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What determines small farms' succession patterns in Eastern European emerging markets? Exploring the role of embeddedness in social networks

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Abstract

Purpose – The interactive relationships of farmers with institutions and other individuals create the context of succession intention – "farm embeddedness". This context shapes in long-term self-efficacy of farmers. The main goal of this paper is to study the contextual drivers of the choice of succession paths in small-scale farms which dominate in Eastern European countries. The studied pathways, ordered by farmers' self-efficacy are "no succession", "conditional succession", "unconditional internalised succession" and "unconditional externalised succession".

Design/methodology/approach – We used a sample of 1,683 small farms from three Eastern European emerging markets: Romania, Moldova and Serbia. The likelihood of choosing a given succession path is analysed using a multinomial logit model; contextual drivers of succession are selected based on the theory of embeddedness.

Findings – We found that more-educated and more-efficient small-scale farmers are less likely to pass on their farms because of a kind of "glass ceiling", so they do not want such a difficult future for their children. The most important determinant of unconditional/internalised succession is the successor formation through "training on the farm". Some formal institutions operating in the agricultural sector hinder self-efficacy and thus unconditional succession.

Originality/value – Most of the papers lack a theoretical background while demonstrating that economic drivers are crucial to succession. The embeddedness theory argues that economic activities are always anchored in a social structure. We contribute to this theory by showing that the embeddedness in social networks is more important than economic factors when smallholders transfer their farms to successors in post-socialist countries. In addition, we attempt to identify which particular types of social networks are most relevant to the multi-stage process of farm transfer, and we outline several transfer scenarios using the concept of self-efficacy.

Keywords Agriculture, Generational renewal, Multinomial logit, Self-efficacy, Small farms, Farm embeddedness

Paper type Research paper

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1. Introduction

According to the Farm Structure Survey (Eurostat), in 2016 there were 10.3 million farms in the European Union, and ca. 58% of them were operated by farmers who were 55 years old or older. Therefore, generational renewal in rural areas, especially regarding the farming sector, is found to be one of the most important problems in EU agriculture, as demonstrated by the consecutive financial perspectives of common agricultural policy. However, the problem of ageing does not apply only in the EU; it is also prevalent in different parts of Europe, including Serbia (Drobnjaković *et al.*, 2022) and Moldova (Chior, 2020). In this context, the smooth process of farm succession is of great importance.

The whole farm succession process has three main phases: successor identity formation, the farm succession itself and farm development (Coopmans *et al.*, 2021; Bertolozzi-Caredio *et al.*, 2020). These phases are equally important for successful succession. The first phase (identity formation) is crucial because, as noted by Fischer and Burton (2014), without this long-term effort, attracting a successor would be very difficult even if policy support is significant. However, the literature concentrates on discovering the drivers that influence the second stage (e.g. Zagata and Sutherland, 2015; Bertoni and Cavicchioli, 2016; Dong *et al.*, 2016; Mishra *et al.*, 2010), or it analyses how farm transfer influences farm performance in the post-succession period (Dudek and Pawłowska, 2022; Bertoni *et al.*, 2023).

There are many possible drivers that increase the probability of farm succession that are related to the characteristics of the farm, the farmer and the household (Bertoni and Cavicchioli, 2016). These drivers can be studied using both qualitative methods, such as interviews and quantitative methods, such as probit and logit models. Results show that succession may be encouraged by better economic performance of the farm (Mishra *et al.*, 2010; Zagata and Sutherland, 2015; Bertoni and Cavicchioli, 2016; Jack *et al.*, 2019; Dong *et al.*, 2016) or a higher level of education of the potential successor (Beecher *et al.*, 2019). Leonard *et al.* (2020) showed that farm transfer also depends on risk perception.

The research cited above concentrates on the problem of succession mainly from the perspective of the successor. However, other strands of literature focus on the intentions and motives behind the decision to transfer the farm or on the intentions of the cedant side. In some circumstances, running a farm until death may be more beneficial than transferring the farm (Leonard *et al.*, 2017). A transfer may therefore result from altruistic motives, such as increasing the children's well-being, or selfish ones, such as conditioning the farm transfer on the children's care of their parents in old age (Corsi, 2017). Moreover, the decision to transfer the farm to a successor may be difficult because of emotional attachment (Rech *et al.*, 2021). We believe that the intentions of both sides of the succession process cannot be considered separately. Therefore, we refer to embeddedness theory (see below), which encompasses the broad social, cultural and behavioural context of the choices being made. This context is very peculiar in Eastern European emerging markets which reinforces our motivation for conducting this research.

There are two common problems in analysing the determinants of farm succession, and we try to deal with them in this paper. Firstly, in quantitative analyses, researchers usually consider only two dichotomous paths: having a succession plan or intention versus not having one. Such a dichotomy can be oversimplifying since it is also important whether a succession plan is conditional for the cedant (and to what extent) even though there is a succession intention. Therefore, drivers of the dichotomous succession choice (having vs not having a succession plan) can be completely different than when asking about the specific conditions of succession. Knowing the full picture of succession drivers is extremely important for policymakers while building agricultural policy schemes to encourage succession. We are going to test **the hypothesis (H1) that other aspects of farmers' embeddedness in social networks are decisive when forming the general intention of having a succession plan and when considering specific conditions of succession**. This hypothesis is derived from a review of the literature on the importance of relational embeddedness for decision-making in small and medium-sized enterprises (SMEs). Alinaghian *et al.* (2020) define the meaning of "relational

embeddedness" as investments in assets embedded in external relationships and the assets' specificity. This perception of embeddedness could be also decisive when answering the question of whether transferring the farm makes sense (or not) at all. In family-owned farms, the investment in specific assets and protecting them against market risk has been identified as an important driver of succession (Leonard *et al.*, 2020). However, this kind of driver requires a specific kind of network embeddedness, for example, cooperation with loan providers and insurance companies. However, if a decision regarding succession has already been made and the specific conditions of transferring the farm are considered, the different aspects of embeddedness is likely to be of primary importance. This is because the frequency of interaction among social network members is another dimension of embeddedness, as highlighted by Zhou *et al.* (2022). The above assertion is based on the well-documented relationship between the intensity of social interaction and an individual's self-efficacy. The effective performance of any behaviour depends on one's self-efficacy (Ajzen and Schmidt, 2020).

Secondly, the majority of papers dealing with farm succession fail to consider any theoretical underpinnings and often lack contextual factors in their models while focusing on economic drivers (Suess-Reyes and Fuetsch, 2016; Corsi, 2017). However, according to Granovetter (1985), human economic activities are inevitably "embedded in social structure" and cannot be considered in isolation. Thus, we adopt the framework of the embeddedness theory that allows to analyse a broad social context of the succession process. By asserting that rational economic behaviour is constantly influenced by the surrounding social context, the embeddedness theory integrates the zero-embedded position of economics and the strongly embedded position of sociology (Zheng *et al.*, 2022). The embeddedness is linked to different types of interactive relationships between institutional and individual actors, and it can have various dimensions: (1) territorial, (2) social network and (3) societal norms, as defined in the previous studies at farm level (Schwabe *et al.*, 2022; Zhang *et al.*, 2023). We adhere to this classification to allow comparability of the research. Meanwhile, we hypothesise **(H2) that farmers' embeddedness in social network has higher relative importance for succession process than farm performance characteristics.** It can be argued that in post-socialist emerging markets, social embeddedness may be of greater importance than current economic factors. The World Value Survey (2021) reveals that in Eastern-European countries, interpersonal trust and individualism in decision-making processes are relatively low (Alesina and Giuliano, 2015). This can be attributed to the path dependency of a negative institutional framework established during the communism era (so-called "institutional hysteresis" – Setterfield, 1993), which manifests itself in negative expectations modelling in current social interactions.

Another problem is specific to small-scale farming and a context related to the level of economy development. The main goals of the functioning of small farms can be different than large-scale market-oriented units. The former are often focused on self-provision so the monetary income does not have to be the main rationale of their operation. Therefore, the logic behind the succession process in large-scale market-oriented farms cannot be directly applied to small farms in emerging markets. Small units are less attractive for potential successors. Moreover, they predominate in the agrarian structure of Eastern European countries, and their situation is important for slowing the rural ageing process and reducing the phenomenon of land abandonment.

In this study, we contribute to the embeddedness theory by showing that involvement in social networks is more important than economic factors when smallholders transfer their farms to successors in post-socialist emerging countries. In addition, we identify the particular types of social networks which are most relevant to the multi-stage process of farm transfer.

The main goal of this paper is to study what drives the choice of a given succession path among small-scale farms in Eastern European countries. To overcome the limitations of previous research, we propose a novel approach to study succession determinants on the original sample of 1,683 small farms from three countries: Romania, Moldova and Serbia. We distinguish between a "no succession" scenario and three other scenarios that differ based

on self-efficacy, as defined by Bandura (1995). These scenarios are as follows: conditional succession, unconditional internalised succession and unconditional externalised succession. We estimate the likelihood of choosing a given path of succession using the theory of embeddedness, first proposed by Granovetter (1985).

The rest of this paper is organised as follows. In Section 2, we present the theoretical framework for the analysis, which combines the concepts of embeddedness and self-efficacy. Section 3 is devoted to the basic legal frameworks regarding the succession process in the three countries. Section 4 describes in detail the data and methodology used for the quantitative part of the study. Section 5 provides the results and a discussion, while the Section 6 concludes.

2. Embeddedness and self-efficacy – theoretical framework

In the research cited above, three issues are problematic: (1) the choice of explanatory drivers of succession, (2) the choice of research perspective – cedant or successor side, (3) the determination of the number and types of succession scenarios (as mentioned, a dichotomous approach prevails). The application of the embeddedness theory helps to solve the first two issues, as it quite precisely defines the contextual conditions of succession that affect both sides of the process. The self-efficacy framework, on the other hand, can facilitate the answer to the third issue: what succession options shall be considered.

Decision-making process of an individual farmer is shaped by dispositional, cognitive and social factors as described by Dessart *et al.* (2019). Dispositional factors comprise personality, resistance to change and moral concern. They are relatively stable and strictly related to the individual, but their impact on decisions is only indirect. Cognitive factors, in turn, have a direct impact on the decisions as they are related to the farmer's knowledge and the costs, benefits and perceived risks. However, besides dispositional and cognitive factors, there are social factors, such as injunctive norms, descriptive norms and motives (Dessart *et al.*, 2019). Social factors are the product of territorially specific interactions between culture and institutions.

Such a perception of social factors has been confirmed by studies of the relationship between culture and formal institutions (Alesina and Giuliano, 2015; Czyżewski and Kryszak, 2022). Cultural traits were operationalised by Alesina and Giuliano (2015) as family ties, generalised morality, limited morality, individualism and trust (see also Hofstede, 2001, and the World Value Survey, 2021). According to Alesina and Giuliano (2015), stronger family ties result in limited morality – i.e. high moral standards apply only to family members. However, generalised morality is negatively correlated with family ties and positively correlated with trust in other people and individualism (Alesina and Giuliano, 2015).

When cultural traits interact with institutions (e.g. public policies, banks and cooperatives), a specific network of "embedded" economic agents is created. Farmers are also such agents and the form of embeddedness in the network can determine their succession intentions, as we hypothesised in the introduction. Farmers' cultural traits determine their membership in organisations, cooperation with other farmers, the resolution of inheritance disputes and relations with banks and insurers but also the farming practices undertaken in response to social claims for environmental protection.

This understanding is in line with the notion of "relational embeddedness" introduced by Granovetter (1985), also followed in recent studies (Zhang *et al.*, 2023). In the agricultural sector relational embeddedness means that the economic behaviours, such a succession, are embedded in the **interactive relationship** with educational and training institutions, farmers associations, banks, insurance companies, commodity exchange and other trading systems, agricultural policy agencies or investment projects, as well as with individuals, e.g. business partners, collaborators, potential successors.

Meanwhile, the interactive relationship means there is feedback from the other side involved which affects the farmer's self-efficacy. Bandura (1995, p. 2) defined self-efficacy as "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations". In other words, self-efficacy reflects people's beliefs in their

ability to succeed in particular circumstances. Various psychosocial theories of behaviour agree that self-efficacy or so-called perceived behavioural control (PBC; Ajzen, 1991) (both terms usually treated as synonyms) are the factors that determine the intention to engage in a behaviour and the actual execution of that behaviour (Rosenstock, 1990; Prentice-Dunn and Rogers, 1986; Schwarzer, 1992). The concept of self-efficacy has already been used in the agricultural context to explain different phenomena such as integration into contract farming (Wuepper and Sauer, 2016), performance of producer group organisation (Pant *et al.*, 2024), the relationship between climate change risk perception and adaptation behaviour of coffee farmers (Tran and Chen, 2022).

Bandura (1995) distinguished four main sources of self-efficacy, which we discuss below with regard to farm succession:

(1) **mastery experiences**, or the successful performance of a task, build a sense of self-efficacy. These experiences may occur as a result of a successful implementation of the knowledge received during education or training activities. However, failure to cope with challenges can undermine and weaken self-efficacy, increasing the likelihood of conditional succession (Figure 1, Scenario 3).

(2) **social modelling,** an extremely important determinant of self-efficacy, involves observing how other people successfully or unsuccessfully perform tasks (e.g. business partners, other members of farmers organisations, etc.). In the case under study, the latter may also be relevant, i.e. farmers observe people like themselves who fail despite their efforts (such as the market treadmill issue – Czyżewski *et al.*, 2019). It is also about learning that small farms have little chance of market success.

(3) **social persuasion,** people are convinced by other people or institutions that they have the right knowledge, skills and resources to succeed individually or prove themselves in the activities society expects of them. Involvement in the education and training

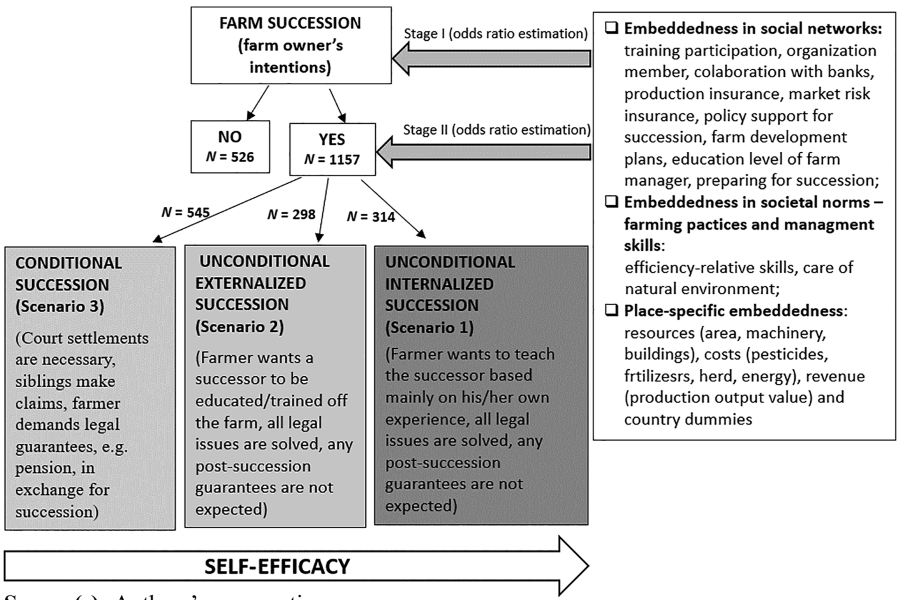

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Figure 1. Embeddedness as a driver of farm succession intentions in different scenarios chosen by farmers (research design)

activities and incentives from agricultural policies (e.g. investment schemes, structural rents – succession support) can be relevant here.

(4) **psychological responses**, like emotional reactions and mood deterioration after certain stressful situations, can undermine self-efficacy. However, this aspect is not present in our study, which focused on the long-term effects of embeddedness rather than incidental events.

The constructs of self-efficacy or perceived behavioural control are used in many studies of farmers' behaviour. In most works, perceived behavioural control/self-efficacy has a strong positive and statistically significant effect on decision-making, especially when it comes to sustainable farming practices (Czyżewski *et al.*, 2021; Wang *et al.*, 2019; Mingolla *et al.*, 2019; van Dijk *et al.*, 2016; Terano *et al.*, 2015). In some studies, however, these constructs were found to be insignificant (Sharifzadeh *et al.*, 2012).

In summary, a type of interactive relationship that farmers have with institutions or other individuals, called "embeddedness", determines the level of farmers' self-efficacy according to the experiences they gain from the relationship. In general, "positive" experiences build self-efficacy, while "negative" experiences undermine it. Hence, we identify three potential succession scenarios that differ by self-efficacy level associated with farmers' expectations about succession. For instance, it can be assumed that the successful collaboration with the banking system will encourage the farmer to waive any post-succession guarantees (see "unconditional succession" in Figure 1). On the other hand, if a farmer's colleagues in a producer group or other professional organisation frequently report problems with profitability and express concerns about the hopelessness of running a small farm, the farmer is worried about the future after handing over the farm to the successor.

3. Eastern European countries cultural and legal framework for farm succession

As highlighted before, the specific context for agents' embeddedness is created in a given cultural context. The three countries under study share several similarities regarding their history and culture. All of them belonged to the so-called Eastern Block, but Serbia was part of relatively "open" Yugoslavia while Moldova was one of the Soviet Republic. Orthodox culture still prevails in all these countries. According to the Inglehart-Welzel World Cultural Map 2023; Haerpfer *et al.* (2023), Moldova, Serbia and Romania are classified as "Orthodox Europe" cluster. When it comes to the traditional vs secular values dichotomy, this cluster can be placed somewhat in the middle, between more traditional Asia or Latin America and more secular Protestant Europe or Confucian. In turn, in this cluster survival values (emphasis on economic and physical security and low level of trust) are more prevailed than self-expression values (high priority to environmental protection, growing tolerance of foreigners, etc.) However, some further differences and similarities that may impact succession process can also be identified between Serbia and Romania [1]. We focus mainly on trust and intra-family relations.

In Romania, people are generally more religious and their opinions are more in line with traditional Christian morality. In both countries, people declare that the feeling of responsibility among their children is important (in Serbia 67,5% and Romania 62,1%) but in Serbia much higher proportion of respondents declare that it is important that children should learn obedience at home (43.6% vs 12.7%). In Romania, in turn, more people believe that it is child's duty to take care of an ill parent (26.4% declared strong agreement vs 15.6% in Serbia). Both countries are characterised by a high level of distrust – only 12.7% of respondents in Romania and 16.3% in Serbia agree that most people can be trusted. However, the numbers look totally different when it comes to trust among families. 84.6% of respondents in Serbia and 79.7% in Romania declared that they have full trust in family members. To provide some background, in Poland (also a post-communist country) this number was 65.6%. Romanians also tend to be more attached to their towns and districts (Haerpfer *et al.*, 2023).

When it comes to legal aspects, the succession of farms in the studied countries is determined by the legacy of socialism. This has led to processes for the restitution of land properties based on the lands owned by the state before 1990 and the reprivatisation of the lands remaining after this action in the 1990s. The effect of these processes is the extensive fragmentation of the land structure. The average area of a farm in Romania is 4.4 hectares (ha); in Moldova, 2.5 ha; and in Serbia, 6.2 ha.

Of these three, however, Serbia stands out because the Restitution Law was enacted late (after 2005) and the restitution procedure is ongoing. There was no large-scale land ownership in the country before Second World War, as it was liquidated as a result of the land reform carried out in 1919. After Second World War, changes in the structure of agriculture in Serbia tended to expand the public sector, but private ownership was never actually marginalised, and the share of private land has been close to 80% (Rajnović *et al.*, 2020). In Romania, the Law on State Domains, adopted in 1991, stipulated that landowners forced to give their land to production cooperatives could reclaim up to 10 hectares of agricultural land (Muntean *et al.*, 2020). In Moldova, the land was separated into three types of plots: arable, vineyards and orchards and land of each type was given to an eligible household. Hence, the average family farm was entitled to 1.5–2.5 ha of agricultural land (Dudwick *et al.*, 2007).

The legal frameworks that regulate ownership and succession, including agricultural land, are quite similar in the countries studied (cf. Table 1). Therefore, national legal regulations are not a discriminating factor with regard to farm succession in the countries studied.

Romania, as an EU Member State, is however subject to the common agricultural policy (CAP), while Serbia and Moldova (as candidate countries) may soon be the subject of this policy. The issue of farm generational renewal support belongs to the ten main objectives of the CAP for the period 2023–2027. This is due to the dynamic ageing of the rural population and the increase in the average age of the farmer which is now estimated to be 51.4 years in the EU. Furthermore, the share of farmers that are 65 years or older is increasing and exceeds 30%. Young farmers in the EU are mainly supported by additional direct payments to each hectare of land and through investment subsidies for new farmers that just started their business (through acquisition or succession).

3.1 Romania

The basic legal framework that regulates ownership and succession in the case of land, including agricultural land, is provided by Law no. 18 of February 19, 1991. Regarding the acquisition of the right of ownership of agricultural land, *ab intestato* succession and

Table 1. Summary of legal and historic conditions for farm succession in countries under study

Conditions	Romania	Moldova	Serbia
EU member	Yes	No	No
Agricultural land before 1990	Mostly state-owned	Mostly state-owned	Mostly private
Average farm size	4.4 ha	2.5 ha	6.2 ha
Key legal acts related to farm succession	Law no. 18 of February 19, 1991; National law 247/ 2005 (lifelong payments)	Land' National Programme in 2000, Article 2,162 of the Civil Code of the Republic of Moldova	Law on Agriculture and Rural Development, Law on the Basis of Ownership and Proprietary Relations, the Family Law
Orientation of legal conditions after 1990 (fragmentation vs consolidation)	Both	Fragmentation	Both

Source(s): Authors' own creation

testamentary succession apply. According to article 1,086 of the civil code, "The inheritance reserve (called also the 'lawful share', i.e. compulsory portion of inheritance) represents the part of the inheritance to which the reserved heirs (surviving spouse, descendants, privileged ascendants-parents of the deceased) have the right, even against the will of the deceased. The inheritance reserve of each reserving heir is half of the inheritance share that, in the absence of liberalities/disinheritances, would have been due to him as a legal heir". As mentioned above, the lawful share can be a barrier to consolidation and farm succession, as the compulsory half of the inheritance share is considerable. Schwabe *et al*. (2022) argue that Romanian succession regulations cause down-sizing of holdings. Small farm size is among the factors that make it more difficult to find a successor. Nevertheless, sustaining the process of farm succession under fragmented agriculture is very important, as it prevents land abandonment, which is becoming an increasingly serious problem in Romania. Under these conditions, it becomes particularly important to implement the succession scenario named in this work as unconditional succession.

On the other hand, there are legal incentives for farm consolidation. A lifetime annuity system, established by National Law 247/2005, provides the holders of small farms aged 62 and above with lifelong payments in exchange for selling or renting land to larger holdings (Ghib, 2008). There are also succession schemes under the EU CAP in which young farmers are eligible to receive investment subsidies (40,000 EUR) when a farm is passed to them.

3.2 Moldova

Agricultural reforms in Moldova began in 1991. Besides the typical restitution, the sectoral reform programme encompassed the liberalisation of the food processing industry and the agricultural products trade. A new institutional framework for the agricultural sector was created. In 1998, land privatisation reached a new momentum – the Republic of Moldova succeeded in privatising 72% of agricultural land (Lerman *et al.*, 1998).

In the current succession system in the Republic of Moldova, when there is only one successor, the entire land is passed to the specific successor. If the bequeather has several heirs (co-heirs), the estate becomes the common property of the co-heirs from the moment the inheritance is opened (indivision). At this point, the successors do not become heirs of the agricultural land by right, but they have the option to accept or renounce the succession, as a rule, through a declaration at the notary. The indivision ceases by the division of the inheritance shares or by the acquisition by the same person of all of them (Civil Code, 2022). However, the above regulations apply when testamentary succession is not applicable. Therefore, it is important to identify conditions in which the owner will be able to designate a successor in the will and preferably without having to enter into a dispute with other potential heirs (unconditional succession scenarios, see Figure 1). The land reform, carried out as part of the "Land" National Programme in 2000, had the purpose of appropriating certain areas of arable land, previously under the management of the state, to the citizens of the rural area. As a result, at the end of this reform, more than 1.4 million citizens of the Republic of Moldova owned the property titles of this real estate.

Both the liberalisation of the land market based on buy–sell relationships and the need to inherit agricultural land have revealed a series of legal problems. At the same time, the current trend of consolidating agricultural land carried out through purchase, lease or inheritance keeps the importance of the legal aspect of this problem at a very high level.

In 2021, there were 1,283,239 agricultural land owners in the Republic of Moldova (except for the districts on the left bank of the Dniester and the municipality of Bender), and this number declines by approximately 1.3% annually (Cadastru funciar, 2021). Consolidation of agricultural land in the Republic of Moldova is also increasing by approximately 1.3% annually. Obviously, at the current stage of the development of the domestic agricultural sector, such growth dynamics (rather symbolic than real) are absolutely insufficient.

3.3 Serbia

The basic legal acts of agriculture in Serbia are the *Law on Agriculture and Rural Development* and the *Agriculture and Rural Development Strategy 2014–2024.* According to them, there are different categories of persons who can engage in agricultural production, and the category with the most representation in the past is family farms.

Since in Serbia family farms are not recognised as subjects of law with respect to property relations or marital and inheritance rights, the law takes into account the existence of spouses or other family members who live together and acquire property together. However, the farm is registered in only one name, and in 99% of cases, it is the name of the oldest male family member. Because of this, it is important to consider the laws in Serbia that refer to the *Law on the Basis of Ownership and Proprietary Relations*, the *Family Law* that regulates marriage and marital relations, relations in an extramarital community, child-and-parent relationships and others and the *Law of Obligations*.

Passing a business in agriculture in Serbia to the next generation can be arduous due to the fact that agriculture is associated with young people with poverty, low social status and standard of living. This is a serious problem for young farmers, and it raises doubts about the possibility of generational renewal. According to Đurić *et al.* (2019), to solve this problem, it is necessary to improve and strengthen agricultural policy so it supports young farmers (as measures of support for young farmers in the EU). This will lead to property increase, diversification of income and higher standards of living and consequently to the decisions of young people to stay in the village and work in agriculture. Some progress was made, in particular, through the adoption of the amendment of the *Law on Agriculture* in November 2021, which increased the efficiency of processing IPARD (Pre-Accession Assistance Rural Development) applications and the timely submission of the IPARD III programme for the period 2021–2027 (EC, 2022).

4. Data and methodology

4.1 Dataset and research design

Defining small-scale farming is always debatable (Guth *et al.*, 2022; Stępień and Maican, 2020). Nonetheless, this is a rarely studied subsector of agriculture in which behavioural factors and various forms of embeddedness play key roles.

The EU Farm Accountancy Data Network (FADN) uses the criterion of economic size that refers to the standard output (SO), which defines the so-called very small and small farms (classification ES 14), including farms with a threshold of SO 2000–15,000 € yearly. Unfortunately, this classification excludes units smaller than 2000 SO, which constitute the largest number in the countries studied.

Therefore, in this article, we have made some modifications to the FADN approach. Our definition of small-scale farming uses the following criteria: (1) 0–15,000 SO €, (2) a workload must be higher than 0.5 all work unit (AWU) and (3) at least 50% of a household's workload is devoted to farming (to exclude units where off-farm jobs dominate).

The data for this article were collected in 2019 under the FAMFAR research project [2]. The professional inspectors conducted a survey (in face-to-face manner) among 2000 small farms (550 each in Serbia and Moldova, 900 in Romania). Participation in the survey was voluntary and each participant was informed that the survey is anonymous and its results will only be used for scientific purposes. Apart from basic information about the holding and its manager, the survey consisted of five parts: economic and social data, environmental data, market integration and risk management, food security and farm succession. This makes it possible to construct our dependent variable (succession intention and its various forms) and test the impact of several farm's and farmer's characteristics on the succession part. After the application of the homogeneous smallholding criteria described above and a detailed data-cleaning procedure, the final database used in this paper consisted of 1,683 observations (Table 2).

Table 2. Descriptive statistics

Variables and units	Obs.	Mean/share	Std.Dev.	Min	Max
unconditional internalized succ. (*dummy*)	1683	18.66%			
uncontitional externalized succ. (*dummy*)	1683	17.71%			
contitional succession (*dummy*)	1683	32.38%			
no succession (*dummy*)	1683	31.25%			
dSerbia (*dummy*)	1683	26.20%			
dRomania (*dummy*)	1683	46.82%			
dMoldova (*dummy*)	1683	26.98%			
training_embedd (*dummy*)	1683	27.63%			
org_embedd (*dummy*)	1683	40.64%			
bank_embedd (*dummy*)	1683	21.45%			
pinsurance_embedd *(dummy*)	1683	19.19%			
minsurance_emmbedd (*dummy*)	1683	20.74%			
policy_embedd (*dummy*)	1157	4.52%			
prep_steps (*dummy*)	1157	65.58%			
farm_dev (*dummy*)	1157	78.14%			
edu_embedd (*1,2. . .7 ordinal score*)	1683	4.26	1.268	1	7
efficiency (*ordinal score*)	1683	0.69	0.831	0.013	18.3
crops diversity (*0–1 index*)	1683	0.27	0.278	0	1
org. matter loss(+)/surpluss(−) *in t/ha*	1683	0.03	1.437	−14.8	2.3
revenue *in* €	1683	8132.17	7202.987	105.4	49775.6
area *in ha*	1683	6.72	7.198	0.05	50
machin_build *in* €	1683	20220.42	26939.48	0	509111.4
rented land (*share of UAA*)	1683	0.21	0.453	0	8
pesticides *in* €	1683	541.33	1373.202	0	30478.1
fertilizers *in* €	1683	529.74	778.307	0	13916.1
lsu *number*	1683	4.90	9.440	0	105.9
energy *in* €	1683	593.85	702.992	0	6372.6

Source(s): Authors own creation

As Leonard *et al.* (2020) said "farms, and in particular farm transfers, are idiosyncratic and thus require an individual level of investigation that allows for the interviewees to describe their specific farm situation . . . Social construction of the range of succession and inheritance risks/uncertainties are influenced by the societal [norm] spheres and networks in which farmers operate". Moreover, the context of farming in the former socialist societies of Eastern Europe is much more complex, as farmers' behaviours are strongly path-dependent and historically constrained (Henderson *et al.*, 2002). Therefore, we distinguished three groups of variables that reflect different aspects of embeddedness that might affect a farm succession process:

(1) **Social network embeddedness** refers to the widely defined relationships between actors with whom the farm manager interacts (Hess, 2004), including the informal family network and more formal outside-farm links. For a family farm, this kind of embeddedness can be expressed in farmers lobbying and in formal and informal relationships with business partners such as customers, suppliers, external labour, land leasers, potential land investors, authorities and family members. Social network embeddedness usually creates so-called social capital as added value (Sutherland and Burton, 2011). Schwabe *et al.* (2022) and Leonard *et al.* (2020) argued that many aspects of social network embeddedness result from prevalent mistrust or the perception of high risk and thus can hinder the succession of farms. To address such issues, we specified the following variables that could affect the succession process:

- *training_embedd* (refers to the question of whether the manager and/or his partner participate in continuing education, i.e. various types of professional training);

- *org_embedd* (refers to the question of whether the manager and/or his partner are members of any agricultural organisations);
- *bank_embedd* (refers to the question of whether the farmer finances investments entirely or partially with loans and/or has loans);
- *pinsurance_embedd* (addresses the question of whether crops or productive assets are insured on the farm);
- *minsurance_embedd* (refers to the question of market risk management and marketing channels, i.e. the farmer uses some form of contracting, sells with the support of a producer group, association or cooperative or uses commodity exchanges also in the sense of information);
- *policy_embedd* (refers to the question of policy support for succession, i.e. whether the farm can benefit from any financial assistance in exchange for transferring the farm);
- *farm_dev* (refers to a question that proxies the viability of the farm, i.e. whether the farmer has any investment plans ready to go);
- *edu_embedd* (education level of farm manager: 1 – no education 2 – primary, 3 – secondary, 4 – vocational, 5 – general 6 –bachelor's degree, 7 –master's degree);
- *prep_steps* (refers to the question of whether the farmer has already taken steps to prepare for succession, i.e. has begun to "train" a successor, either on his own farm or another one; for example, farmers who declare an intention to succeed and want to prepare a successor may be in a situation where the successor is currently too young or lives in another location).

(2) **Societal norm embeddedness** (proxied with farm practices and managerial skills variables) consists of historically shaped cultural norms, social practices and established habits (Hess, 2004). In the context of family farms and succession, emotional attachment to farmland, production practices and perceptions of rural work particularly matter (Hughes *et al.*, 2008). Hence, we proxied these aspects with three complementary quantitative indicators:

- *care of soil 1 – crop diversity* measurement (an inverted Gini-based index that would reach a value of 1 if all types of crops were present on the farm and occupied the same area, while it would reach a value of 0 if the farm cultivated only one type of crop over the entire land area);
- *care of soil 2 – soil organic matter loss* (based on the balance of organic matter);
- *technical efficiency* score – comprehensive, relative managerial skill assessment [3]

(3) **Place-specific embeddedness/control variables** (resources, cost, revenue, country dummies) cover a variety of factors that enable a farmer to perform a particular type of farming. In our analysis, this group of variables is a control one, with particular emphasis on the country dummies. Each country under study has a different legal and institutional framework that may generate a fixed effect on a succession pathway. The variables of resources, cost and revenue reflect the specificity of a farming profile – for example, the permanent crop type uses more pesticides, whereas the large size unit (LSU) is higher in animal production, and fertiliser use is typical for field crops. Many authors point out that for succession, the farm characteristics that build the perception of the farm's value for a potential successor are crucial (Mishra and El-Osta, 2007; Mishra *et al.*, 2010). These authors emphasise the role of farm financial conditions, especially farm income. Hence, we engaged the following place-specific and agricultural system-specific control variables that have a potential impact on the process of succession:

- *country dummies* (Serbia – 1, Romania – 2, Moldova – 3)
- *revenue* (agricultural output value);
- *area* – utilised agricultural area (UAA), including rented land;
- *machin_build* – value of machinery and buildings;
- *rented land* – share of rented UAA;
- *pesticide* expenditures;
- *fertiliser* expenditures;
- *LSU* – animals expressed in livestock units;
- *energy and gas* expenditures;

Legal and cultural conditions in countries under study are complex, hardly comparable and to some extent unobservable. This is why we introduced into the model country-specific dummies which shall address this hardly observable part of the place-specific embeddedness. Nevertheless, we assume that legal and cultural conditions can impact the succession process indirectly while affecting other control variables that describe a particular farming system, i.e. revenue, farm area, machinery and building, share of rented land, pesticide and fertiliser use, livestock units, energy and gas consumption. For instance, the land reforms and inheritance law described previously determine the extent to which farmland is fragmented and the need of renting agricultural land as well as capital endowment (building, machinery); meanwhile, rental prices and land value are affected which has implications for expected farm revenues. Moreover, other specific legal regulations with respect to agricultural inputs use are indirectly proxied by such variables as fertiliser, pesticide, energy expenditures or livestock. Hence, we believe that the set of control variables used can reflect place-specificity, including different legal conditions, and there is no other possibility to introduce this specificity into the model.

On the other side of the model, there is "succession" as a context-dependent variable. The way it was defined and incorporated into the analysis is depicted in Figure 1.

In the first stage, we distinguish between a binary situation in which a farmer declares an intention to transfer or not to transfer the farm to successors and determines the marginal probability of succession (odds ratio) associated with each variable representing different aspects of rooting. In the second step, analysis of the interviews identified three succession paths (described in Figure 1) preferred by the farmers who expressed an intention to transfer their farms:

(1) Scenario 1 – unconditional internalised succession

(2) Scenario 2 – unconditional externalised succession

(3) Scenario 3 – conditional succession

Then, using the same set of embeddedness variables, we re-estimated the marginal odds ratio for each statistically significant variable with respect to the three scenarios. At the same time, we noted that the scenarios described by farmers correspond to different levels of farmers' self-efficacy (or perceived behavioural control), which is subject to a kind of gradation, as depicted by the arrow in Figure 1. This results in succession being most feasible in Scenario 1 and least feasible in Scenario 3.

4.2 Statistical procedure, model goodness of fit and robustness

Although we apply a standard statistical approach, we have made efforts to determine the best goodness of fit and robustness of the estimated models. The empirical strategy has several steps in each stage of the analysis.

In the first stage, we estimate binary logistic regression for "Yes/No" succession intention using the set of explanatory embeddedness proxies described in the previous subsection. We perform the following steps:

(1) Stepwise backward binary logistic regression with robust standard errors, after which the variables shown in Table 5, remained in the model;

(2) Robustness check: stepwise forward regression for the groups of variables identified in the previous step to check whether adding consecutive groups of variables does not inflate standard errors, change regression signs or affect the coefficients' structure (Table 5);

(3) Goodness of fit tests (Table 3): prediction-accuracy ratio (PAR) and Hosmer–Lemeshow's test; the model performs very well when it comes to Succession = 1 prediction (1,077 of 1,157 cases are correctly predicted, i.e. 93%); overall PAR = 72%.

In the second stage, we estimate multinomial regression (UCLA, 2022) for the three succession scenarios ("no succession" scenario was not considered here) in Figure 1 (Scenario–3 as a reference) using the same set of explanatory variables. We perform the following steps:

(1) Stepwise backward multinomial regression with robust standard errors, where the significance in at least one scenario is a condition for remaining in the model. Hence the variables shown in Table 6 have remained;

(2) Robustness (model stability) check: stepwise forward regression for the groups of variables identified in the previous step to check whether adding consecutive groups of variables does not inflate standard errors, change regression signs or affect the coefficients' structure (Table 6);

(3) Goodness of fit tests: R^2 count, Suest-based Hausman tests of the Independence of Irrelevant Alternatives (IAA) assumption, Hausman tests of the IIA assumption, Small-Hsiao tests of the IIA assumption (H0 says that *odds are independent of other alternatives*; see Table 4). We adopt the condition that each scenario should pass at least two tests to approve the model specification (UCLA, 2022).

5. Results and discussion

Descriptive statistics show that a picture of succession in the small farm sector is slightly better than in the opinion of the local nongovernmental organisation representative presented by Schwabe *et al.* (2022), according to whom "90% of Romanian farmers do not have a succession plan". The overall result of **31%** for "no succession intention" is better than expectations, with **50%, 27% and 20%** for Serbia, Romania and Moldova, respectively

Table 3. Binary logistic model – goodness-of-fit statistics

Classified	True Succession = 1	Succession = 0	Total
+	*1,077*	386	1,463
–	80	*140*	220
Total	1,157	526	1,683

Note(s): Hosmer–Lemeshow's test(HL)
Pearson $\chi^2(1,670) = 1727.41$; Prob > $\chi^2 = 0.1602$
correctly classified are italicized; model is well-fitted if *HL p*-value>0.05
Source(s): Authors' own creation

Table 4. Multinomial logit model – goodness-of-fit statistics

Class	Hausman tests of IIA assumption; $p > \chi^2$	Suest-based Hausman tests of IIA assumption; $p > \chi^2$	Small-Hsiao tests of IIA assumption; $p > \chi^2$
1	*0.999*	*0.165*	*0.178*
2	–	*0.090*	*0.911*
3	*0.687*	0.024	*0.334*

R^2–count: 0.68

Note(s): A significant test at p-value = 0.05 is evidence against H0; passed tests are italicized
Source(s): Authors' own creation

(Table 2). Nevertheless, when "conditional succession" is added as a scenario with a relatively low chance of succession, many more exits from agriculture are likely, i.e. 64% of the small farms are concerned: 93% in Serbia, 56% in Romania and 48% in Moldova. **Therefore, the conclusion is that agricultural policy and other institutional support should focus on reducing this conditionality of succession, not just on the intention of succession itself. This aspect has not yet been addressed in research.**

Modelling results for the first stage are shown in Table 5 (binary, logistic regression: "succession intention" vs no intention of succession). Let's focus on the two last columns: the odds ratio (1 is a reference point, values above 1 indicate how much the chances increase, values below, how much the chances decrease) and the marginal effect at means (Me). With a smaller area of variation, e.g. in the case of a binary variable and a low initial probability level, the marginal changes expressed by the odds ratio – exp(b) – are apparently larger, but this does not mean that the variable has a stronger impact. Therefore, we also calculated Me assuming that the other explanatory variables are at a mean level (Bertoni and Cavicchioli, 2016). For dummy variables, Me indicates the difference between succession probability (P) for outcomes 1 and 0. For continuous/ordinal variables, the marginal effect (a derivative) was multiplied by a typical range (a measure of position) of the given variable, i.e. Xtyp $\in$ (Me – Q. D., ME + Q.D.) (see Table 5). In this way, the effects of qualitative and quantitative variables on succession choices expressed by Me are more comparable, regardless of the units. For example, we can say that an increase in revenue by a "typical variability" range will result in the growth of succession probability by 3% (Table 5).

The highest chances of succession were in Moldova, followed by Romania and Serbia (as manifested by odds ratios and marginal effects at mean). This can be because the Moldovian labour market does not offer a high number of attractive jobs, so operating a farm seems to be a relatively attractive possibility. Moreover, land reform followed by the liberalisation of markets was completed fastest in Moldova, and it is considered a success story. Another explanation may be the tradition of passing the land to successors. It is something that is related to the proudness of having an asset and passing it on to the sons or daughters. The higher chances of succession in Romania than in Serbia can be explained by the fact that Romanian agriculture is subject to EU agricultural policy, which offers incentives for farm succession and supports young farmers. As highlighted in Section 3, Romanians are also more locally oriented – they declare that they have a higher emotional attachment to their surrounding area. It may therefore happen that Romanians are more likely to stay in their home area and to take over the farm.

The probability of succession increased significantly for *bank_embedd* and *minsurance_embedd* variables (Me = 9.3% and Me = 5.6%, respectively). This is not surprising in the context of other studies of the impact of embeddedness on succession (Schwabe *et al.*, 2022; Fischer and Burton, 2014). The ability to use a network of banking institutions and contractual relationships to reduce market risk can compensate for the loss of self-efficacy from negative social modelling. These findings point to the critical importance of risk for transferring and

Table 5. Binary logistic model

Succ_ Intention	m1	m2	m3	m4	m4 Odds ratio	m4 Me at means	m4 Typical var
dSerbia (ref. Moldova)	−1.3472*** [0.1507]	−1.5592*** [0.1836]	−1.5843*** [0.1845]	−1.5217*** [0.1939]	*0.218*	*−31%*	*[0; 1]*
dRomania (ref. Moldova)	−0.3960*** [0.1415]	−0.2654* [0.1575]	−0.2901* [0.1586]	−0.3767** [0.1847]	*0.686*	*−7.8%*	*[0; 1]*
training_ embedd		−0.4135*** [0.1406]	−0.4159*** [0.1408]	−0.5258*** [0.1505]	*0.591*	*−10.8%*	*[0; 1]*
bank_ embedd		0.5960*** [0.1689]	0.5788*** [0.1697]	0.4518*** [0.1735]	*1.571*	*9.3%*	*[0; 1]*
minsurance_ embedd		0.3584** [0.1463]	0.3686** [0.1464]	0.2707* [0.1504]	*1.311*	*5.6%*	*[0; 1]*
edu_embedd		−0.1995*** [0.0508]	−0.2009*** [0.0508]	−0.2081*** [0.0520]	*0.812*	*−8.5%*	*[3; 5]*
efficiency			−0.1113** [0.0527]	−0.1222** [0.0534]	*0.885*	*−1.7%*	*[0.158; 0.854]*
revenue				0.0000* [0.0000]	*1.000*	*3.0%*	*[1844; 10035]*
rented land				0.5692*** [0.1935]	*1.767*	*1.2%*	*[0; 0.104]*
pesticides				0.0003*** [0.0001]	*1.000*	*2.1%*	*[0; 411]*
energy				−0.0002** [0.0001]	*1.000*	*−1.4%*	*[225; 604]*
Constant	1.3699*** [0.1168]	2.1547*** [0.2708]	2.2590*** [0.2757]	2.1535*** [0.2825]	*8.615*	–	–
Observations	1,683	1,683	1,683	1,683	–	–	

Note(s): Marginal effect assuming the other explanatory variables are at a mean level; for dummy variables Me indicates a difference between succession probability for 1 and 0 outcomes, in the case of continuous/ordinal variables marginal effect (derivative) was multiplied by a typical variability range (a measure of position) of the given variable, i.e. $X_{typ} \in (Me - Q.D, ME + Q.D)$; Robust standard errors in brackets***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; significant odds italicized

Source(s): Authors' own creation

acquiring farms (Leonard *et al.*, 2020; Hardaker *et al.*, 2015). Another aspect is that farmers using bank financing take a longer-term view of farm development and are often bound by multi-year loan agreements. Naturally, such farmers will be more interested in seeing their farm operations continue.

The other positive determinants of succession probability are variables related to place-specific embeddedness such as revenues, share of rented land and pesticide costs. These variables represent the economics viability of farms which is a key aspect from the successor point of view – more developed farms provide more revenues but it is often related to the need for more rented land and more spending on pesticides. While the impact of increased revenues on the likelihood of succession is fairly obvious, the impact of the proportion of land rented is more ambiguous. On the one hand, usually, more viable farms decide to rent land to increase the scale of operation. On the other hand, Glauben *et al.* (2009) have found the negative effect of a higher proportion of rented land among German farms. The impact of rented land may

therefore be highly context-specific. It depends on the motives for renting land – whether it is a voluntary strategy or a necessity. Higher energy costs may be, in turn, a sign that a farm is not energy-efficient. All in all, it should be noted that the impact of revenues, share of rented land and pesticide costs, although statistically significant, is not very high. The impact of network embeddedness (*bank_embedd* and *minsurance_embedd* variables) is much stronger.

Most striking is that the greater the human capital, the lower the chance of succession. This is indicated by as many as three variables that build human capital: *training_embedd* (participation in professional training), *edu_embedd* (level of education) and efficiency (general managerial skills). All of them significantly reduce the chance of succession by 10.8, 8.5 and 1.7%, respectively (given an increase by typical variability range). These results are in line with the findings of Mishra *et al.* (2010) that completing college or high school or having a college degree decreases the probability of farm succession or more recent findings by Bertoni and Cavicchioli (2016). Similarly, in the US context, Dong *et al.* (2016) found that more educated operators are more likely to exit. Beecher *et al.* (2019), in turn, have shown in the Irish context that a higher level of successor's education is a positive determinant of succession. It shows that it is important to underline whether the current owners of the farm or successors are studied. While the young well-educated people may be interested in taking over the farms, the experienced and formally educated ancestors are sceptical about the process.

Although seemingly paradoxical, the explanation for this phenomenon alludes to the "social modelling" described by Bandura. The peculiarity of small farms manifests itself in the fact that they struggle with the "glass ceiling" effect. The most efficient small-scale holders do not think about succession at all but quite the opposite. Without a significant technological change, especially an increase in area, there is no possibility of increasing income and quality of life. The better-performing farmers are simply the most aware that they have reached the "glass ceiling", and they do not want such a future for their successors. They simply know that, in a given market and resource context, more profits cannot be obtained from the farm, and the barriers to development are apparently too great to overcome. In addition, more-educated farmers usually have more educated children, and these children can find better jobs outside the sector. There is also the issue of path dependency in the eastern European countries and the systemic fragmentation of land after the land reforms (Cartwright, 2017). **This awareness of the failure and entanglement in the market treadmill is the knowledge that smallholders gain from the system of education, training and improvement of managerial skills by doing. Therefore, the more embedded a farm is in the above aspects, the lower the chances of succession**.

We should add that farmers who declared no intention of succession were asked about their reasons for this choice. The responses, which involved more successful entities, often included the statement that they "did not want such a future for their children". This is a very difficult situation for agricultural policy. Programmes to support the development of human capital, or pro-efficiency schemes for investment, animal production, etc., may prove ineffective without concentrating agricultural land and increasing the acreage and scale of production of small farms through the purchase or lease of land, especially those that earn most of their income from agriculture. In the second stage of the analysis, we examine only farms with succession intention, so Scenarios 1 and 2 are compared to Scenario 3 ("conditional succession") in multinomial regression. As shown in Tables 6 and 7, unconditional internalised succession (Scenario 1), which has the highest level of self-efficacy, seems most likely in Romania, followed by Moldova and Serbia. This can be advocated for because of the reasons discussed previously (the CAP in Romania, successful land reform and the importance of the agricultural sector in Moldova and late agrarian reforms in Serbia).

The model shows that the most important determinant of Scenario 1 (unconditional internalised succession) is initiating steps to prepare for succession in the form of "training" the successor on the farm. It increases the probability of this succession path significantly if the farmer supports the intention to prepare the successor himself by starting preparations (in many cases, this was not possible because the children were too young or the successor lived

Table 6. Multinomial logit model

	m1		m2		m3		m4		m4- odds ratio	
VAR/SCEN.1,2 vs 3	1	2	1	2	1	2	1	2	1	2
dSerbia (ref.Moldova)	−0.9762***	−3.8100***	−1.7424***	−3.7618***	−1.6146***	−3.7509***	−1.5548***	−3.7658***	*0.211*	*0.023*
	[0.2588]	[0.4307]	[0.2995]	[0.4387]	[0.3062]	[0.4429]	[0.3237]	[0.4691]		
dRomania(ref.Moldova)	0.9059***	−1.1120***	0.6607***	−1.1096***	0.9250***	−1.0392***	1.0619***	−0.7406***	*2.892*	*0.477*
	[0.1891]	[0.1640]	[0.2337]	[0.2038]	[0.2429]	[0.2100]	[0.2681]	[0.2653]		
org_embedd			−0.5179**	−0.1718	−0.4986**	−0.1771	−0.4635**	−0.1330	*0.629*	0.876
			[0.2068]	[0.2112]	[0.2118]	[0.2148]	[0.2282]	[0.2311]		
minsurance_embedd			0.6502***	0.2634	0.5749***	0.2397	0.5535**	0.3378	*1.739*	1.402
			[0.2166]	[0.2360]	[0.2226]	[0.2374]	[0.2380]	[0.2524]		
policy_embedd			−1.4083***	−1.8350***	−1.2922***	−1.8325***	−1.3730***	−1.7284***	*0.253*	*0.178*
			[0.3720]	[0.4569]	[0.3826]	[0.4610]	[0.4319]	[0.4814]		
prep_steps			2.4790***	−1.0256***	2.5603***	−1.0224***	2.7790***	−0.9190***	*16.103*	*0.399*
			[0.2607]	[0.1801]	[0.2722]	[0.1799]	[0.3193]	[0.1884]		
farm_dev			0.4696**	1.1031***	0.4885**	1.0991***	0.4399**	0.9365***	*1.552*	*2.551*
			[0.1947]	[0.2169]	[0.1989]	[0.2177]	[0.2085]	[0.2233]		
efficiency					0.3822**	0.0732	0.2852*	0.1152	*1.330*	1.122
					[0.1526]	[0.1654]	[0.1694]	[0.1769]		
crop diversity					0.8386**	0.0871	0.7459**	−0.1012	*2.108*	0.904
					[0.3282]	[0.3173]	[0.3454]	[0.3352]		
org. matter loss					0.4742***	0.1160**	0.4002***	0.0497	*1.492*	1.051
					[0.1493]	[0.0578]	[0.1404]	[0.0556]		
revenue							0.0000**	0.0000	*1.000*	1.000
							[0.0000]	[0.0000]		
area							0.0559***	0.0414*	*1.058*	*1.042*
							[0.0193]	[0.0212]		
rented land							−0.9208***	−0.9263***	*0.398*	*0.396*
							[0.2761]	[0.2807]		
pesticides							0.0003***	0.0003***	*1.000*	*1.000*
							[0.0001]	[0.0001]		
fertilisers							−0.0007***	−0.0006	*0.999*	0.999

(*continued*)

Table 6. Continued

	m1		m2		m3		m4		m4- odds ratio	
VAR/SCEN.1,2 vs 3	1	2	1	2	1	2	1	2	1	2
							[0.0002]	[0.0004]		
lsu							−0.0224**	−0.0159	*0.978*	0.984
							[0.0110]	[0.0114]		
energy							0.0007***	0.0007***	*1.001*	*1.001*
							[0.0002]	[0.0002]		
Constant	−0.8929***	0.3653***	−2.8121***	0.0535	−3.5839***	−0.0417	−4.1875***	−0.3910	*0.015*	0.676
	[0.1647]	[0.1155]	[0.3525]	[0.2439]	[0.4197]	[0.2966]	[0.5005]	[0.3328]		
Observations	1,157	1,157	1,157	1,157	1,157	1,157	1,157	1,157	1,157	

Note(s): Robust standard errors in brackets; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; significant odds italicized
Source(s): Authors' own creation

Table 7. Marginal effects (Me) on scenarios' probability at means (multinomial logit)

Var	Scenario 1	Scenario 2	Scenario 3	Typical variability
dSerbia (ref.Moldova)	*−8.9%*	*−56.4%*	*65.3%*	[0; 1]
dRomania(ref.Moldova)	*19.5%*	*−16.7%*	−2.9%	[0; 1]
org_embedd	*−6.7%*	−0.3%	*7.0%*	[0; 1]
minsurance_embedd	*7.2%*	3.4%	*−10.6%*	[0; 1]
policy_embedd	*−14.3%*	*−23.2%*	*37.5%*	[0; 1]
prep_steps	*47.0%*	*−26.6%*	*−20.4%*	[0; 1]
farm_dev	3.0%	*13.8%*	*−16.8%*	[0; 1]
efficiency	*2.8%*	0.5%	−3.3%	[0.16; 0.86]
crop diversity	*1.7%*	−0.7%	−1.0%	[0.11; 0.25]
org. matter loss	*4.1%*	*−0.5%*	*−3.6%*	[−0.16; 0.53]
revenue	*5.2%*	−0.6%	−4.5%	[1731; 10528]
area	*4.1%*	*2.7%*	*−6.8%*	[2.09; 7.91]
rented land	*−2.3%*	*−2.5%*	*4.8%*	[0; 0.22]
pesticides	*1.3%*	*1.6%*	*−3.0%*	[31; 457]
fertilisers	*−5.7%*	−3.8%	*9.5%*	[18; 629]
lsu	*−1.1%*	−0.7%	*1.8%*	[0; 4]
energy	*2.8%*	*3.4%*	*−6.2%*	[225; 604]

Note(s): Marginal effect (Me) assuming the other explanatory variables are at a mean level; for dummy variables Me indicates a difference between succession probability for 1 and 0 outcomes, in case of continuous/ordinal variables marginal effect (derivative) was iedby a typical variability range (a measure of position) of the given variable, i.e. $X_{typ} \in (Me - Q.D, ME + Q.D)$; italicized indicates significant effects at p-value<0.1
Source(s): Authors' own creation

elsewhere). Those farmers who started successor training on their own were also more likely to have legal issues resolved and did not expect additional guarantees after the transfer of the farm (Table 7). These results confirm the important role of family ties in the countries studied that were described in Section 3. If the relationship between farmers and their children is close, then the process of succession is smoother and it doesn't need to be subject to additional conditions.

Interestingly, starting to prepare a successor does not increase the likelihood of Scenario 2 (unconditional externalised succession). The situation in which successors begin to learn and gain off-farm experience was generally associated with the intention of conditional succession, characterised by unresolved legal issues and demands for additional guarantees for the farmer after succession (Scenario 3).

Of the other determinants of social network embeddedness in Scenario 1, three more have significant Me: *minsurence_embedd*, *org_embedded* and *policy_embedd* (Table 7). The embeddedness in the insurance system confirms the conclusion from the first stage of the analysis: i.e. various forms of formal and informal contractual integration-reducing price risk increases the probability of unconditional internalised succession. Thus, it can be said that this type of embeddedness increases the farmer's self-efficacy, which is consistent with the conclusions of other authors about the role of contractual integration (Schwabe *et al.*, 2022) and risk in farm succession and the decision-making process (Leonard *et al.*, 2020; Hardaker *et al.*, 2015). In contrast, membership in various social organisations has the opposite effect (decreasing the likelihood of Scenario 1 in favour of Scenario 3, conditional succession). Thus, we are dealing here with social modelling, which may have negative overtones, since the lobbying power of farmers' organisations that bring together many small producers is usually low. It is also an indication to policymakers that horizontal integration in agriculture is built ineffectively and provides few positive experiences for farmers.

When it comes to key variables related to societal norm embeddedness (i.e. crop diversity or efficiency) and place-specific embeddedness (such as revenue and area) they have a positive and significant impact on the probability that the smoothest scenario of unconditional internalised succession pathway will be chosen. This is intuitively since these variables reflect

farm' long-term potential and current state. However, it should be noted that the marginal effects assigned to these variables are rather low. Interestingly, the most important determinant of unconditional externalised succession (Scenario 2) is the fact that there are investment plans ready to go (farm_dev variable). The explanation for this could be as follows: farmers who plan investments in their farm prefer their successor to train off the farm to gain professional knowledge that is necessary to make effective use of the benefits of the investments undertaken. Policy embeddedness is, in turn, a crucial determinant of the choice of conditional succession (Scenario 3). The existence of financial assistance in exchange for transferring the farm can be, on the one hand, an important help in the farm succession process. But, on the other hand, it may cause conflicts between potential heirs and may encourage the transferor to demand additional benefits.

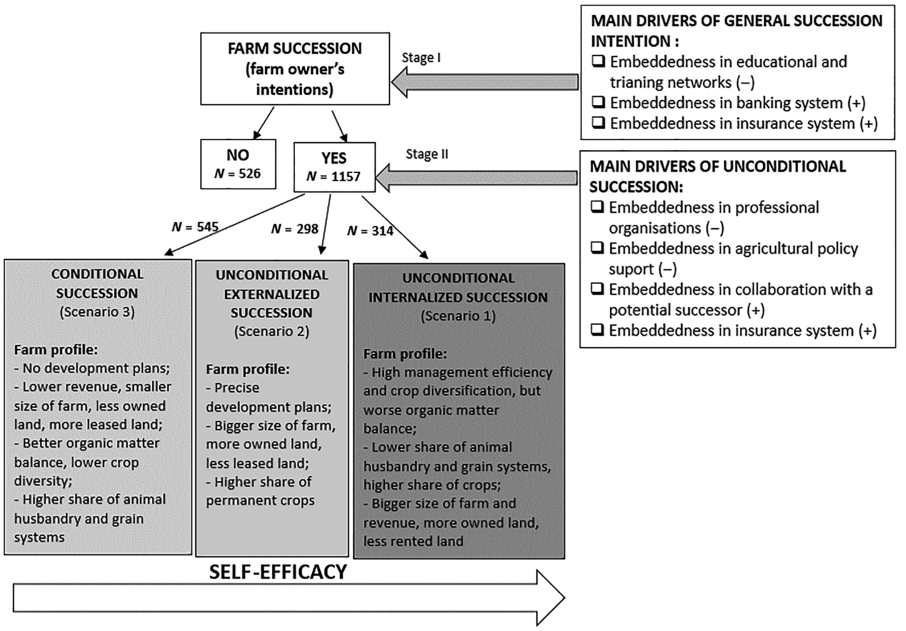
To summarise the results, we developed four farm profiles for different succession scenarios (Table 8). Synthesised findings with regard to succession drivers are depicted in Figure 2.

Relating the results to the research hypotheses, it should be noted that both of them were confirmed. In the case of H1, it has been proven that the general intention of succession is mainly driven by the embeddedness in educational and training networks, indicating the negative impact of these networks in supporting the succession of small farms. In the case of the conditionality of succession, the relationships with professional organisations and agricultural policy schemes are decisive and again it is worth emphasising that these

Table 8. Small farm profile with regard to the chosen succession scenario

No succession intention	Conditional succession	Unconditional externalised succession	Unconditional internalised succession
- Farmers are more likely to participate in training, have higher levels of education and manage their farms effectively - Weak embeddedness in cooperation with banks and the insurance system against market risks - Lower revenue and UAA - Lower share of permanent crops	- Strong embeddedness in producer associations - Expectations of support for succession from agricultural policy - Farmers do not have farm development plans and management is less effective - Successors learn and gain experience off-farm - Lower revenue, smaller size of farm, less owned land, more leased land - Better organic matter balance, but lower crop diversity - Higher share of animal husbandry and grain systems	- Farmers do not expect support from agricultural policies for succession nor have they begun training a successor - Farmers have specific investment plans - Bigger size of farm, more owned land, less leased land - Higher share of permanent crops	- Farms firmly embedded in the insurance system against market risks - Weakly embedded in producer associations - Farmers do not expect support for succession from agricultural policy - Successor training started; successors learn and gain experience on the farm - High management efficiency and crop diversification, but worse organic matter balance - Lower share of animal husbandry and grain systems, higher share of crops - Bigger size of farm and revenue, more owned land, less rented land

Source(s): Authors' own creation



Note(s): (+)/(–) indicates the positive/negative influence respectively

Source(s): Authors' own creation

Figure 2. Drivers of farm succession within the embeddedness framework

institutions currently have a negative impact on small-scale farmers' self-efficacy and hinder the succession process. As for H2, the marginal effects (Me) on the change in the probability of succession for the variables reflecting embeddedness in social networks are in the range of 7–15% and for farms performance below 5%.

At first, our results seem to be contradictory to findings from developed countries in which the authors found a positive link between farm performance (profitability) and the chances of succession (Mishra *et al.* (2010) and Dong *et al.* (2016) in the USA or Jack *et al.* (2019) in Ireland). However, these studies did not focus particularly on small-scale farming. Our results do not show that it is unlikely to conduct succession if there is a big, very profitable farm that provides a decent income. The results rather suggest that in the context of small farms (that face the "glass ceiling" effect), we should apply different logic to understand the complexity of their functioning. That is why other aspects are crucial for the succession process among small farms. As Zagata and Sutherland (2015) noted, the problem with the lack of young farmers in European countries is related to farm structure. The apparent shortage of young farmers is found in countries where there is a higher proportion of small farms. It means that if the farm structure is more favourable, then less policy incentives are needed.

6. Conclusion

In this research, we contribute to the embeddedness theory with regard to the succession process in small-scale businesses by showing that the involvement in social networks is more important than economic drivers when the decisions about succession and its scenarios are formulated, especially in post-socialist emerging markets.

Using the concept of self-efficacy, we distinguish between 'no succession' and three other succession scenarios. We specified the explanatory variables, assuming that farmers' embeddedness in social networks, perceived as the interactive relationships with formal institutions and individuals, affects farmers' self-efficacy. The latter determines the level of conditionality associated with different succession scenarios. Thus, we bridge Granovetter's theory with Bandura's concept of self-efficacy.

We also identify which particular types of social networks are most relevant at each stage of the succession decision-making process. In the initial phase of succession planning, the integration of farmers into the banking system is a crucial factor. Farmers who have access to external funding for agricultural development tend to prioritise the identification of a successor. In the subsequent phase, which occurs within the family network, the importance of relational embeddedness increases. The research also contradicts the common belief that higher education and efficiency always enhance business continuity. By highlighting the negative side of education and efficiency in the context of small farms, the study nuances the traditional view of human capital and opens up new avenues for research into how education impacts succession in family businesses (see Figure 2).

The study contributes to conceptual comprehension of business entities succession not only in agriculture. The theoretical framework used can also be applied to analyse the succession process of family-owned, small businesses in other sectors. We shed more light on succession process in terms of place-specific, societal norms and social network context in which small businesses usually operate.

In particular, the novel insights provided by this study demonstrate how relationships of farmers with some formal institutions hinder self-efficacy and thus unconditional succession. The feedback from embeddedness in social networks, which negatively affects self-efficacy, is a novel finding and thus contributes to the understanding of interconnections between the embeddedness and self-efficacy theories. Hence, the embeddedness in social networks can have also a negative influence on the development processes in some sectors of the economy through undermining the self-efficacy of individuals (social negative modelling). This is a signal that should not be ignored by policymakers, who should take action to reform such institutions (in agriculture: educational and training networks, vertical integration as well as policy schemes for small farms) and develop institutions that foster self-efficacy (e.g. insurance system against market risk).

The results highlight the peculiarities of small farms in emerging markets and indicate, in the first place, which agricultural policies may not be effective in their case. Ineffective schemes can include pro-efficiency support and subsidies for producer groups implemented in isolation from active land management. Investment support without mechanisms to stimulate the concentration of agricultural land and reduce market risk may not have the desired effect in the small farm sector, because their basic problem is that they are simply small. The best-educated, experienced and most efficient farmers do not see a prosperous future for their farms. This can be called the glass ceiling effect (even the most efficient small farms are doomed to market vegetation at most). Therefore, the bi-professional small farm model should be promoted more.

Second, for smallholders living mainly from agriculture, it is necessary to look for solutions that bypass the market treadmill. Based on this research, positive social modelling can be of great importance. Policymakers should create specific development paths for smallholders that provide real opportunities to increase income and compete in markets. From our analysis, two directions for such a development tentatively emerge: (1) permanent crops with recommended business plans followed by precisely targeted investment subsidies and training (for *unconditional externalised succession*) and (2) so-called landscape guardians under a crop farming system who will receive high support for providing environmental public goods through precisely tailored environmental schemes and risk management measures (for *unconditional internalised succession*). In this group of farms, the rationale for succession may be of a more altruistic nature related to the growing vogue for organic farming, which,

however, requires considerable experience, determination and courage on the part of the farmer (i.e. self-efficacy). Perhaps the heirs will be willing to take over the farm in such a model, treating it as an additional but also socially prestige-giving source of income.

The present article has some limitations. Firstly, this study employs quantitative econometric methods. On the one hand, it can be seen as an advantage since it allowed a comprehensive analysis of the determinants of succession on a large sample of farms. On the other hand, in quantitative analyses, it is not fully possible to capture all the complexity of the motivations behind potential successors and farmers who want to transfer their farms. The use of qualitative methods (e.g. in-depth interviews) to better understand the farmers' motivation could be a valuable complement to these analyses. The second limitation is related to the fact that are samples of farms are not representative of all farms in post-socialist European countries. We have run the analysis for the three countries that vary in size and in political and institutional context. It helps to diversify the scope of analyses but still some important parts of Central and Eastern Europe (such as Baltic countries or The Visegrád Group countries). The third issue is that our analysis is conducted from the perspective of the current farm owner. Thus, we do not directly analyse to what extent potential successors are interested in taking over the farm. Nor do we analyse the impact of succession on future farms' development.

The limitations identified above may provide a starting point for further research. One line of research could be ex-post analyses, i.e. surveys on farms where succession has occurred recently. The motivation and goals of small-farms successors could be identified. This would help policymakers to better target the policy support for these young farmers. The economic and environmental performance of the inherited farms could be compared, depending on the conditions under which the succession took place. Future research could also seek to answer the question of to what extent farm size influences dominant succession patterns. It is likely that in post-socialist countries where large farms dominate (Czechia or Slovakia) the succession may be influenced by other factors. An interesting line of further research would be to develop the scenario of unconditional externalised succession (see Figure 1), while investigating institutional arrangements that could help farmers to meet their expectations regarding a successor preparation. It would also be interesting to compare the determinants and models of succession in agriculture in emerging economies with farm succession patterns in the most developed countries.

Notes

1. There is no detailed data for Moldova in 2017–2022 wave. However, because of the common language (and partly history), it can be assumed that the cultural context in Moldova is similar to Romania.
2. https://famfar.ans.pila.pl/
3. The efficiency score is expressed as a relative distance to the efficiency frontier in different types of farming (crops, mixed, animal). We used a DEA-based, hybrid, super-efficiency, variable return to scale, non-oriented model in which agricultural production stands as the output and different types of capital and land are the inputs, referring to the classical production function. Scores ≥ 1 indicate a fully efficient farm. The super-efficiency approach allows us to differentiate the efficient units. The details of this approach are discussed by Czyżewski and Kryszak (2022).

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