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Factors influencing farmers' willingness to participate in Farm to School programmes – The case of Albania

Farm to school (F2S) programmes ensure school pupils receive an appropriate diet, fight malnutrition, and motivate children to attend school. The participation of local smallholders in F2S schemes contributes to these objectives, but also provides a market opportunity for local small farms. This is particularly important in the case of developing or emerging economies that are characterised by malnutrition among children and where smallholdings often struggle with limited market access, as is the case with Albania. The aim of this paper is to explore the main factors affecting farmers' willingness to participate in a F2S scheme using data from a structured farm survey. Regression analysis results show that economically based motivation (farm-related factors such as size and post-harvest losses) intertwined with social capital factors and attitudinal indicators (experience and attitudes towards cooperation, reliance on local governmental support, information, and product safety perception level) affect farmers' willingness to participate in F2S schemes. For farmers to participate viably in such schemes, it is necessary to provide knowledge, awareness, and support for ensuring compliance with food safety and quality standards and for improving cooperation.

Keywords: Farm to school, farmer, willingness to participate, Albania

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Introduction

School food and nutrition programmes are tools that can help ensure an appropriate diet for school pupils, fight malnutrition, and motivate children to attend school. Such programmes are well established in most advanced economies such as United States, Australia, and many European countries. In developing or emerging economies, such programmes are even more important, given the widespread malnutrition among children and market access challenges faced by many poor smallholders (Sumberg and Sabates-Wheeler, 2011). Unfortunately, a combination of a lack of government policies, limited financial resources and a lack of institutional capacity to operate school food programmes often prevents the establishment of food nutrition programmes (FAO, 2019).

Food nutrition programmes are the basis for establishing farm-to-school (F2S) schemes. These schemes are becoming a viable avenue for positively impacting children's dietary habits as well as the sustainability of the entire food system (Feenstra and Ohmart, 2012). F2S schemes also contribute to reducing food waste, educate children about healthy food practices and ensure that pupils follow a balanced and healthy dietary regime (Botkins and Roe, 2018). On the other hand, these initiatives aim at integrating local small farms into school food and nutrition programme schemes, subsequently improving their access to market (Plakias *et al.*, 2020) and improving the local economy (Bauman and McFadden, 2017). While developed countries have evolved into new stages of F2S schemes (such as reducing food waste, improving child education, increasing dietary diversity, educating youth on nutrition, and strengthening cultural

identity), in some developing countries there are emerging the early stages of these schemes (Fitzsimmons *et al.*, 2019). In countries where F2S programmes are weakly developed, it is crucial to analyse farmers' capacity and willingness to participate in F2S programmes. This is also the case with Albania, a post-socialist country where there are no F2S programmes, despite the potential and the need for such programmes.

The integration of smallholder farmers into formal markets depends on a wide range of factors and it can be explored through different perspectives. Joshi *et al.* (2008) argue that framing all supply dimensions – especially those of farmers – as accurately as possible provides the conditions under which programmes can function effectively. While many studies focus on the demand side, including the impact on pupils' nutrition, school involvement and local governance (Bonanno and Mendis, 2021; Wen and Connolly, 2022), only a few scholars have explored the supply issues (Conner *et al.*, 2012, Joshi *et al.*, 2008; Izumi *et al.*, 2010). Botkins and Roe (2018) found that both school characteristics and local farm production factors were associated with participation in F2S, yielding positive effects on both sides. However, according to Conner *et al.* (2012), farms are a key component of F2S programmes and determine the successful adoption of such schemes. The farmers' capacity and willingness to participate in F2S schemes is crucial not only for the F2S programmes but also in the framework of the consolidation of local markets. However, in transition economies, poor organisation of the value chain (weak vertical and horizontal cooperation) is a major challenge (Imami *et al.*, 2013; Gërdoçi *et al.*, 2017), making it more challenging to establish F2S. Despite the

importance of local short food supply chains (i.e. F2S) for rural communities, food quality, children's health and the overall local economy, research on this topic in post-socialist transition economies remains scarce.

According to most surveys carried out in Albania, food insecurity is moderate overall. Rural food security is moderate due to flexible food systems, low population density, high equality of agricultural land ownership/use and abundant, extensively used common land (pastures and meadows), which together represent good conditions for rural communities to access a diversified but highly seasonal food intake. Poor peri-urban and urban families are more exposed to food insecurity. In Albania, many children exhibit poor nutritional status, have unhealthy diets and inadequate physical activity. Underweight and undernutrition remain a concern in some areas (although to a lesser extent when compared to the past) (FAO, 2022). Weak consumption habits are one of the factors. For instance, Hyska *et al.* (2020) found that approximately 63% reported having eaten breakfast regularly. Being overweight among Albanian children – linked to unhealthy or excessive eating and overall inadequate lifestyle – represents a growing problem. The prevalence of both overweightness and obesity was found to be much higher among urban children compared with their rural counterparts (Hyska *et al.*, 2014). Child and adolescent obesity were not common prior to 2000 in Albania but have been increasing over the past decades and according to the latest estimates, account for almost 8% of the child and adolescent population in the country (FAO, 2022).

There are two main challenges regarding food supply chain organisation and farmers' integration in potential F2S schemes. The first challenge relates to the institutional framework guaranteeing food safety and quality. There are gaps in food safety standards throughout the downstream food value chain in Albania. The national food safety control system faces serious problems in terms of legislation, infrastructure, institutional capacity, control, and enforcement (Zhlhima *et al.*, 2015). In addition to weak law enforcement, another factor resulting in low food quality and safety is limited knowledge/awareness among farmers about animal diseases, inputs, food safety standards, and their consequences for the health of family farms and end consumers. These issues are exacerbated in the case of livestock, and consequently, meat and dairy products (Zhlhima *et al.*, 2015; Gjenci *et al.*, 2016). These constraints make direct procurement to farms without intermediaries difficult to enact. A recent study highlights that pupils, parents and teachers consider food safety to be one of the main concerns/constraints affecting their intention to support or participate in F2S schemes (Hyska *et al.*, 2020).

The second challenge relates to the small size of farms (approx. 1.2 hectares on average) combined with fragmentation (3 or more parcels per farm), which together affect the capacity to comply with (food safety and quality) standards and to achieve efficiency. Access to the market is becoming more difficult for local producers, especially for smaller (and fragmented) farms due to the expansion of supermarket chains, which are more demanding in terms of volumes and standards (FAO, 2022). In the context of the slow pace of the farm consolidation process, given that the small farm size hampers economies of scale (necessary to compete in terms of efficiency), it is necessary to look for alternatives. Since

Albanian agriculture (small farms) can hardly compete with large volumes in the local and especially export markets, participation in short (local) value chains is important; this can be linked to F2S.

Despite the importance and potential that F2S schemes represent for children's nutrition (considering both need to improve access to healthy food and preference for local origin) and for local farmers' access in the market, such schemes have not been developed in Albania. After 2013, reforms on Albania's social care and protection systems, aimed to divert a part of economic aid (frequently cited as the only instrument of social protection in the country) to households in conjunction with other instruments such as food for children and other types of assistance were expected to function. However, no major change was experienced, despite the willingness to adopt them. Indeed, since 2012, only one primary school was subject to food nutrition (due to exclusive presence of minorities, namely Roma and Balkan Egyptian children), through the direct provision of basic school meals (FAO, 2019).

In recent years, school feeding programmes have been gaining in importance and have been the focus of policy discussions on how to enable a healthy diet and better education for children. A concrete initiative took place in 2018, aimed at testing/piloting the introduction of a large-scale school feeding programme in Albania. Yet, despite the efforts of a few local governments, the implementation of F2S programmes has not taken place.

Economic and social capital factors as well as experiences and perceptions affect farmers' willingness to participate in coordinated food supply chains, as in the case of F2S schemes. Our objective is to assess the factors that influence farmers' willingness to participate in F2S programmes, in the context of institutional weaknesses in terms of safety and quality infrastructure. The analysis of the Albanian farmers is an illustrative case that can help fill the gap in the literature of post socialist countries.

The rest of the paper is structured as follows: Section 2 presents the literature review which serves as a basis for the hypotheses. Section 3 consists of methods, Section 4 demonstrates the results, while Section 5 concludes.

Literature and Hypotheses

There is a rich literature analysing the system of supply of local food for school feeding programmes (Christensen *et al.*, 2019a; Boys and Fraser, 2019). However, few studies explain the factors determining F2S programmes' feasibility. One of the crucial factors determining the successful implementation of F2S is farmers' capacities and willingness to participate in such programmes (Feenstra and Ohmart, 2012; Botkins and Roe, 2018; Fitzsimmons and O'Hara, 2019). Over the last few decades, especially in developing world, there has been growing research interest concerning farmers' behavioural intentions (beliefs, attitudes, perceptions about a particular decision or outcomes of a decision) and how they affect their farming decisions (Conner *et al.*, 2012, Joshi *et al.*, 2008; Izumi *et al.*, 2010). Following the theoretical arguments of Fishbein and Ajzen (2011), we can expect that attitudes towards a particular behaviour may affect behavioural beliefs and consequently the

intention of carrying it out. Therefore, we study willingness as a prerequisite of a farmer's potential engagement at the point in time when F2S are established.

As was highlighted earlier, food safety is a major concern. According to Janssen (2014), local farmers and school food service buyers have vastly different approaches to food production and handling. Local farmers have developed individually based marketing and handling processes, while school food service personnel focus on regularity and precise record-keeping – thus standards compliance is considered more important than (local) origin. For instance, O'Hara and Benson (2019), who focus on milk procurement in the framework of a F2S scheme, show that the local agricultural conditions (existence of local dairy production) do not strongly influence the probability that a school district sources local foods. This instead depends primarily on the standards of safety and quality to be achieved by the suppliers. Under most procurement rules, including here in Albania, it is not easy to discriminate between producers according to their location, hence quality and safety are the most important standards to be achieved. Even the farmers themselves perceive that product quality and safety chiefly determine how ready for F2S and how F2S-oriented they feel. Thus, we formulate the following hypothesis:

H1: Farmers' perceptions of the safety standards of their production are positively associated with their willingness to engage in F2S programmes.

The structure of the value chain is also an important factor. Higher fragmentation makes cooperation and the role of intermediaries more important. Christensen *et al.* (2019b) found the role of intermediaries in local procurement is key. Although the existence of intermediaries may be important for catalysing sales, on the other hand it may reduce the direct impact and benefits perceived by farmers on being integrated in these schemes of procurement. Thus, another option is collective engagement and cooperation in the value chain. Willingness to participate in cooperatives can enable integration in F2S schemes. Morakile *et al.* (2021) indicate that despite the perceived benefits of belonging to a group in the context of accessing government markets, about half of the smallholder farmers in areas of South Africa would prefer to remain independent from any form of aggregation or farmer group. The majority of the farmers – mainly those who have sufficient individual capacity – would prefer to approach the market individually. If a farmer has had a positive experience of joint activities, their attitude towards cooperation will dispose them favourably towards another type of coordination, such as contract farming. In addition, experience of cooperation practices such as sharing transport among farmers is likely to coincide with an openness to making joint sales through F2S schemes. Hence, our second hypothesis is as follows:

H2: The more favourable the attitudes on cooperation among farmers, the higher the willingness to participate in F2S. Farmers who have previous experience in carrying out joint actions are more willing to participate in F2S.

The existing empirical literature also indicates that there is a twofold picture of indicators, suggesting that farmers' motivations are largely based on social values on the one hand, and economic prospects on the other hand (Hinrichs, 2000; Izumi *et al.*, 2010; Conner *et al.*, 2012; Matts *et al.*, 2016; Nathan Rosenberg *et al.*, 2014). For instance, Izumi *et al.* (2010) found that farmers' motivations for selling their products to schools are market- and socially based: for example, finding new market opportunities for their production, perceived long-term economic benefits and realised social benefits (i.e., introducing children to nutritious foods and local community support). A later study (Conner *et al.*, 2012) builds on these results and empirically groups farmers' motivations so as to differentiate between the market versus social orientation of farmers willing to engage in local F2S programmes; it also explores for other variables. The authors suggest that market-oriented farmers are more willing to invest and incur increased transaction costs to meet F2S programme requirements. Although F2S impacts individual sales only modestly, Joshi *et al.* (2008) find that farmers see F2S as an instrument for additional sales through other venues. One potential added opportunity consists in the view that farmers, beyond profit maximisation, would be able to rely on reducing post-harvest losses. The intention to enter (formal) agreements also aims to address (market) losses. Previous research has shown that farmers who are engaged in contract farming or who have stable relations with buyers have lower losses (Imami *et al.*, 2013). Thus, we expect that:

H3: With an increased level of post-harvest losses, an increased willingness to participate in F2S schemes is to be expected.

Benefits in improved bargaining position through F2S are hampered by farmers' perception that production and/or marketing decisions lack coordination, a lack of (common) storage facilities and limited information. Therefore, there is a fundamental need also to explore the role of information in enticing farmers into F2S schemes. Information is one of the elements that are crucial to increasing trust and reducing uncertainty in market channels. For instance, providing more information on procurement procedures may reduce the perceived difficulties by farmers. The level of perception is also linked to uncertainty. Indeed, research shows that trust, uncertainty and investment in specific assets are key determinants of long-term relationships for Albanian farmers (Gërdoçi *et al.*, 2017). The perceived level of uncertainty is influenced by the level of information that farmers have about challenges (e.g. related to F2S). Thus, the less they are aware about challenges, the lower the perceived uncertainty and the higher the willingness to engage in F2S. This is the basis of our fourth hypothesis:

H4: Absence of information (or awareness concerning challenges relating to food procurement standards) is negatively associated with the willingness to participate in F2S. In addition, a high level of uncertainty is positively associated with the willingness to participate in F2S.

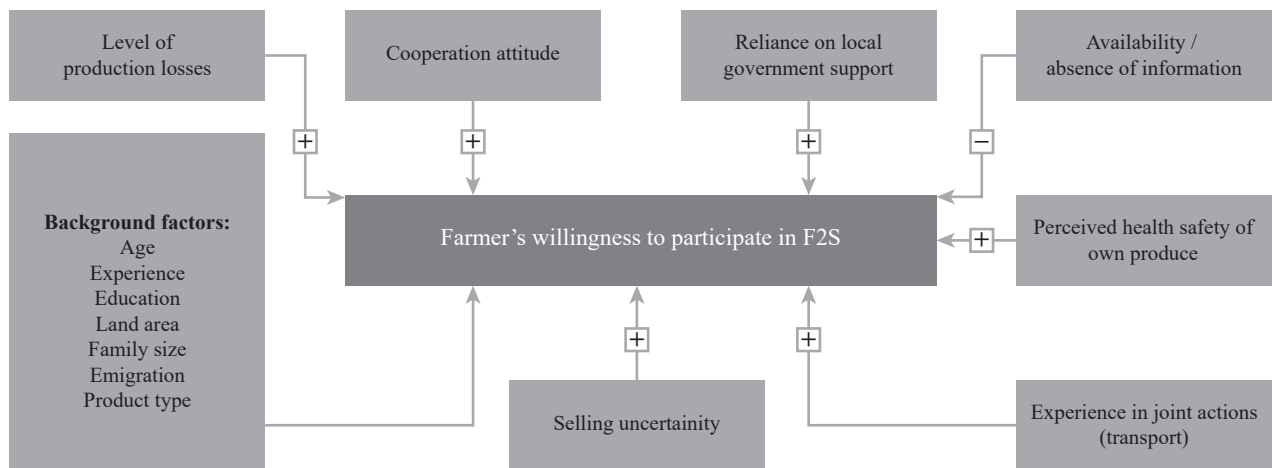


Figure 1: Conceptual framework of the study.

Source: Own composition

Institutional circumstances and the role of local government are also important. Authors such as Bagdonis *et al.* (2009) depict the importance of frame bridging and extension in North America case as strategies for expanding the F2S movement and revitalising the rural community through support of local agriculture. The role of local government is indispensable in enabling two objectives with one action: on one hand, securing stable sales to local farmers, and on the other hand, providing local and safe food to schoolchildren. Farmers are challenged by several barriers, for instance cost of food, labour, equipment, supply quantity, seasonality, distribution, etc. (Izumi *et al.*, 2010; Joshi *et al.*, 2008; Vallianatos *et al.*, 2004; Roche *et al.*, 2015; Feenstra *et al.*, 2011). These barrier factors become highly important issues for countries with weak institutions such as Albania; thus support from (local) government is crucial and farmers perceive local government support to be essential to providing the incentive for their integration into F2S. According to Thompson *et al.* (2014), appropriate state and local level agriculture infrastructure supports (e.g. food safety and good agriculture practice training, market-ready workshops, accessible value-add processing centres, and contract-grow procurement options) should be put in place in order to orient smallholder farmers into F2S programmes. Thus, prior experience with local government support is expected to positively influence farmers' willingness to participate in F2S, which serves as a basis for our fifth hypothesis:

H5: Reliance on local governmental support increases the likelihood of farmers to be willing to participate in F2S.

In our paper, farm and farmers characteristics (e.g. farm size, sociodemographic characteristics of the farmers household, etc.) are also included, which receive attention in behavioural studies but less so in F2S related literature. Matts *et al.* (2016) indicate that small scale farmers are less likely to rate economic factors as motives to participate in such market opportunities and large-scale farmers are less likely to be oriented towards social benefits of participation. Considering

the current farm structure in Albania, it is expected that the larger the land area, the higher are the odds that the farmer is willing to participate in F2S, due to produce availability. The household size is a very important labour endowment factor and increases the potential of the farm to be engaged in processes requiring product cleaning, sorting and packaging and other added value activities. Taking into account the high seasonality of production and the need for consistent supply in F2S, farmers engaged in greenhouse production have a higher capability than fruit producers in this regard and may therefore be more willing to participate in F2S programmes.

Additionally, farmers socio-demographic characteristics are important. Age, experience, education may influence farmers' willingness to pursue innovative market channels. While younger and more educated people are expected to be more open to exploring innovative market opportunities, on the other hand, (higher) education can also be negatively associated with farmers willingness to engage, since more educated farmers can be also more reluctant to take the risks that emerge from F2S. Innovation is often endorsed by returning migrants (F2S). Thus, returned migrants may be more able to understand the benefits of F2S.

The conceptual framework of the paper is presented in Figure 1.

Methods and Data

Questionnaire design

In addition to the literature review, focus groups and semi-structured interviews were used to determine the most relevant variables and the type of questions to be used in the structured farm questionnaire. The focus groups (FG) were carried with several stakeholders, namely farmers (FG 1), traders and consolidators (FG 2), municipality and school representatives (FG 3) and catering companies (FG 4). The number of participants to each focus group was from 8 to 12. A guideline was prepared for the focus groups which was divided in subsections according to the topics of the

research, namely the promptness of farmers to supply produce, the sustainability of the schemes, the procurement procedures and the overall system of cooperation and integration. In addition, 35 semi-structured interviews were carried out before and after the structured survey, which were useful both for the structured survey design and for validating or interpreting the findings. A snowball sampling method (Creswell, 2009) was applied to identify the main stakeholders and opinion leaders. The questionnaire was composed of several sections. The first section contains farmers sociodemographic characteristics. The second section contains farm structural attributes, while the third section is composed of questions used to explore farmers attitude and beliefs.

Data collection

The study considers the F2S linkage as a food system and aims to identify its main segments which are crucial to ensure food and nutrition security to schoolchildren during the school day. Structured survey interviews were carried with market-oriented farmers with homogenous product portfolios. Two types of farm profiles were targeted which were characterised by low production seasonality or high storage capacity: i) farms focused on the production of fruits which are more suitable to be stored for longer periods (apples, plums and nuts) and, ii) the greenhouse farms which produce vegetables (e.g. tomatoes, cucumbers, salads) throughout the year. The selection of these two activities is linked with the dietary requirements of pupils, but also with supply provision as being important elements of the products basket to be found in the (Albanian) market, and less risky related to food safety standards (when compared to livestock products), and relatively easy to store, transport and consume. Convenience is important considering that on one hand, there is a lack of premises and logistics at suppliers and schools, while on the other hand, the longer the period of production during the year, the more likely it is for stakeholders to establish stable relations and networks in the value chain and moreover, the greater are the chances to create convenient and enduring menus for children.

After the identification of the main products and regions (Korçë and Fier regions host the largest number of fruit/apple and greenhouse farmers, respectively), farmers were chosen following a two-stage sampling approach. A purposive sample method was applied in two main areas of concentration of these farms: i) the farming communities surrounding the Municipality of Korça with 250 farmers focused on production of apple, plums, and ii) 250 farms¹ of the farm communities surrounding the municipality of Fier (more than 20% of a total population of 1200 greenhouses), which are focused on production of off-seasonal vegetables raised under greenhouse systems such tomatoes, cucumber etc.

After identifying the areas/villages with higher concentration of farms operating in the chosen activity, a random sampling was carried within villages so as to have more variability in terms of structural factors related to the farm producing products of F2S relevance. The sampling frame was limited to market-oriented farms. The selection of the farmers' operators subject of the survey was based on the use of filter questions (farms with less than 0.2 ha of fruits in block and greenhouses with less than 0.1 ha of surface were not selected).

A pilot survey was carried out with 8 percent of the sample using two types of farms, namely greenhouse and fruit farms. The survey was carried by using groups of surveyors (two groups with four members each). The coordination was carried by the authors of this paper (two of the authors were coordinators of the survey), while the implementation was done in cooperation with the agriculture extension services of each region targeted by the survey. Questionnaires were completed using paper-based versions. Following the results of the pilot survey testing, minor changes/editing was introduced to the questionnaire before implementing the full survey.

Sample characteristics

Socio-economic characteristics and other descriptive indicators of the sample are depicted in the Table 1. Only 6% of the sample are women, while 94% are men (this

Table 1: Socio-demographic characteristics of the sample.

Age	No.	Percent	Education level	No.	Percent
<30	96	19.5%	Primary education	258	52.4%
31-40	112	22.8%	Agricultural secondary education	90	18.3%
41-50	111	22.6%	Other secondary education	100	20.3%
51-60	111	22.6%	University	44	8.9%
61<	62	12.6%	Total	492	100.0%
Total	492	100.0%			
Gender	No.	Percent	Employment	No.	Percent
Male	461	93.7%	Employed in the public sector	13	2.6%
Female	31	6.3%	Employed in the private sector	15	3.0%
Total	492	100%	Self-employed in my company/farm	436	88.6%
			Other (retiree, student, special needs, etc.)	28	5.7%
			Total	492	100.0%

Source: Own composition based on survey results

¹ Of which 30 in Fier (of 68 farms mainly in Strum, Zharrëz, and Frakull), 150 in Lushnje (of 830 farms mainly in Krutje dhe Bubullimë) and 70 between Berat and Fier (of 307 farms mainly Kutalli).

Table 2: Key descriptive statistics for surveyed farms.

	Indicator	Mean	Std. D	Min	Max
Orchard farmers	Age	50	14.1	20	79
	Cultivation experience of the main product (no. of years)	16	7.0	2	30
	Total agriculture land area (dynam ^{a)})	22.2	15.3	3	82
	Land area under orchards (dynam)	12.8	10.0	2	70
	Unused (fallow) land (dynam)	0.9	2.4	0	14
	Indicator	Mean	Std. D	Min	Max
Greenhouse	Age	41	12.2	19	75
	Cultivation experience of the main product (no. of years)	10.6	6.9	1	30
	Total agriculture land area (dynam)	12.0	9.7	2	80
	Land area under greenhouse vegetables (dynam)	3.6	2.9	1	30
	Unused (fallow) land (dynam)	0.6	1.8	0	16

^{a)} 1 hectare is equal to 10 dynam.

Source: Own composition based on survey results

indicator corresponds to the share of households' heads in rural communities (FAO, 2020)). Most of surveyed farmers have completed primary education (52%), 89% of them are (self) employed in the agriculture sector (agricultural activities being the main source of household incomes).

The average area cultivated is relatively small, around 1.3 hectares for orchards and 0.36 hectares for greenhouses respectively (Table 2). Consequently, volume production and the income from sales appear to be limited. Farmers involved in the greenhouse sector are relatively younger than the ones included in the orchard sector, and subsequently also their experience in the farming sector is lower than fruit trees farmers.

Data analysis

Data cleaning took place by using descriptive analyses based on calculated averages and addressing outliers. Furthermore, the questionnaire had control questions (interlinked questions) to validate the quality of implementation. After data cleaning, the sample reached 492 valid observations. Qualitative information collected through semi-structured interview notes was analysed using a simple content summarising approach and qualitative content analysis techniques, with the intention of summing up the most relevant and interesting topics emerged from the interviews, mainly to guide the process of structured questionnaire design. The information collected through the structured farm survey was subject to descriptive statistical analyses as well as regression analyses. The dependent variable, willingness to participate in F2S, is assessed using three categorical (ordinal) variables, where the lowest value reveals a low level of willingness to participate in F2S programmes:

- I am willing to contribute as part of a group to supply directly with food products massive centres of consumption (schools, kindergarten, social care, etc.)
- I am willing to supply by myself with food products massive centres of consumption (schools, kindergarten, social care, etc.)
- I am willing to supply an intermediary to supply massive centres of consumption (schools, kindergarten, social care, etc.)

A Principal Component Analyses was used to create a composite variable from these three questions. The variable created is solid in terms of eigenvalue estimates, in this case higher than 1 (KMO = 0.621, sig = 0.000, percent of variance 60.064). Higher values imply higher level of willingness to participate. The coefficients of correlation between the dependent composite variable and its constituent variables are very high – 0.83, 0.82 and 0.67, respectively.

Considering the continual value of the dependent variable, a linear regression analyse was used to explore the relationships between the developed latent variables and farmers' willingness to engage in F2S programmes. Linear regression is a linear model, which assumes a linear relationship between the input variables (x) and the single output variable (y). The dependent variable, in this case, is the willingness to participate, is calculated from a linear combination of the input variables (x). Method of least-squares is used as a principal approach for fitting the regression line (Montgomery et al., 2021). This method calculates the best-fitting line for the observed data by minimising the sum of the squares of the vertical deviations from each data point to the line (if a point lies on the fitted line exactly, then its vertical deviation is 0). Because the deviations are first squared, then summed, there are no cancellations between positive and negative values.

To select the variables, a correlation matrix was used. Following the main findings of the literature review and the focus groups opinions, we selected a series of variables related to farm, farmer characteristics and behaviours. The model controls for socio-economic characteristic of the farmer such as education, experience in cultivating the main product and experience in emigration (as a proxy for professional experience gained elsewhere). Family farm characteristics are also used such as household size, land ownership, type of main product sold (greenhouse vegetables versus fruits). In addition, farmers' previous experience of being engaged in group actions (joint transportation activity), experienced level of losses (product post-harvest losses due to perishability and sales bottlenecks), promptness to cooperate with other farms or with local government, and level of information on food procurements (previously handled by the local government) and level of awareness of own product safety including as independent variables in the model. Table 3 presents the variables and each hypothesis direction.

Table 3: Definitions of variables included in the model, their operationalisation, and hypotheses

Independent Variable	Question	Operationalisation	Hypothesis direction
Age	Farmers age in no. of years	Scale variable expressed in number (of years)	+
Experience	No. of years cultivating the main product on the farm	Scale variable expressed in number (of years)	+
Education	Farmer's level of education	Categorised (ordinal) variable: 1. No education 2. Basic 3. Agriculture high school 4. Other high school 5. University	+
Land area	Total agriculture land area cultivated by the farm at present	Scale variable expressed in number (dynam)	+
Family size	No. of family members	Scale variable expressed in number (no of members)	+
Product type	The main product type (vegetables vs fruits)	Categorised variable 0 = Greenhouse vegetables and 1 = Fruits	+
Joint transportation activity	"Have there been times when you have transported the products together (in a group) to split costs?"	Categorised (ordinal) variable 1. Never 2. Rarely 3. Sometimes 4. Often 5. Always	+
Level of losses	The increased/decreased level of losses from the main product compared to the last season	Categorised (ordinal) variable 1. Much lower 2. Lower 3. About the same 4. Higher 5. A lot higher	+
Level of information availability/absence	"I don't know how to apply for supplying kindergartens /hospitals."	Categorised variable 0 = False, 1 = True	-
Emigration experience	"Did you personally emigrate (abroad)?"	Categorised variable 1. Yes 2. No	+
Reliance on local government support	"Local government should support us on the demand about supplying kindergartens and schools."	Categorised (ordinal) variable 1. Strongly Disagree 2. Disagree 3. Neither Agree nor Disagree 4. Agree 5. Strongly Agree	+
Attitudes towards cooperating with each other	"We need to cooperate with each other to supply kindergartens and schools."		+
Selling uncertainty	"Uncertainty in selling the main product is a big problem."		+
Perceived health safety of own produce	"What is your perception about health safety of your farm products?"	Categorised (ordinal) variable 1. Very low 2. Low 3. So-So 4. High 5. Very high	+

Source: Own composition based on survey results

Results and Discussion

Farmers are usually not involved in supplying food products for large organisations and institutions mainly due to lack of information (Figure 2). Legal impediments such as the fiscal registration or inability to comply with standards are considered by farmers as valid reasons not to supply massive consumption units with their own farm produce.

Farmers are not accustomed to formal contracting. Results show that that only 2% of farmers have written contracts with their buyers (see Table 4). The majority, almost 79%, have informal agreements, while 29% are engaged in spot market exchange relationships. These findings are confirmed also by other value chain actors. Both intermediaries and catering companies argue that they can-

not deal directly with farmers because they cannot provide fiscal receipts and are not willing to engage in long term, contractually regulated transactions.

The typology of relationships with buyers is illustrated in Figure 3. Only 37% of farmers have durable relationship which is instrumental to the supplier's evaluation. Since for a successful implementation of a F2S scheme, there is need for reliable and stable source of supply, farmers' exchange behaviours partially fit the required criteria.

Results also show that farmers engage mainly in selection and sorting of fruits and vegetables (52% of cases), while they rarely engage in cleaning and packaging (farmers responded they never do so in 45% and 93% of cases). Farmers are more prone to sorting-selection due to their labour availability, while the other operations are mainly performed

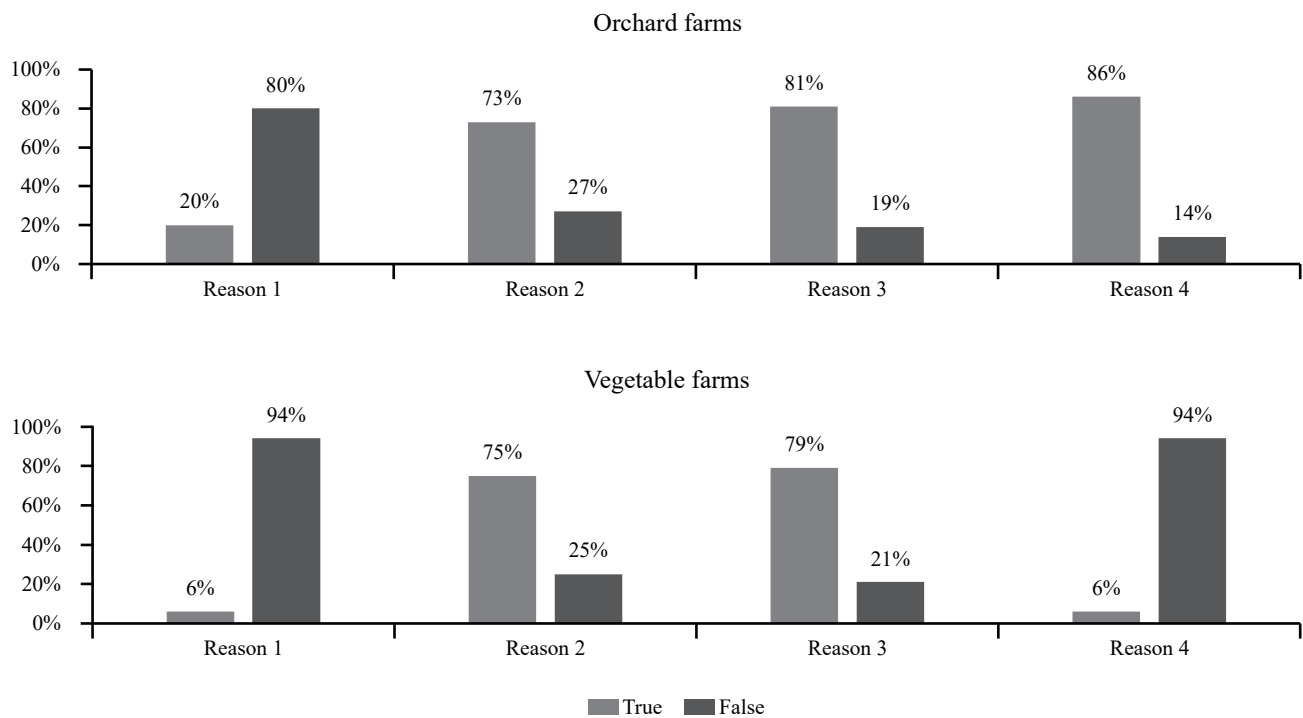


Figure 2: Reasons why farmers do not supply massive consumption units (MCU) with their products

Note: Reason 1: I don't have the fiscal farm ID number for selling (invoice number); Reason 2: I don't know how to apply for supplying kindergartens/hospitals; Reason 3: I don't have information on the specifications of products required for supplying kindergartens and hospitals; Reason 4: My products do not comply with the food and hygiene standards. Only the farmers who have not supplied MCU answered the questions. They could give more than one reason.

Source: Own composition based on survey results

Table 4: Type of agreements between farmers and buyers for two different sectors.

Sector	Type of agreement	Observations	Frequency
Orchards	Written contract	5	2%
	Verbal agreement	147	69%
	No agreement	62	29%
	Total	214	100%
Greenhouse vegetables	Written contract	70	25%
	Verbal agreement	157	57%
	No agreement	51	18%
	Total	278	100%

Source: Own composition based on survey results

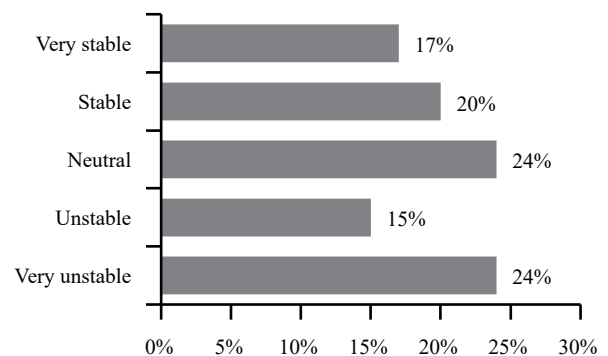


Figure 3: The stability of relationships between farmers and their buyers

Source: Own composition based on survey results

mainly based on capital investments. As previously noted, farmers have limited capacities to deliver food ready for consumption – only 46% possess their transport facilities. Even in the case of fruits to be sold directly to schools, the quality of delivery equipment is not adequate (Figure 4).

A majority of the farmers are informed about the potential of F2S to enable direct or intermediary-based sales to large buyers, namely public institutions. Our study reveals that farmers see large organisations such as schools, hospitals, and kindergartens as potential clients. Many see cooperation with other farmers as a solution to supply large volumes (36%), while larger farmers can supply these organisations by themselves (38%). However, around 52% of the respondents agree that this can be done through intermediaries (Figure 5).

A majority of the respondents are willing to supply through intermediaries. The ability of the farmers to sell individually or in group remains limited. One common issue hinges on the ability to invest in postharvest infrastructure. In recent years in Albania, a pivotal group of actors have

been investing in postharvest logistics, the main driver of this being the export orientation experienced in the last decade, mainly in the greenhouse sector.

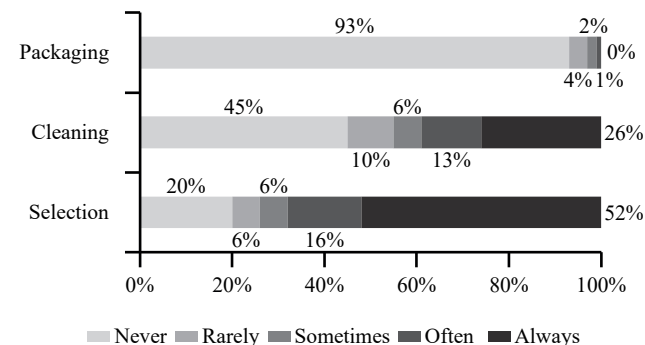


Figure 4: The extent of services like selection, cleaning and packing within farm for the main product

Source: Own composition based on survey results

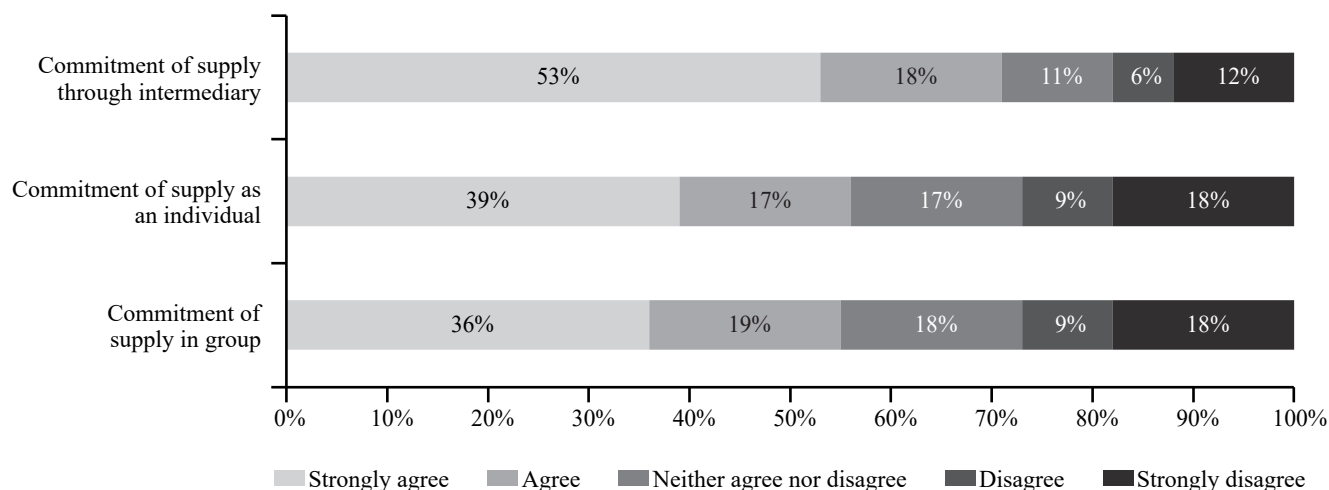


Figure 5: Willingness of farmers to supply massive consumption units with food products.

Source: Own composition based on survey results

Table 2: Linear regression results.

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	Beta	Std. Error	Beta		
(Constant)	-3.642	.520	-	-6.998	.000
Age	.004	.003	.062	1.288	.199
Family size	-.020	.027	-.032	-.742	.458
Education	.055	.044	.057	1.238	.216
Experience	-.001	.006	-.011	-.233	.816
Land area	.009	.004	.125	2.677	.008
Product type (Fruits=1)	.021	.100	.011	.215	.830
Availability of information	.258	.099	.114	2.613	.009
Joint transportation activity	.097	.045	.093	2.157	.032
Reliance on local governmental support	.156	.056	.120	2.762	.006
Attitudes towards cooperation	.335	.043	.348	7.859	.000
Perceived safety of own produce	.110	.049	.094	2.223	.027
Post-harvest losses at farm level	.198	.054	.157	3.685	.000
Selling uncertainty	-.010	.050	-.009	-.205	.838
Emigration	-.136	.104	-.057	-1.303	.193

Dependent Variable: Willingness to participate; R=0.469 (F=9,049339, sig=0.000; DW=1.837

Source: Own composition based on survey results

According to the results, the average experience of farmers in the respective sectors is around 13 years, while the average total land area cultivated is 16.4 dynym with the average family size reaches 5 family members. For other descriptive statistics on the main variables in the model please refer to Appendix 1.

The results obtained from the linear regression model are presented in Table 6. Farm characteristics such as cultivated agriculture land area and the level of post-harvest losses are positively associated with the farmers' willingness to be engaged in F2S schemes. Farmers' previous experiences in joint transportation activity are a positive factor for the willingness to be engaged in F2S schemes. Results show that the higher the perceived safety of a farmer's own produce, the higher is the likelihood to be willing to engage in F2S schemes. Absence of information on school and kindergarten food procurements is a factor negatively associated with farmers willingness to participate in F2S schemes. As hypothesised, reliance on local governmental support and positive attitudes towards cooperation positively affect farmers willingness to take part in F2S programmes.

Results show that, selling uncertainties and type of product turned out not to be statistically significant factors in farmers' willingness to participate in F2S programmes. Moreover, post-harvest losses are positively associated with the farmers willingness to be engaged in F2S schemes. Considering the recent concerns on oversupply in the internal market, the farmers perceive that entering a F2S scheme is an exit option for addressing market losses. An increasing share of losses, especially in orchard farms in the future, is a potential motivation to make farmers engage into F2S schemes. Contrary to our hypotheses, farmers' uncertainty on sales is not statistically significant. In contrast to the findings of Gërdoci *et al.* (2017), increased uncertainty is not related to the likelihood of farmers establishing sustainable (lasting) relationships with buyers. This might be the case also because a large number of farmers do not perceive F2S programmes to be "lengthy market" relations. Previous studies have confirmed that farmers who are engaged in contract farming or long-term relations with buyers experience lower post-harvest losses (Imami *et al.*, 2013). Considering this variable as an economic motivation, similarly to other authors (Hinrichs, 2000; Izumi, 2010; Conner *et al.*, 2012; Matts *et al.*, 2016; Nathan Rosenberg *et al.*, 2014), the study shows that economic based motivations are very important.

Farmers' previous experiences in joint transportation activity positively affects their willingness to engage in food provision to schools. The result might be related to farmers' proactiveness towards carrying out joint activities. Indeed, farmers' cooperation is positively associated with the willingness to provide food to schools. In a finding similar to that of Izumi *et al.* (2010), the results show that the higher the perceived health safety of own produce, the higher the willingness to engage in school food provision. The reasoning is that farmers who are aware of their product safety superiority are more prone to participate in F2S supply schemes. Given that major contractual failures are known to happen related to safety and traceability, farmers are increasingly aware of the need to achieve safety standards.

The absence of information on school and kindergarten food procurements is a factor negatively associated with farmers' willingness to participate in F2S schemes. Due to missing or limited information, farmers, as shown by Gërdoci *et al.* (2017), are risk averse. Taking the legal and other specific criteria into account, farmers who are familiar with the requests are not likely to join a F2S programme as they believe they cannot satisfy what they perceive to be conditions (e.g. ability to fulfil procurement needs in time, formalisation requirements, analyses of products and following quality protocols).

Given the information gap and the lack of prior experiences, farmers' willingness to participate in F2S is still influenced by the perceived role of – and their reliance on – local governmental support. The results provide evidence for the increasing role of local government as a bridge (Bagdonis *et al.*, 2009) to F2S programmes. As has also previously been explained by Thompson *et al.* (2014), in countries where smallholders make up most of the farming community, appropriate local level agriculture infrastructure and services are very important for fostering smallholder farmers integration in F2S programmes. The size of farms makes cooperation more important when considering coordinated actions in the scheme. This aspect is related to the awareness of the farmers regarding the reduced possibility to sell small quantities. Therefore, it seems that in contrast to the findings of Morakile *et al.* (2021), Albanian farmers do still value collective action to exploit options emerging from school feeding.

As expected, farm characteristics such as cultivated agriculture land area are positively associated with farmers' willingness to be engaged in F2S supply, a finding largely in line with Matts *et al.* (2016). In Albania, due to the high fragmentation of land, farm size remains crucial for creating viable food provision and sufficient quantity for procurement. The human resources at farm level (farm size) have no statistically significant relationship with the willingness to participate in F2S supply due to a larger engagement of rented labour in the specialised farms.

Surprisingly, the type of product is a factor that is not related in a statistically significant way to farmers' willingness to participate in F2S schemes. On the supply side, the level of post-harvest losses and perishability does not significantly differ between product types. On the demand side, the lack of any significant relationship may be due to the absence of previous procurements from these farms and a lack of direct market signals resulting in a relationship centring on supplying farm produce to schools and kindergartens. Results show that farmer experiences, education and emigration background are not statistically significant. The reason for this may be that a farmer's willingness to participate in F2S is attributable primarily not to their level of experience, but rather to the level of risk they perceive it has.

Conclusions

Integration of local food producers into F2S supply schemes contributes to multiple objectives, but also provides small and local farms with an additional or alternative trade channel for their products. An assessment of willingness to

participate in F2S is crucial to achieving a feasible programme implementation. The purpose of this paper is to model farmers' willingness to participate in F2S programmes and analyse factors that will affect farmers' participation decisions.

Economic factors intertwined with social capital factors and attitudinal indicators affect farmers' willingness to participate in coordinated food supply chains as in the case of F2S schemes. Land area (farm size) and post-harvest losses at farm level used as economic reasons, justify farmers willingness to participate in F2S significantly. Additionally, level of access to information about these schemes, prior experience with joint activities and reliance in local governmental support used as social capital indicators influence farmers' willingness to engage in F2S, an influence that is reinforced also by the positive attitudes towards cooperation and the perceived safety of own produce.

Although smallholders are not ready to supply food catering supply chains directly, they are willing to be part of a F2S scheme through group provision or through brokerage. The results indicate the importance of identifying and involving the proper range of suppliers when formulating the procurement procedures and the eligibility as well as premium criteria for selection of suppliers. Thus, farmers experiences, opinions and perceptions provide entry points for establishing the F2S programme.

The government should raise awareness and provide know-how on F2S scheme requirements, provide best examples of organisation in groups through common contracts and increase the financial capacity for achieving compliance in terms of food safety and quality. Contract farming should be introduced to increase the capacities and tackle the exclusion of inexperienced farmers. The availability of service providers (i.e. facilities in common use, or companies which provide post-harvest and first processing services in return for a fee), at local government level can also facilitate a larger involvement of small farmers and processors into complex F2S supply chains.

Further research should be carried out to explore other actors' behaviour in the value chain. It needs to be taken into account that the institutional environment for the functioning of a F2S scheme is based also on intentions and actions of other actors in the value chain. The most important of these are the consolidators and intermediaries who assemble the large flows and are those contracted for the procurement. This may be the usual situation in cases where the majority of farmers are smallholders and where there are no incentives for cooperation. Improving preconditions for collective action in post-communist transition country agriculture is critically important for F2S programmes. Supporting cooperation through capacity building together with the easier legal procedures is a precondition for the success of F2S. Here the issue is to understand the transaction costs and the factors making consolidators and intermediaries interested in being integrated into F2S programmes. An additional important actor is the local government or the school. Depending on the legal form, the municipality would be the institution responsible for the procurement of food. Their eagerness to identify and activate local resources has both benefits and challenges. Consequently, there is a need to explore both the costs and benefits using participatory analysis.

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Appendix

Appendix 1: Descriptive statistics of the variables.

Independent Variable	Categories and respective frequencies				
Product type	Vegetable 56.5%		Fruits 43.5%		
Education level	No education 0.2%	Basic 52.2%	Agriculture high school 18.3%	Other high school 20.3%	University 8.9%
Prior joint transportation activity	Never 74%	Rarely 11%	Sometimes 9%	Often 4%	Always 2%
Level of post-harvest losses	Much lower 1%	Lower 19%	About the same 47%	Higher 30%	A lot higher 3%
Availability/absence of information	True 74%		False 26%		
Emigration	Yes 78%		No 22%		
Perception on health safety of own produce	Very low 0%	Low 1%	So-so 10%	High 27%	Very high 62%
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Reliance on local governmental support	1%	3%	5%	34%	57%
Attitudes towards cooperation	3,9%	6,4%	15,5%	40,5%	33,7%
Selling uncertainty	2%	3%	6%	29%	60%

Source: Own composition based on survey results