large farms tend also not to cooperate so often. Main driving forces of establishment of agricultural cooperatives is higher off-farm income, better access to credit, keeping farm records and trust among farmers. Nugussie (2010) examined cooperative in Ethiopia and confirms male headed households are more willing to join agricultural cooperatives head. Based on author's results, other influencing variables are membership in rural associations, attendance of public meeting and/or workshop, membership in administrating committees, accessibility to credit services, exposure visits and training access, number of family sizes, family members in secondary school and information access. Certain

aspects which affect cooperation cannot be derived from different environments of China, Italy or Central Africa since they have country-specific nature. Studies that focused on investigation of obstacles to Georgian cooperation (Buschmann, 2008; Lampi, 2012; Lerman and Sedik, 2014a; Teres and Bondarchuk, 2015; USAID Georgia, 2011a;b) agree on negative influence of Soviet legacy and "mental block". Buschmann (2008) and USAID Georgia (2011a;b) highlight poorly developed social capital as another important factor negatively affecting cooperation in the Georgian environment. Buschmann (2008) also find out other problems like distrust of general population toward the state authority, lack of financial and credit resources and unsustainable one-sided assistance of international donors. This confirms Lampi (2012), who in accordance with Teres and Bondarchuk (2015) adds organizational and human obstacles, namely exploitation of cooperatives by leading members, lacking management competences in rural areas and no experience among farmers to manage cooperative institutions as main problems. Both authors in line with Lerman and Sedik (2014a) and USAID Georgia (2011a) emphasize also potential significance of policy and legislative support for cooperatives formation. But until recently, all conclude, neither legislation nor taxation had been supportive for cooperatives successful development. Beside above mentioned problems, Hejkrlík and Kotková (2013) based on survey among small farmers in Western Georgia found additional following reasons for low level of cooperation in Georgia: no sources of information in communities on benefits of cooperation, limited positive models of successful cooperative enterprises, no experience from community resource management, no strong political commitment from national and regional government to facilitate cooperation, weak public dialog among villagers and local government and lack of motivation and enthusiasm because of non-stable markets and legislative environment. Kvariani and Ghvanidze (2015) investigate both positive as well as negative forces that influence institutionalized cooperation in Georgian wine industry. Authors admit importance of governmental and EU support for cooperatives formation but, on the other hand, demonstrate how external support easily creates strong dependency and limits sustainability. Other difficulties preventing institutionalized cooperation mentioned by Kvariani and Ghvanidze (2015) are weak access to capital, absence of long run plans and strategies and the lack of trust among farmers. Last but not least, theory that we employ for understanding the context of newly created cooperatives under the first objective is the Agency theory. Some of the features of this theory are used for understanding the situations when some farmers (usually local opinion leaders and strong individuals) who are crucial for initial establishment and registration of cooperatives dominate in terms of access to information and decision-making power. Their role in start-up phase of cooperatives is essential, but their dominance in decision making also represents potential threat to cooperative cohesion and performance. The Agency theory deals with agency relationships which "exist whenever one individual, called the agent, acts on behalf of another, called the principal" (Royer, 1999). But objectives of the agent might not match those of the principal and therefore there is a danger that agent does not represent the interest of principal (Ortmann and King, 2007; Royer, 1999; Sykuta and Chaddad, 1999). This situation is called agent-principal problem. Every time, agent's preferences differ from what principal wants, there

are some welfare losses. Principal-agent problems apply to cooperatives to even greater extent than to investor-owned firms because of cooperative's extended governance systems. Managerial compensation schemes are therefore more difficult to be appropriately set up (Richards et al., 1998). Cooperative institutional form brings other specific problems caused by vaguely defined property rights in traditional cooperatives. Most commonly listed disadvantages include the free-rider problem, the horizon problem, the portfolio problem, the follow-up problem and the influence costs problem (Nilsson, 2001; Ortmann and King, 2007; Royer, 1999).

2.2 Wine export potential in Georgia
Georgia, a country located between Caspian Sea and Black sea as a same altitude as the south of France, also known as cradle of wine (Mc Govern 2003, 2009). Georgia is located in the Caucasus Mountains, and it is Caucasus country Georgia has an experience of 800 vintages and also it offers 500 endogenous kinds of grapes. Secondly, Georgia is a home of unique wine technology called Kveri and this technology is included on the list of Intangible Cultural Heritage of Humanity by UNESCO in 2013. Georgia has revealed comparative advantage in agriculture ranks 15th out of 193 countries (Liapis, 2011). Georgia has natural advantage with a wide diversity of 500 unique vitis vinifera, wine grapes, and low cost labor, low chemical and water applications including a unique and authentic food/wine/hospitality culture. Similarly, Georgia is second among the 13 major wine exporting countries in terms of comparative advantage (Anderson and Neigen, 2011).

Wine export accounts one tenth of the export in 2013 in Georgia, which makes wine exports six times as economically as important in France, Italy and Spain. For the last two centuries, Georgia has been producing a wine in European style by using European Fermentation Process (Anderson, 2015). During last two centuries Georgia has been exporting 80% of wine and 57% in 2014 as shown in *Figure 2* to its major supplier Russia. The demand for Georgian wine in Russia is always high due to the special role of Georgian wine in Soviet Union. For a political reason Russia introduced a ban on Georgian wine in 2006. This was a major blow for Georgian wine market as they export very little elsewhere, also the export rate of wine declined to 50%. Georgia export to Ukraine as it was the major trading partner after the ban of Russia. But, Ukraine was highly affected by the global financial crisis, which currency devaluated by 40% against US (United States) Dollars. However, after reopening of Russian market for Georgian wine in 2013, the export increased highly and Russia got back its top position among the Georgian wine exporting countries. Georgian producer of wine and citrus fruits has a favored role because of Soviet experience and also Russia lacks the warm climate for products like wine and citrus. Russia was in top position to damage Georgian export by cutting off its imports. Georgian wine and mineral water sales were forbidden in 2006 due to the quality and safety concerned (BBC, 2006). This shock was compounded by the war with Russia in 2008 and global financial crisis in 2009. The impact of these measures made Russia insignificant trade partner for Georgia. Georgia export only 2 % from 2008 to 2012 to Russia. Georgia overall trade balance went to negative as it imports twice more than it exports (Kates G. 2006). However, the new

democratic government elected in 2012 managed to uplift the unofficial embargo. Afterward Georgian government announced to see the trebling on wine exports by 2015. Nonetheless, Russian ban forced Georgian winemakers to increase the international standard and quality of wine. Georgian Wine exports reach $ 183 million in 2014 which means 34% increase on 2013 (Worldfolio, 2015). The Georgian wine market has better in 2014 which has grossed 118.5 million dollar in eight month comparing to 2012. Suddenly, the Georgian wine exports decreased by 39% in 2015 but in 2015 there was dramatic change in number of wine exports in 2015 as it exports decreased by 39%, Russia and Ukraine were the major sources of Wine exports and economic difficulties in these region caused the drop in total wine export (GT, 2015)

During this embargo period between 2006 to 2013 with Russia, Georgia made a good ground for wine export. They found a new market like United States where Georgian wine has growing popularities. Similarly, Georgia is increasing its exports to EU (European Union) from one-sixth to one-third since 1980s and to China, where Georgia exported 2.6 billion bottles in 2015 (GT, 2015). Recently, Georgia has completed its negotiation of the free trade agreement with Europe. After ratification of the association agreement of the DCFTA (The Deep and Comprehensive Free Trade Area) in 2014 (along with Moldova) this relationship reached a new stage, strengthening political and economic integration with the EU (Delegation EU, 2012). This is the reason that Georgia still maintains to export 15% of national total wine export to EU in 2015(Worldfolio,2015).The opening up of the free trade agreement with EU is the great weapon and the strongest insurance policy for Georgia in order to tackle with embargo of Russia (BBC, 2014). Similarly, the value of exports to new world is also increasing. The value of wine exports to Argentina has grown at more than 20% and New Zealand at 25% (Anderson & Neigen, 2011).

Gravity model usually deals with the simulating of trade from national perspective not with the trade of the specific goods. Timbergen (1962) and Pöyhönen (1963) were the first to purpose that gravity model is a very powerful tool for international trade analysis. Later, Gravity model is used to analyze for bilateral trade analysis. For example, free trade blocs (Martinez-Zarzoso et al., 2003), multilateral commercial agreements (Rose, 2002), migration and tourism flows (Karemera et al., 2000), and foreign direct investment (Brenton et al., 1999). This result was useful in order to estimate the impact of policy.

The basic of the gravity model is explained from physics. It says that the trade between the two countries is directly proportional to economic masses and inversely proportional to distance.

It is possible to take the natural logarithm of the gravity model and to obtain the linear relationship between log of economic sizes and log of trades as follows:

$$\ln F_{ij} = \alpha_0 + \alpha \ln M_i + \beta \ln M_j - \gamma \ln D_{ij} + \varepsilon_{ij} \qquad\qquad (1)$$

Here the term F_{ij} is the flow of export from country of origin to the destination country and M_i and M_j are the economic size of the two countries which is measured in the term of Gross

Domestic Product. D_{ij} is the distance between two countries, which is measured by physical distance.

Several additional variables were added to the basic gravity model, like population, income per capita, exchange rates, colonial links and other dummy variables. The model obtained from this has been called Augmented Gravity Model.

However, some authors have addressed foreign wine trade of countries with massive production. Here, we can take the example of Carluci et al (2008) who studied the opportunities of Italian export of table and quality of wine. Similarly, federal export of German wines was analyzed by Konig and Schulze (2008). Furthermore, the impact of ICT technology on wine trade was studied by Fleming, Mueller and Theimann (2009).

To model bilateral wine products between major exporting countries, the basic gravity model has been augmented by including several conditions and dummy variables. Inter-provincial, Inter-state and border trade between Canada and USA was studied using an augmented gravity model (Anderson&Wincoop, 2001). Sevela(2002) used an augmented gravity model in order to explain the determinants of agricultural exports from the Czech Republic using a cross-sectional data. A similar model was used by Jayasinghe and Sarke (2004) to analyze the diversion and trade creation effects of the North American Free Trade Agreement (NAFTA) on six selected agri-food products. Similarly, a gravity model was used to identify the determinants of India's agricultural trade on its trading partners (Shinoj and Mathur, 2009).

The analysis of the Slovak wine exports by gravity model suggest that membership in any organization doesn't influence on Slovak wine exports. Other variables behave accordingly preassumption (Judinova & Zentkova, 2011).

Similarly, Koo (1993) has used the gravity model to incorporate the policies and unique characteristics with trade flows of specific commodity.

The history of Georgian wine export is interesting because it has such an abrupt change in export. In addition, The Russian market for Georgian wine is lucrative but volatile. It is time for Georgia to take Steps in order to reduce the dependence and to treble the wine export.

We will like to turn out the major questions through which Georgia can expand its potential for wine, improve its present position and significantly become a greater exporter of wine. The result of this research would be effective to boost the country's poverty alleviation and rural development.

The main focus of the paper is to determine the tendency of development of Georgian Wine and to identify barriers and positive stimulants of wine exports using gravity model.

The paper is based on the hypothesis on each specific of variables. We expect a positive coefficient value on the GDP per inhabitant assuming that richer countries tend to trade more

than poorer countries. Similarly, income per capita can be taken as the expression of infrastructure standards (Flemings, Mueller and Thiemann, 2009). We assume that population of the country affects the trade positively because the growth of population increases the growth of exports in the selected countries (Walsh, 2006). We assume that GDP per capita has a positive effect to the trade between the countries. As the income of the individual increases the higher the demand for wine (Carlucci et at; 2008). The distance between two countries is measured by the air distance which is as proxy of transportation and tendency to innovation (Carriljo and Li, 2002). The greater the distance between two countries, the higher the cost associated. If the distance between two countries area higher than it decreases the gains from the trade due to the relative cost of transportation goods (Glick & Rose's, 2002). We assume the Georgia tend to export more to border countries and the dummy variable CIS is used in this model in order to assess the impact of policies and trade agreement. We assume that subsidies on the grapes can increase the export of wine as the production increases.

We assume that the wine trade between members of the commonwealth Independent states increases. Another Dummy variable is trade sanction as Georgia faced trade sanctions and war with its neighborhood country Russia. We assume that the existence of trade sanctions and war decreases the bilateral trade.

2.3 Agriculture and Economic Growth in Georgia

Georgia experienced remarkable economic growth from 2006 to 2008 (Finchannel, 2014). But, the country was affected recently by two crises: the war with Russia and the global economic recession in 2009. The conflict with Russia in 2008 and the global economic recession in 2009 suddenly slowed down economic growth rates. In spite of the recovery of Georgia's economy in 2010 and 2011, 11.6 % of Georgia's population is below the poverty threshold on extreme poverty and the unemployment rate in 2014 was 12.4% (Geostat, 2014). A high level of inequality is found with a Gini Coefficient standing at 0.42 in 2011 (Geostat, 2012). But, in general, Georgia is a middle-income country with a GDP per capita of USD 3,644, ranking it 79th in the Human Development index in 2014 (UNDP, 2014).

Georgia is traditionally renowned for the quality of its agricultural production and cuisine. The agricultural sector is still prominent in the economy and in 2013 accounted for 9.3% of Georgian GDP and 53.4% of employment (World Bank, 2014). Despite an unsatisfactory performance after the collapse of exports to Russia, mixed trends in the pattern of growth can be observed as shown in Figure 1. Nevertheless, the agricultural sector is still an important segment and is expected to remain important in the near future (FAO, 2013). In 2013, the largest growth sector in Georgia was also agriculture at 9.8% and a contribution to real GDP growth of 10.6% (Patsuria, 2013).

During Soviet time, up to 1990, the situation of agriculture was strongly oriented towards production for the whole of the USSR. Agricultural exports exceeded imports by 70% and many plantations and processing plants provided employment, serving a command driven supply

chain. Since the 1990s agriculture has remained a dominant employer only because of a total collapse in industrial production. The destruction of other industries meant the population had to return to the countryside and agriculture. The share of agriculture in GDP increased to 42% but productivity and efficiency declined substantially.

On the whole, in the 1990s agricultural reform in Georgia failed when the older Soviet supply chain system collapsed completely. The privatization of former collective farms (kolkhozes) resulted in half a million farmers being left with less than 4 hectare of land. During the following two decades the pro-western liberal government had a laisser-faire approach to agriculture and rural development which resulted in further decline in agricultural production, the cultivated area of arable lands, and primary agricultural production. However, the government economic reforms of 2010-2011 helped Georgia grow its economy and maintain macroeconomic stability (FAO, 2012). In relation to agriculture it was only with the new government after 2013 that systematic support started, based on its new Agricultural Growth Strategy.

Nevertheless, Georgia is still today dependent on imports of agricultural products, its index of food self-sufficiency remains low and there is a steady decline of agriculture's share of foreign trade. Underdeveloped agricultural infrastructure, insufficient knowledge and the under- The agricultural sector provides food, raw materials and also helps to earn foreign exchange. The development of agro-industries is important in the creation of employment and generating income opportunities. Agri-business increases economic growth and reduces poverty which can have a real impact on the development of a country (UNIDO, 2009). Therefore, still prevailing argument maintains that the overall development of a country depends upon the health of the agricultural sector which impels further industrialization in the country (Johnston, 1970). Bielik & Hupkova (2013) point out that the health of agricultural trade depends upon its balance of trade. The negative trade balances of both Czech and Slovak agricultural trade influence the development of their agricultural trade.

The argument is especially valid for developing countries where agriculture has been highlighted by many authors as the most important factor in national development. For instance, Husain and Khan (2011) identified that GDP and agricultural growth are positively related by using the Ordinary Least Square Method for the time period 1961-2007 in Pakistan. Chein & Thaipakdee (2013) also studied causality between agriculture and economic growth and found that agriculture plays an important role in the Thailand economy. Godoy.C & J. Dewbree (2010) also claim that agricultural development plays a vital role in poverty reduction and economic transformation. Agricultural growth reduces poverty through direct impacts on farm incomes and employment while indirect impacts are through value chain linkages. Vogel (1994) examined agriculture as a factor of economic growth in 27 countries and confirmed that agriculture served as an engine of growth in the overall economy. At the same time, he found that the importance of agriculture diminished significantly as the country started advancing industrially. Tiffin & Irz (2006) also find evidence that supports the argument that agricultural value added is a causal variable of economic growth in developing countries while the direction of causality in

developed countries is unclear. Their tests were done by using the Granger Causality Test and co-integration in panel data for 85 countries.

The role of agriculture as the main determinant of economic growth is generally explained in terms of trade. Thornton (1997) found an export-led growth strategy in Italy, Norway, Sweden and Mexico in the 19th century by employing Granger Causality in terms of a Vector Error Correction Model (VECM). Love and Chandra (2005) studied the link between trade and economic growth by using three time series analysis techniques, namely, Unit Root, Co-integration and Causality. The results revealed that export-led economic growth were found in India, the Maldives and Nepal as well as finding growth-led exports in Bangladesh and Bhutan. The study of Thungsuwan and Thompson (2003) in Thailand supported the hypothesis of export-led economic growth with positive impacts in the short-term and long-term relationship of exports and economic growth. These findings support the relationship between agriculture and economic growth. Timers (2005) correlated poverty and growth in agricultural output and found that two-thirds of the reduction in poverty was due to growth in agricultural output at the provincial level.

Elbeydi (2013) finds the unidirectional causality relationship between agricultural output and economic growth in Libya. His results suggest that if this positive development continues then the agricultural sector will play a major role in future. Ramphul (2013) investigated the nature of the causal relationship with India's GDP of agriculture and agricultural exports, using the Granger Causality Test via the Vector Error-Correction Model over the period 1970–1971 to 2009–2010. He suggested outward-looking, export-promotion policies offered potential for agricultural growth.

Katircioglu (2006) used the annual data covering the 1975-2002 period to analyze the relationship between agricultural output and economic growth using a Co-integration and Causality Test to find the direction of causality in North Cyprus. Economic growth was measured by real gross domestic product and agriculture growth by agriculture value added to GDP. The empirical result from his study suggests that there is a long-term equilibrium relationship between agricultural output growth and economic growth. His result also indicates that there is a bidirectional causal relationship between these variables. This study concludes that the agriculture sector still has an impact on the economy, although North Cyprus suffers from drought.

3. AIMS AND METHODOLOGY

Goal, specific objective, hypothesis

The *goal* of this PhD thesis is:

The main research question of this Ph.D. dissertation is to what extent the agricultural growth and development can be expected in post-Soviet country like Georgia? What are the main enabling factors? The thesis will analyze the question from three different perspectives and at three different levels – 1. At macroeconomic level of agricultural exports (Georgia was traditionally agricultural export oriented country under former Soviet Union times), 2. At the product level of the most promising agricultural product – Georgian wine, which still keeps good recognition in the regional and international markets and 3. At the micro level of individual small farmers groups as a primary engine of agricultural development and growth. Based on this mix of different findings conclusions and recommendation will be drawn for the near future of Georgian rural development.

The thesis is structured in three specific objectives:

1) To analyse internal and external factors which are crucial for making decision of farmers whether to join the cooperative or not and also to find out the weights of individual factors by which they affect this decision.

2) To identify barriers and positive stimulants of wine exports of Georgia

3) To analyze empirically the existence of a causal relationship between agricultural growth and GDP growth

Methodology

The methodology is different for each objectives.

Methodology for the first specific objective is builds on survey type of mixed research and first-hand experience through personal interviews of authors with members of cooperatives. The research design borrows from both - quantitative and qualitative methods employing convergent parallel mixed method of research (Creswell, 2014). This allowed for triangulation of quantitative and qualitative data and better interpretation of results. For qualitative part of the research, we use the cross-sectional non-experimental type of design based on complete population of members of newly established cooperatives in Imereti region of Western Georgia. In order to study factors influencing farmer's decision to join a cooperative, we use design including main research group of members of cooperatives with control group of farmers who has intended but after all not joined a cooperative for various reasons. Partial matching strategy without randomization has been employed. The pilot research was organized in July, 2015 conducted with 12 respondents, 7 members of cooperatives and 5 farmers from reference group.

Later, the methodology of the research was revised and adjusted to local conditions with main data collection in October - November 2015. 5.1 Conceptual framework and operationalization of the research For the first objective, following criteria were established in order to capture variations in institutional design and membership base among new cooperatives: For typology of new cooperatives - type of cooperatives according the main activity (marketing, production, service and input supply cooperatives), cooperatives' products, land owned and land managed by cooperatives, number of members, cooperatives' assets, financial grant provided and co-financing of grant by members, governance structures and loans taken by cooperatives. For analysis of membership base - socio-economic characteristics of members, land possessed by members of cooperatives, cooperatives members' income and geographical distance of their farm to cooperatives' headquarters, cooperatives members' employees and taken credits. Based on review of above mentioned literature (mainly Buschmann, 2008; Lampi, 2012; Teres and Bondarchuk, 2015; EC and FAO, 2012; USAID Georgia, 2011a;b) potential factors of institutional cooperative formation were identified and grouped in categories distinguished as external and internal. For the second objective of our research, some factors were employed as variables for the econometric model, while others were analysed by descriptive statistics methods only: Internal factors come from within target group itself. They are basically objective or subjective characteristics of the studied community of farmers.

There are 3 categories recognized under this group in our research: We start with socio-economic characteristics of respondents. Beside personal data of target group's age, gender and education, also information on farm size and income were collected with the aim to reveal whether personal characteristics are associated with the incentive to cooperate. Other group of factors measured level of social capital. Based on available body of knowledge, Georgian society is characteristic by low level of bridging capital while bonding capital is unusually strong. In order to capture this potential influence, we investigated trust and business inside and outside the community. Attention was paid also to other kinds of relationships inside the village, as information sharing, provision of help or informal institutions within the community. Individual factors and competences was third and most varied category of measured internal factors. We assume that past negative experience with collectivization still play important role in willingness to cooperate, so the extent of its impact on farmers groups' formation was important for our approach. The role of leadership on forming the institutions was also examined. Experiences in the production of major crops was included as well. External factors represent influence independent from the farmers and out of their control: State and international donor policies have usually decisive impact on formation of producers' groups. Favourable taxation and legislation as well as availability of credit and national grant incentives are typically portrayed with strong effect for enabling environment for horizontal integration. At the same time, trust in national legal system is necessary. We also recognize that one of the crucial factors currently present in Georgia might be international donors' policies and availability of their support.

We perceived importance of the availability of credit from international donors to such an extent that we decided to control for this characteristics among respondents. As a tool we used matching of characteristics between research and control group of farmers based on the fact that all of them were involved in initial stages of informational campaign and trainings by NGOs responsible for grant distribution. Our assumption was that even farmers in control group were aware of the possibility of financial support and could have been potential target groups for donor intervention. The second category of external factors concerns market conditions. We assume that the level of functioning of the agricultural and financial market significantly influences the tendency to form producers' organizations. Access to services, inputs, trainings, information, start-up or operational capital and number of farmers with the same product can be one of driving forces of cooperation.

The ***methodology for the second specific objective*** will be based on the ***gravity model.*** The value of export of Georgian wine to its majoring trade partners is explained through an extended form of the Gravity model using cross sectional data and panel data analysis. Cross-sectional and longitudinal data to analyze the foreign trade with the wine (Konig and Schulze, 2008).

We will analyses the cross sectional data of Georgia wines in 2015. The relationships between dependent variable as the wine exports and other independent variables are characterized by following equation:

$$\ln ExpW_j = \gamma_0 + + \beta_1 \ln GDP_J + \beta_2 lnPop_j + \beta_3 lnDist_j + \beta_4 \ln Subs_j + \beta_5\ HRAN_j + \beta_6\ WAR_j + \beta_7 UHist_j + \beta_8 SIM_j + \beta_9 lnPS_j + u_j$$

We do not use the production of wine for the specific year because it is constant within one year. This means we can exclude the effect of change of this value to changes in the dependent variable-wine exports to country j.

Panel Analysis:

To examine the bilateral trade of Georgia with the neighborhood countries we use pooled regression model where the time period is from 2008-2015. The allocation of Georgian wine is given by the following equation. The coefficient α, β, γ, η, ς, are identical for all j and t. The equation that we estimate for this panel analysis can be written as

$$\ln ExpW_{jt} = \alpha_0 + \alpha lnQwProd_{it} + \beta lnPcGDP_{jt\ +}\ \gamma lnPopj_t + \delta lnDist_j + \eta ln\ SIM_{jt} + \lambda_1\ EU_{jt} + \ \lambda_2\ CIS_{jt} + + \lambda_3\ HRAN_{jt} + \lambda_4\ PS_{jt} + \lambda_5\ TEMP_{jt}\ + \varepsilon_{it}$$

Where

$ExpW_j$ - The value of Georgian export of wine to the country j

γ_0 - Constant

GDP_j - GDP per inhabitant of the country j

Pop_j - The population of country j year t , in million inhabitants

$Dist_j$ - Distance of the countries (capital cities) from exporting country j

Subs - Subsidies on grapes

$HRAN_j$- Dummy variables which take value 1 if country j has a state border with the country i.

MN_j - Dummy variables which take value 1 the country i have the market awareness with the country j it takes value 1.

PS_j - Dummy variable which takes value 1 has any political sanction with countryj

WR_j - Dummy variable which takes value 1 if the country i has war with country j

RL_j - Dummy variable which takes value 1 if the country i speaks the Russian Language.

EU - Dummy variables which value 1 if the country j belongs to this organization

CIS - Dummy Variable if the importing countries are the member of this organization than it takes the dummy variable 1

Where:

α, η, λ_1, λ_2- the sensitivity change of the dependent variable to the changes in independent variable

Data for the number of those inhabitants of the examined countries were received from the database of the population size. We recalculated the distance between from the countries based on the air of their capital countries. Database of UN is used for the data of the gross domestic products. Georgian wine production is reporting a country was drawn from a database of INTRASTATSR

The *methodology for the 3rd objective* will be based on the *Granger Causality test*. In order to determine the relationship between agriculture and economic growth we have adopted different econometric approaches and methods to test the long term causal relationship between agricultural GDP and GDP. The data used in this study is agriculture GDP (% of agriculture value added to GDP) and overall GDP growth rate. Annual data of GDP and agriculture GDP are obtained from the database of the World Bank (World Development Indicator) starting from the period 1980 to 2013. For this study, Grtel software version 1.6.5 and the Microsoft E-views package were applied. Macroeconomic time series data are generally characterized by a stochastic trend which can be eliminated by differentiations. Some variables are stationary after one differentiation and some are stationary after more than one differentiation and some may

become stationary by more than one. In order to test the stationary nature of the variables, the Augmented Dickey-Fuller (ADF) technique was utilized. The ADF equation was used for the case when it includes only the intercept (Dickey & Fuller, 1979).

$$\Delta y_t = \beta_0 + \beta_1 t + \alpha\, y_{t-1} + \sum_{it=1}^{n} \gamma_i \Delta\, y_{t-1} + \varepsilon_t \qquad (1)$$

Where ε_t is white noise error. The null hypothesis is $\alpha=0$ (unit root). In order for the time series to be stationary, α must be negative, i.e. $\alpha<0$. However, a test for a small sample size is not fully reliable as it rejects the null hypothesis when it is true and accepts it when false, and this is mainly due to its size and power properties (Dejong et al, 1992 & Harris 2003).

To avoid this problem, the Dickey-Fuller Generalized Least Square (DF-GLS) is also used. This test solves the problem of the data size and power properties. The newly developed test is also called a de-trending test, as developed by Elliot et al (1992).

This test adds to the results of the ADF test and is based on the null hypothesis Ho: $\alpha^* = 0$ in the regression:

$$\Delta y_t^d = \alpha^*\, y_{t-1}^d + \alpha_1\, \Delta y_{t-1}^d + \ldots\ldots + \alpha_{p-1}^*\, \Delta y_{t-p+1}^d + \eta_t \qquad (2)$$

Where y_t^d is the GLS de-trended series.

The Johansen Co-integration Test is employed to determine long term associations. This technique is only able to show the existence of a co-integrating equation but it fails to give any further detail about long-term associations. In the Johansen test, if the data or variables are non-stationary at their raw data level, they are integrated to a 1st differential. However, some data being integrated to a first order does not mean that the whole series are integrated. Interpretation based on Vector Auto Regression leads to an incorrect conclusion. In such a case, Vector Error Correction can resolve the short-term and long-term relationship between the variables.

Co-integration analysis allows non stationary data to be used so that spurious results are avoided. This study aims to examine whether there is a long-term relationship or not. For this purpose, a model developed by (Johansen, 1988) and (Johansen and Juselius, 1990) is used.

We assumed the hypothesis

$$not\, stationary\, for\, \hat{\mu}_t \vee not\, cointegration\, if\, t_\delta > \tau$$
$$HO{:}\ \delta = 0$$

$$stationary\, for\, \hat{\mu}_t \vee have\, cointegration\, if\, t_\delta < \tau$$
$$H1{:}\ \delta < 0$$

t_δ is the critical t-static in this model, the null hypothesis is $\delta = 0$ and $\hat{\mu}_t$ is the error term. The Johansen–Juselius Model approximates to two likelihood ratio tests such as the Trace Test and the Eigen Value Test.

VECTOR ERROR CORRECTION MODEL

If co-integration exists between two variables than proper statistical inference is obtained only by analyzing causality based on the Error Correction Model (ECM) (Engel and Granger, 1987). The VECM estimation is performed by following the VAR (Vector Autoregression Model) framework:

$$\Delta GDP_t = \sum_{i=1}^{n} \emptyset_i \, GDP_{t-i} + \sum_{i=1}^{n} \beta i \, \Delta AGDP_{t-1} + \delta 1 \varepsilon_{t-1} + \varepsilon_{1t}$$

$$\Delta AGDP_t = \sum_{j=1}^{n} \emptyset_j \, AGDP_{t-j} + \sum_{j=1}^{n} \beta j \, \Delta GDP_{t-1} + \delta 2 \mathrm{e}_{t-1} + \varepsilon_{1t} \qquad (3)$$

The coefficient of the error term (δ measures the deviation of the dependent variable from long term equilibrium. The F Wald test is also used to find short term causality. If the coefficient is negative and significant then there exists long term causality. Similarly, short term causality exists if the chi-square is significant in the F Wald test.

4. AVAILABLE RESULTS:

Small Farmers in Western Georgia Willing to Break the Mental Block and Establish Producers' Groups

Cooperatives most often focus on processing of grapes into wine and one cooperative even own its vineyard for production of grapes. Two cooperatives produce herbs, mainly dill and parsley and there are also two dairy cooperatives, one of them producing pasteurized milk and second one making traditional regional cheese Imeruli. Other products generated as the main income of researched cooperatives include grapes seedling, corn, honey and artificial combs for beehives, chicken, lemonade and black tea. Products are typically sold directly in villages at farm gate to local consumers or in regional market in close cities to wholesalers and processing companies. Cooperative from Racha supplies its honey beside regional capital Ambrolauri also at national level to Tbilisi. Three cooperatives succeeded at international market with selling of herbs to Greece and Ukraine where dill, parsley and coriander is further processed while wine from Imereti has buyer in Japan.

All 11 studied cooperatives offer marketing to their members as the primary function of the institution. Cooperatives buy products from members for advantageous selling prices and with the guarantee of regular sales of all production so the member do not have to rely on insecure contracts with middleman who can suddenly decrease purchasing prices or find other suppliers of products. Five cooperatives focus also on joint production of crops independently from members' own farming activities. Nine cooperatives add value to their products, means they engage in processing of raw materials into partially-processed goods or final commodities ready to be distributed through different marketing channels to wholesaler or final consumer. Services in terms of cooling and storing are provided by two herbs cooperatives to their members. Honey and chicken cooperatives serve to members as well as non-members who can process their honey on cooperative's assets or use cooperative's hatching facilities respectively. Cooperative pasteurizing milk offers to its member's services in terms of supplying necessary inputs as medicines, feed and straw for farmers' cattle. Tea and herb cooperative supply members with fertilizers, seeds and fencing material and furthermore non-members can obtain these inputs too.

Regarding the management of the cooperatives it is required by the law to have Board of Directors and Director elected in each cooperative. During the establishment process all respondents participated at the election process that will be repeated in majority of cases once in four years, few cooperatives agreed to elect new leadership more frequently - once in three years and in one case even every year. Management Board has in average for researched cooperatives 3 members. Majority of cooperatives arrange the General meetings every month, two cooperatives' governing bodies meet once in three months, one Board of Directors held meeting once in six month, another once a year and highest frequency of General meetings has milk cooperative - it meets every week. None of the cooperatives have full time management, only

one of wine cooperative employs part-time accountant and two cooperatives hire together six agricultural labor force for seasonal works.

The average size of land owned by seven cooperatives is almost 1.5 ha. Nevertheless real ownership of the land is questionable because mostly the land of individual members is used for production or processing purposes of cooperative without legal transfer of ownership rights on cooperative as legal entity. There are cases when building with all processing equipment is built on plot of one of the member although property rights haven't been solved yet. Thus, the problem can arise in case of cooperative's break up. Only 4 cooperatives do not possess any land which is the case also for three production cooperatives. Obviously, production process takes place on the members' land. If any conflict among members appears the owner of the land can appropriate the production without paying off other members because the land officially doesn't belong to the cooperative.

Financial grant given to the cooperatives was 60,000 GEL in average. Use of the funding was limited on the purchase or restore of assets which are directly connected to the main business of cooperatives. Grant was mostly used to acquire production or processing equipment and/or vehicles, trucks or tractors and few decided to restore buildings invested into cooperatives by members for processing purpose. Co-financing investment exceeded in majority of cases the threshold of 25% required by the donor. In average cooperatives invested 28, 000 GEL from private sources. Lowest co-financing was 5,055 GEL while the highest reached 88,200 GEL which is even more than value received grant from donor. In this case members invested their high value land for production of wine to ensure the co-funding. The issue of land ownership is highly relevant here as members still use the land for individual production of grapes. Beside land also buildings and equipment were mostly provided as in-kind investment representing substantial part of co-financing. In cash investment corresponded to about half of remaining funding from private sources.

All cooperatives are young existing for only about one and half a year so less than two seasons. Therefore neither reliable calculations of profit and loss nor the report on profit paid to members by cooperatives have been made yet. Nevertheless they are all active in their business regarding marketing of members' products and few of them show first other activities in form of services. For instance one herb cooperative already started with rehabilitation of irrigation system and storage and cooling of products in cooperative facility, another cooperative producing herbs supply seeds and fertilizers to members and two others provided transportation and consultation services. So far, cooperatives reported also some constraints to their business which is mainly limited access to capital stated by all cooperatives. Other frequently noted problems hindering smooth operation are natural disaster in form of droughts that appeared last season, demanding government regulation as high and complicated taxes, and business regulations, poor access to skilled employees and expensive or limited access to inputs. In terms of infrastructure mainly unsatisfactory conditions of roads and power supply make it more difficult for cooperatives to run prosperous business. On the other hand access to information and market, quality of

irrigation system, communication and water and sanitation were relatively positively evaluated by most of cooperatives.

Despite difficulties in obtaining the loan from commercial banks three cooperatives have already taken a loan in values of 6,400, 5,000 and 48,000 GEL respectively. First one was used for purchase of materials and inputs while other two for business expansion.

Characteristics of coop members

The size of cooperatives measured in terms of number of members is rather small with average of 7.6 members per cooperative. The only bigger one is herbs cooperative with 26 members while all others have less than 10 members. Without extreme value average membership of remaining 10 cooperatives is 5.8 members. All together 11 women, giving 13 % of members, participate in the ENPARD project and they associate in three cooperatives. Young farmers are underrepresented in cooperatives. Only eight people younger than 30 years participate in investigated cooperatives and youngest two members are 23 years old. Average age of respondents is 46 years with oldest farmer having 69 years. Out of 84 cooperatives' members more than half of them (43) have university education. Oversupply on labour market and mismatch between educational system and demand on labour market causes unemployability of considerable part of economically active population in cities. They are forced to employ themselves in working positions that are inadequate to their professional expertise. To make a living after finishing of studies they return to home countryside and work on farms where earnings are significantly lower than in cities but at least they produce food for subsistence. Eight cooperatives have two or more members coming from the same family and cooperative focusing on production of seedlings and corn consists of members of only one family. Interesting fact about this cooperative is that during only one year of its existence it lost one member and so currently have just four members which is one member less than required by the law.

The average size of members' land is 1.3 ha and only two members do not posses any land. The smallest parcel has 0.12 ha while the biggest 10.25 ha so the standard deviation of individuals' land size doesn't exceed 1.9 ha within one cooperative, means the members within cooperatives are quite similar in this regard. On the other hand differences between members within the cooperatives in terms of income are tremendous. Average annual income of respondents' HH is 15,993 GEL with the highest income reaching over 83,000 GEL while the poorest families earn only about 1,000 GEL per year. The lowest differences of income between members of one cooperative is around 3,500 GEL but there is herb cooperative with standard deviation of 27,000 GEL; the range of incomes within its members is 71,310 GEL. In total major part of respondents' income origins from selling of agricultural products. However members of smaller seven out of total eleven cooperatives receive bigger part of their income from non-agricultural activities. Half of this income represents salaries earned from employment in company or government, quarter of income HH's get in form of pensions or disability insurance. Rest of other than

agricultural income is obtained from self-employment and grants/vouchers from the government, donor organization and NGOs.

Only five cooperatives associate farmers who are all engaged in the production of agricultural product that is main business of their cooperative. 20 members of other six cooperatives do not work in the same business as cooperative does and 15 of them are not farmers at all. Extreme cases are corn, chicken and tea cooperatives whose only one member produce cooperative's main commodity while all others gain majority of their income from non-agricultural activities. Even though most of them own some plots of land they use it rather for renting or doing other than agricultural businesses. Engagement of members' non-farmers into agricultural cooperatives is highly unclear.

High inequality applies also for members' shares into cooperative. It is demanded by the law to invest at least one share in minimum value of 50 GEL to become a member of agricultural cooperative. Nevertheless 13 out of 84 respondents answered they didn't invest any share into the cooperative. The average difference between members of the cooperatives in terms of investment is 4,391 GEL which implies there is high inequality within particular cooperatives. The highest standard deviation of members share of capital is almost 25,000 GEL in one of wine cooperatives where two members with the lowest investment have share of 3,300GEL while two with highest 55,000 GEL. The reason for such huge differences can be misunderstanding of shares which are often confused with co-financing of donor's grant. In the case of mentioned wine cooperative the value of the highest shares exactly corresponds to the value of building and land given as the in-kind co-funding investment during establishment process of cooperative.

Most of the members within one cooperative lives in the same village or are even neighbors. The average distance of respondents' farms from the cooperative headquarter is 4.2 km. Extreme case is wine cooperative whose all members answered they live directly next to the center of the cooperative. On the other hand another cooperative producing wine has one remote member who lives 45 km far from the village so the difference between members' farms location and cooperative's processing facility is 17.8 km.

Members of seven cooperatives do not employ any workers neither for their individual farming nor for cooperative purposes. Other four cooperatives' members provide seasonal work for totally 540 people from which 400 workers is employed only by four farmers from one herb cooperative where employees mainly help during harvest time with picking up and packaging of herbs. Members of other two wine and one herb cooperatives provide job in average for 2, 3 and 6 employees respectively. 11 permanent workers are employed on four individual herb farms.

Except of the smallest corn cooperative all others have at least one member who has taken a loan. Totally 40 respondents got a credit from official commercial bank in average value 7,159 GEL. In 13 cases farmers used borrowed money for expansion of the business, nine cooperative members needed loan for reconstruction of house, six respondents answered they paid school

fees from the credit and five times was the purchase of a car stated as the purpose for taking a loan. Among less frequent means of credit use appeared purchase or building of a house, medical treatment of family member and acquisition of agricultural land.

Long-term Relationship between Agriculture and Economic Growth in Georgia.
EMPIRICAL RESULTS

Table-1: Unit Root Test Results

Variables	ADF TEST		DF-GLS TEST	
	Level	1st Difference	Level	1st Difference
AGDP	-1.0674	-4.2698*	-1.1266	-4.3156*
GDPGR	-2.0782	-4.6664*	-2.0832	-4.7438*

* Significance at 1% level

The results in Table-1 indicate that both variables, the AGDP (Agriculture GDP growth rate) and the GDPGR (gross domestic product growth rate), are not stationary at their raw data levels. In other words, they have a unit root. The likely reason is that they have trends. Then, we repeated the Unit Root Test for the first differential for both variables. The results indicate that the AGDP and GDPGR do become stationary as first differentials. The statistics given in the ADF test of Table-1 shows that the variable does not have the problem of a unit root in its 1st differential. Both variables are significant at their first differentials in intercept, trend and intercept, and also without trend and intercept. Similarly, in the DF-GLS test, the variables were also stationary after differentiation. Since the computed values (in absolute value) are greater than the critical values (in absolute value) at a 1% level of significance, the null hypothesis of the unit root or non-stationary variable can be rejected.

Table-2: Lag order Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-241.8146	NA	23254.70	15.72997	15.82249	15.76013
1	-192.0051	89.97846*	1211.944*	12.77452*	13.05207*	12.86499*
2	-188.6870	5.565838	1272.124	12.81851	13.28109	12.96930
3	-187.5253	1.798676	1543.361	13.00163	13.64924	13.21274

* indicates lag order selected by the criterion.

AIC: Akaike Information Criterion, SC: Schwarz Criterion, & HQ: Hannan-Quinn

Here the Schwarz Criterion (SC) & Hannan-Quinn Information Criterion (HQ) has been selected to estimate the lag order. The estimated results are given above in Table-2 as this does not allow us arrive at more than one lag because of the small data set (Gujarati, 2003).

Table-3: Co-integration Test

Null hypothesis	Max. Eigen value	5% critical value	Trace statistics	5% critical value
None*	28.038	14.26460	31.44277	15.49471
At most one	3.404462	3.8414	3.404462	3.84146

The result of Table-3 shows that the Trace statistic is above the 5% critical values; hence it rejects the null hypothesis of no Co-integration in favor of one co-integrating vector. Similarly, the Maximum Eigen Value test statistic is also above the 5% critical values, which reject the null hypothesis of no Co-integration. The result thus suggests that there exists a long-term stable relationship between economic growth and agricultural growth.

Table-4: Long-term Causality

	ECMt-1	T-Statistic	P value
Long - term causality from GDP to AGRI	-0.369	-4.587	0.0002
Long - term causality from AGRI to GDP	-0.413	-0.332	0.7520

ARCH F stat 0.0208 LM test (0.729)

The result for long-term Granger causality in Table-4 shows that both coefficients have the expected negative values but causality from agriculture to national economy is insignificant at the 5 % level. The GDP causation AGDP is significant at a 5 % level suggesting that economic growth causes agricultural growth.

Table-5: Short term Causality

	Coefficients	Chi-square	P-value
D(GDP(-1)	-0.500	5.21	0.0356
D(AGRI(-1))	0.125	0.10	0.749

ARCH F stat 0.0208 LM test (0.729)

The estimated result in Table-5 shows that p value is significant at a 5 % level, meaning that there is short-term causality from economic growth to agriculture. However, there is no short-term causal effect from agriculture to economic growth as exists in the long-term. The accuracy of the estimated results is validated by performing several diagnostic tests such as a Serial Correlation (LM) Test and a Heterocedasticity Test (ARCH). Both of the tests support the validity of result.

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