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SUCCESSION DECISIONS IN FAMILY FARMS AND PUBLIC POLICIES IN DEVELOPED COUNTRIES?

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Succession Decisions in Family Farms and Public Policies in Developed Countries*

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Abstract

This paper presents a review of the literature on family farm succession in developed countries. It starts with a presentation of the different, and conflicting, theoretical models of succession, then analyzes the empirical work on the determinants of family succession, of its timing, and on the effects of succession on farm performances. The policies affecting family farm succession are presented, with an emphasis on inheritance rules and on agricultural policies.

1 Introduction

Agriculture, both in developing and developed countries, is predominantly composed of family farms. The definition of family farming is debated, with someone more inclined to stress the family links, other the economic dimension; the definition proposed by FAO (Garner and de la O Campos, 2014: "Family Farming (also Family Agriculture) is a means of organizing agricultural, forestry, fisheries, pastoral and aquaculture production which is managed and operated by a family and predominantly reliant on family labor, both women's and men's. The family and the farm are linked, coevolve and combine economic, environmental, reproductive, social and cultural functions") encompasses both the labor contribution by family members and the role of the household. The link between the economic unit (the farm firm) and the social unit (the household) has several implications, one of which is the issue of succession. Actually, intrafamily transfer is predominant in many economies (Bryden et al., 1992; Perrier Cornet et al., 1991; Marsden et al, 1989) and farmers' children are

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more likely to follow their parents' employment than other profession's children (Laband and Lentz, 1983). Notwithstanding its relevance for the evolution of the agricultural sector, the issue of farm succession has not been analyzed intensively in the economic literature. We will present a review of the relevant literature with reference to developed countries, starting with the theoretical models, then examining the empirical analyses of the determinants of family farm succession and its effect on farm behavior. Finally, we will discuss the policies that are relevant for farm succession.

2 Theoretical models of farm succession

Intrafamily transfer implies two separate issues. One is the transmission of the farm assets over generations (inheritance). The second is the transmission of the farm operation (succession). The issue of inheritance as such and is not specific for farms. The reasons for parents to leave their assets to the children, both during their life and through bequests, are largely debated in the economic literature (for a general review on the issue of intergenerational transfers see Laferrère (1999) and Schokkaert (2006)). There are different streams in the literature. Some economic models assume altruistic parents (e.g. Becker and Tomes, 1976), so that the motivation for leaving assets to the children rather than consuming them during lifetime is that children's welfare is an argument in parents' utility function. Other models consider intergenerational transfers as an old age security: the parent loans to the child who will pay back in parent's old age (Samuelson, 1958; Shell, 1971; Hammond, 1972; Cigno, 1991 and 2000). Other models assume selfish behavior, thus implying that altruism towards the children is not required to explain bequests. According to Bernheim et al. (1985), intrafamily transfer has strategic motives, and parents use bequests to induce care by their children by threating them not to leave any inheritance. A further approach, still assuming selfish attitudes, is intrafamily transfers as an insurance against risk (Kotlikoff and Spivak, 1981). Individuals, when annuity markets are imperfect, insure themselves against the risk of running out of their resources if they long live by an implicit or formal contract with their children, benefitting of the risk sharing.

Some of these general theories are adopted to analyze farm succession, with some specificities that intergenerational agricultural asset transfer raise. A stream of literature treats farm succession as in insurance problem. Pesquin et al. (1999) start from the consideration that individuals basing their consumption in retirement years enjoy greater consumption if they can rely on a actuarially fair annuity like a pension

fund rather than on self-reliance on the wealth obtained selling the farm, since the probability of survival is averaged across all participants. A succeeding family receives the farm and takes on the obligation of providing the parents an income for the rest of their lives. Then family succession can be considered as a mutual insurance providing a fair annuity, and the family collectively enjoys the relevant economic surplus, which can be further increased by parents' contribution in labor and in farming experience. Additional benefits are a "smooth" transition, lower transaction costs, and possibly lower taxes. Unlike in Kotlikoff and Spivak (1981), Pesquin et al. assume an intergenerational cooperative behavior, since the division of the economic surplus is seen as the result of a bargaining process modelled as a Nash cooperative game. They do not test empirically the model, but rather simulate the outcomes based on the data of some Israeli farms. In this model, the reason for passing on the farm within the family are the additional benefits that family succession provides and, hence, the mutual interest in the collaboration.

Kimhi (1995) presents a theoretical model of farm succession based on the investment by the parent on sector-specific, farm and non-farm, human capital of two children, of which only one is going to succeed on the farm. Under the assumption that for an altruistic parent his descendants' utilities enter in his utility function, Kimhi derives the predicted investments in human capital for each sector without and with a constraint of equal welfare for the children. Uncertainty about future farm income of each potential successor implies decisions about the length of the period of delay of the succession decision, since delaying the decision allows accumulation of information on the potential successor's abilities in running the farm. However, this situation is prone to strategic behavior of both the parent and the child. A parent desiring to have a successor but wishing to delay as much as possible the succession will delay the decision until the child is about to give up and quit. A child knowing that his parent is extremely willing to have a successor can threat to quit, to force him to transfer the operation earlier.

Kimhi (1994) further offers a model of the timing of succession. The theoretical model assumes a family maximizing the present value of income streams from the parent and the child. Hence, the family trades off the loss of the income generated by the parent if the transfer is made one year earlier to the gain with the income generated by the child. The choice variable is therefore the time of transfer. The results, estimated on a sample of Israeli *moshavim*, suggest that transfer time decreases with the age of the parent and when he/she works off the farm, and increases with

the child's education. The theoretical model is overall supported, thus suggesting an altruistic behavior of parents seeking to maximize family welfare.

A particular question is why the farm operation, and not only farm assets, are transferred within families. This is typical for farms much more than for other individual businesses. For instance, Blanc and Perrier-Cornet (1993) note than in France artisan bakers often sell to former bakery assistant who set up on their own account rather than handing it on to their children. The answer proposed by Rosenzweig and Wolpin (1985) is that the accumulation of farm-specific knowledge raises labor productivity, so that, if an offspring works on the farm and gains specific knowledge, he/she has an incentive to purchase the farm from his/her parents, since it is more profitable and the land is worth more than for anybody else. For the same reason, the offspring has an incentive to work for his/her parents in young age for a lower cost than hired workers. The outcome is an implicit contract among generations involving transfer of land and use of family labor that is Pareto efficient compared to nonfamily sales of land and labor. The model does not require altruistic behavior, since both generations are better-off with the arrangement. Rosenzweig and Wolpin test their model for a panel of Indian farms, taking experience on weather events as the indicator of specific knowledge, and find support to their thesis. They note that the effects of technological innovations reduce the value of accumulated knowledge. Hence, in developed countries, its effect should be weaker. Corsi (2009) investigates the determinants of succession for an Italian region, and finds that variables proxies for specific knowledge do significantly affect the probability of intrafamily succession; though, the effect is rather weak, and other determinants are also important.

In addition, the social science literature points to the farm cycle. The interest in this stream is not in explaining the reasons for succession, but rather in describing its different possible patterns. Errington (1998), in comparing research in France, UK, and Canada, depicts four different stylized paths: the "stand-by-holding", when the father sets up an independent farm for the child, which eventually can be amalgamated with the father's when he retires; the "separate enterprise", when the child develops his own enterprise, perhaps a pig unit or sheep flock; the "partnership", when the potential successor gradually acquires responsibility for particular aspects of the home farm; and the "farmer's boy" pattern, when the child spends many years working for the father, mainly in manual activities with little involvement in the management.

3 The determinants of succession

The issue is what favors and what impedes that the farm is handed on to some family member of the next generation. This is of interest to predict the evolution of the farm structure. Given that available agricultural land is virtually fixed, expansion of farm size is only possible if some farmers quit farm operation. This may happen because of economic reasons when the farmer is still active or because he/she retires without successors. Considering that most of the entry to farming is linked to intra-family succession, detecting under which conditions the intra-family transfer is easier is of interest also for policy makers. The lack of an agreed theoretical framework on which to base the empirical analyses pushes many researchers to analyze empirically what variables are influencing the succession, or its timing, regardless of the underlying theory. In some cases, the empirical analyses are presented as reduced-form of theoretical models, even though the estimates cannot discriminate between alternate theories. In other cases, the analyses give up the ambition of testing more structured theoretical predictions and simply assume that the choice is the outcome of some dynamic process within the family that produces the highest utility. Hence, they investigate on which variables influence the outcome of succession, typically with logit or probit statistical methods.

However, the analysis of this issue is complicated by a set of empirical problems. First of all, the empirical definition itself of succession is not trivial. Since almost by definition intra-family succession happens at a generation time distance, to fully observe the entire process one should need very long panel data. This contrasts with the usually available data sets. In addition, even when data are periodically available for long periods, like for Agricultural Censuses, there is almost invariably a problem in matching the observations from one period to the other. Hence, it is often difficult to be sure that, e.g., a farm observed in one Census is the same farm in the following one. Moreover, it is not always possible to know with certainty, when the operator has changed, if the new operator is the child of the former one. As a result, most of the literature investigating the issue of succession is based on cross-sectional samples. Few exceptions are Weiss (1999) and Kimhi (1994), who utilize data matched from three and two Censuses, respectively, to build panel samples. The empirical identification itself of succession is diverse. Many studies use statements by farmers of having identified or designated a successor (Potter and Lobley, 1996; Hennessy, 2002; Viaggi et al., 2011; Calus et al., 2008; Kimhi and Nachlieli, 2001; Mishra and El

Hosta, 2008). However, Väre et al. (2010) warn that succession plans as stated by farmers may not be good predictors of actual following succession. Glauben et al. (2004) also stress the difference between the decision of a farm succession and the designation of a successor among the children. Weiss (1999) and Kimhi (1994) identify a change in operation comparing the operator's age between two following periods. Corsi (2009) and Kimhi and Nachlieli (2001) use the presence of a younger household member working on the farm as an indicator of a likely successor.

Table 1 summarizes the main determinants found in the empirical studies, showing the sign of the estimates. A first group of explanatory variables concern the farmer's characteristics. Farmer's age is, quite obviously, included in almost all studies, and shows a positive effect on the probability of succession. The approach to retirement age favors the definition of a succession plan[1]. Several studies also include a squared age variable, to represent a non-linear effect. However, some found the age-squared variable not significant (Glauben et al., 2009; Kimhi and Nachlieli, 2001). Glauben et al. (2004) estimated that the probability of succession reached its maximum at the age of 53, while for Stiglbauer and Weiss (2000) it was at almost 70, well beyond retirement age, in line with Corsi (2009). The overall conclusion is that to all practical purposes the probability of succession is strictly increasing with the operator's age. It should be noted that this variable presumably mainly affects the farmer's choice. The only possible effect on the potential successor's choice to accept the succession might be when he/she has another occupation, and the approaching retirement of the farmer induces to go back to farming accepting the succession.

A related determinant is the age difference between the farmer and the oldest child, which is estimated as significantly negative by Kimhi and Nachlieli (2001) and Glauben et al. (2009). The idea is that children, if much younger than the parent, can be still too young and unwilling to make a long-term decision like accepting the succession.

Some studies also include the farmer's education as an explanatory variable. Stiglbauer and Weiss (2000), Kimhi and Nachlieli (2001), Corsi (2009), Mishra et al. (2010), all find a negative effect on succession of farmers' education, particularly for tertiary education, which is interpreted in several ways. Kimhi and Nachlieli (2001) argue that in the bargaining game their theoretical model assumes between parents

[1] Mishra and El-Hosta (2008) find a positive relationship with the definition of a succession plan, but a negative one with family succession.

and the potential successor, more educated parents are more able to postpone the solution; to this, Corsi (2009) and Mishra et al. (2010) add the consideration that, even if farmer's education usually raise farm income, thus increasing the child's willingness to take on the farm, it also raises the probability that the children receive a higher education, which in turn makes their potential off-farm wage higher, thus discouraging the farm continuity. However, for Mishra and El-Hosta (2008) the effect of education is positive, arguing for a prevalence of the effect of higher farm income, and for Glauben et al. (2009) it is non-significant.

The farmer being a woman raises the probability of succession (Stiglbauer and Weiss, 2000; Glauben et al., 2004; Corsi, 2009). There is here some suggestion of gender roles, and mothers apparently are more willing than fathers to hand over the farm operation to their children. Also, Glauben et al. (2004) find that the number of male children is significantly positively related to succession (the number of female children is negative but non-significant), and Glauben et al. (2004) have similar results (but the estimate is not significant for males). In the other studies, not distinguishing children's gender, the variable of the number of children is never significant.

A second group of variables included in almost all studies comprises various indicators of farm income (Hennessy, 2002; Mishra et al., 2010), also including Standard Gross Margin (Glauben et al., 2004; Corsi, 2009), farm area (Kimhi and Nachlieli, 2001; Hennessy, 2002; Väre et al., 2010), livestock units (Stiglbauer and Weiss, 2000), and profits (Glauben et al., 2009). The majority of the studies find a significant and positive effect on succession (only for Mishra et al. 2010, and for Väre et al., 2010 the relevant estimate is not significant). An exception is Kimhi and Nachlieli (2001), who explain their finding with past lower investments in large farms, that therefore require less labor (resulting in a lower demand for successors), and provide less income (thus attracting less successors). Without any doubt, farm income has an effect mainly on the potential successor's choice to take on the farm, making it more attractive relative to alternative occupations. It is much more uncertain which is the effect on the farmer. The only link with theoretical models might be with Rosenzweig and Wolpin's argument of a higher productivity of the offspring, due to idiosyncratic knowledge. If this were the case, then the causality would be circular, with successors working on the farm and raising its income, thus making it more attractive for them.

Similar arguments apply to farm wealth, or assets. Mishra and El-Hosta (2008) find a positive relationship with succession, as well as Calus et al. (2008) and Glauben et al. (2009). Mishra and El-Hosta's interpretation of their finding is that a large farm capital stock is an indicator of a high farm income making succession more attractive for the potential successor. To this, Glauben et al. (2009) add the consideration that farm assets, in particular owned land, help overcoming borrowing constraints for the successor. Calus et al.'s vision is more articulate, since they see large assets as conducive to a more likely family succession, but also as the result of good succession prospects.

The role of part-time farming for farm evolution has been a largely debated issue. Stiglbauer and Weiss (2000) find that if the farmer works off the farm the probability of family succession is significantly lower, a result consistent with Mishra et al. (2010). In other studies, though, the effect is positive (Mishra and El-Hosta, 2008), albeit non-significant (Kimhi and Nachlieli, 2001; Glauben et al., 2004). Corsi (2009) distinguishes between off-farm work as a minor occupation (that has a significant negative effect) and as the main occupation (with a positive significant effect). Overall, it seems that the relationship between off-farm work status of the farmer and the succession is unclear and might hide different phenomena. As noted by Kimhi and Nachlieli (2001), a successor is perhaps less needed in a part-time farm; on the other hand, Corsi (2009) argues that a parent with a successor might work off the farm exactly because he has someone substituting for him on the farm and wants to leave him more responsibility in running the farm, while an operator with no successor might work off the farm as a prelude to exiting from farming.

The type of farming is considered by some studies. Glauben et al. (2004) show that a farm specialization is more favorable to a family succession than diversification, quite the opposite than Stiglbauer and Weiss (2000). A specialization in dairy has a positive effect on succession for Kimhi and Nachlieli (2001) and Glauben et al. (2009), who argue that dairy allows an early division of labor and involvement of children in the farm operation and provides more stable income. Corsi (2009) interprets the positive effect of some specialized types of farming (cattle, dairy, quality viticulture) as those in which the accumulation of farm-specific knowledge creates an incentive for intra-family succession.

Almost all studies introduce some area dummies. The rationale behind these variables is not always clear. They can be interpreted as indicators of the type of

production prevailing in specific areas or as indicators of the alternative local employment opportunities for the potential successor. Only Corsi (2009) explicitly introduces local labor market variables, finding that those implying more (and more attractive) employment opportunities do reduce succession prospects.

Only one paper includes among the determinants a variable that could potentially be extremely important, that is, public policies. Mishra and El-Hosta (2008) model the factors affecting succession decision of a sample of US farmers and, conditional on the choice being made, its nature (family succession, non-family succession, and exit). They particularly include, among the explanatory variables of a multinomial logit, expected government payments, that turn out to have a (weakly) significant negative effect, even if they favor a succession plan. No study considers inheritance taxes or retirement schemes among the explanatory variables, probably because they are common for all observations at each national level.

A few considerations are at point. First, assessing the sign of the effect is often insufficient to really appreciate the effect of a variable. When the studies are based on logit or probit models, not all report the marginal effects, that give the actual importance of the variable. When evaluated quantitatively, the effects of some variables, though significant, become negligible: for instance, $100,000 more wealth, according to Mishra and El-Hosta (2008) increase the probability of succession by 2 percent, and according to Corsi (2009) a 10,000 Euro increase in the Standard Gross Margin raises the probability by 1 percent. Both effects are very weak in practical terms.

Second, the link of the variables to the theoretical models is somewhat weak, since they have a limited, if any, capacity to discriminate between alternative models. The above review is enough evidence that different interpretations can be given to the same results. Since both the farmer and the potential successor(s) are involved in the decision, given that the arguments in their utility functions can be different, and keeping in mind that farm stability can have culturally rooted meanings, it is much possible that different behaviors can coexist, so that the outcome is a weighted average of completely different mechanisms, altruistic and selfish, interested or indifferent to farm continuity in the family.

Third, as noted by Glauben et al. (2004), some of the variables considered as determinants of succession may pose a problem of causality. This is particularly the case of income and wealth variables. A lower farm income makes farming less

attractive for a potential successor, hence decreasing the likelihood of succession. At the same time, the lack of a successor typically induces operators to reduce their enterprise, for lack of motivation (Marsden et al., 1989). This cause-or-effect puzzle may determine an endogeneity problem in the analyses, as observed by Mishra et al. (2010).

Finally, the succession can be analyzed strictly from the perspective of the potential successor. Hennessy and Rehman (2007) model the occupational choices of designated successors, as predicted by the farmers. The choices can be full-time farming, part-time farming, no farming or undecided. Their results suggest that the most likely outcome is part-time farming, and that the probability of working full-time on the farm increases with land and herd size and with a dairy type of farming and is lower when the farmer has an off-farm job and when the designated heir has a third-degree education.

4 The effect of prospected succession on farm behavior and performances

Not only the farm characteristics have an influence on the prospects of family succession, but also the opposite holds: having or not having prospects of succession can affect the way the farm is managed. Marsden et al. (1989) point to the influence of succession on farm operation, contingent on the income prospects: "the lack of a successor was a powerful variable in explaining the decline of farming operations. Alternatively, for many more, the existence of children was a major justification for the expansion of activities". Potter and Lobley (1996), perhaps the first to explicitly speak of a "succession effect", find that farms where a successor aged at least 18 has been identified and is currently working on the farm are significantly more likely to have expanded their farmed area, to have undertaken significant capital investments, and to have acquired land, than those in other succession situations. By contrast, farmers lacking successors are more inclined to disengage and to decrease the degree of intensification of their farms. They relate this behavior to the family cycle.

Calus et al. (2008) use Total Farm Assets (TFA) as a predictor for discriminating between farms with a high or low succession potential. They show, based on FADN data, that the designation of a successor results in an increase of TFAs. They also note that higher TFAs imply better succession perspectives. This is consistent with the findings that more profitable farms make succession more likely, if TFAs are taken as indicators of the present value of future income streams, and suggests a

circular causation, from succession perspectives to more investments to more prospective farm income, that makes succession more likely.

Viaggi et al. (2011), in a study on the determinants of investment reactions to the CAP reform, investigate stated investment intentions by farmers in several European countries. The results suggest that the choice of increasing the investment is made by a larger share of farmers who have a successor (27% vs 6% for those who do not have a successor).

Sottomayor et al. (2011) in a comparative survey in Germany, UK, and Portugal, find that farmers with a successor are more likely to retire at the normal age, to adopt new farm activities (in Portugal only), to intensify production (UK and Portugal).

In general, the logic behind this observed behavior is that the existence of a successor extends the time horizon on which plans and investments are made and renders investments more likely. Hence, as already noted, many variables that are considered as determinants in models of succession probability might be viewed in the reverse causality. Just as an example, Stiglbauer and Weiss (2000) find that farm diversification is a significant explanatory variable of farm succession. However, one might argue that those farmers that have good perspectives of succession adopt a strategy of diversification, possibly to reduce risk in view of handing on the farm. The same argument might apply to the number of milk quotas included as determinants of the presence of a successor on the farm by Hennessy (2002). More generally, this applies to various types of income and wealth variables (farm size and proprietorship, farm assets, net worth, etc.).

A strictly related issue is whether farm succession has a positive impact on farm economic performances. Weiss (1999), analyzing farm growth between subsequent Censuses, finds that farms taken over by younger farm operators in the previous period are 9.29% more likely to survive in the subsequent period, but the effect is only significant for full-time farms. A slightly different issue is the performances of inherited vs. non-inherited farms. The results are mixed, although predominantly for better performances of the former. Laband and Lentz (1983) use USA data to show higher income of children following their parents in the farm business. The results by McNally (2001) on a sample of European farms are similar. They relate them to the transfer of human capital from father to son. By contrast, Carillo et al. (2013), using the FADN sample of Italian commercial farms, and taking Value Added per Work Unit as the measure of performance, conclude that non-inherited farms

outperform inherited farms. The explanation they provide is drawn from the literature on industrial family firms, arguing that family transfer does not guarantee the choice of the best talent for managing the firm. However, one should note that, if the comparison is made between the performances of the farms with and without a successor, it is quite possible that a selection bias is at work: the most profitable farms are more likely to have a successor. Vice versa, in Carillo et al.'s interpretation, non-inherited farms are more profitable because non-inheriting farmers choose to operate the most profitable farms.

5 Policies affecting intrafamily farm succession

Looking at policies influencing farm succession, the questions are the rationale behind the relevant policies, and their effect. It is useful to divide the policies between 1) inheritance laws and regulations; 2) general agricultural policies; 3) fiscal and retirement policies; 4) policies directly concerning farm transfers.

Inheritance laws affect the transfer of farm assets, along with all other assets composing the estate. There is a large diversity in rules regarding farm inheritance. In some countries, the testator has little or no discretion as to the distribution of his property, while in other the testator has much more discretion as to whom leave the land (Baker and Miceli, 2005). OECD (1998) distinguishes three group of countries in this respect: 1) those with a preference for a single-heir inheritance (Germany, Austria, Switzerland, Greece, Denmark, Sweden, Norway and Finland), where the legislation allows one single heir to inherit the whole farm, in return for monetary compensation for the co-heirs; 2) those based on the Principle of Egalitarian, mainly influenced by the 1804 French Civil Code (France, Belgium, Luxembourg, the Netherlands, Italy, Spain and Portugal), where the principle is to ensure equal treatment to all heirs; 3) those following freedom of will, and referring to Common Law (UK, Australia, Canada, Ireland, New Zealand and the United States), where an heir can be designated as a single farm successor by testator's will and inherit a whole farm without any obligation to pay monetary compensation to other co-heirs.

The rules are mostly relevant in determining the evolution of farm structures when there are several claimants to the farm estate. Laws giving the right to descendants (and spouse) to a share of the estate tend to favor the fragmentation of farms, which leads to a lower efficiency if economies of scale exist. This is the case of France, of the other countries of the second group, as opposed to the countries of the first group, and to the Anglo-Saxon countries, dominated by Common Law.

In France, for instance, children have the right to equal shares to the heritage. At present, the surviving spouse has the right to the usufruct of the estate or to one fourth of its value, while the descendants have the right to equal shares of the rest, or to the entire estate, is there is no surviving spouse. In Italy, the law prescribes the shares of the estate that are reserved to the children and the spouse, and the share (a minor part) of which the testator can freely choose the beneficiary. The countries where the one-heir principle dominates avoid the problem of fragmentation, but at the cost of charging the sole heir with the obligation of monetary compensation to the other ones. By contrast, in the UK, in Ireland, and in the USA, the spouse has in some cases a right to a share of the estate, but the children do not, so that the assets can be transferred according to the testator's will.

The rationale behind the French approach is linked to equity motivations, not to discriminate among children. Historically, the equal rights for the children were created in France by the *Code Napoléon*, and also responded to the goal of breaking the power of the aristocracy and the inefficiency of the system of *majorat*, according to which the whole property went to the oldest son and the land could not be divided nor sold. Nevertheless, both the primogeniture rule (like in Norway) and the equal share rule prevent the possibility for the testator of choosing the best fit heir, even if both rules eliminate rent-seeking by the potential heirs. This decreases the farmer's utility if ensuring the continuity and the profitability of the farm are arguments in his/her utility function.

The equity and rent-seeking elimination reasons for equal shares among children may nevertheless contrast with efficiency issues when there are economies of scale in farming and when the potential heirs have different farming skills. A material division of the farm among different heirs can decrease its efficiency. Hence, different mechanisms have been created to cope with this issue in the countries where the equal-shares rule dominates. For instance, in France the law envisages the possibility of a preferential allotment (*attribution préférentielle*) of the totality of a good to a co-heir, while the other are awarded a monetary compensation, or are even compelled to rent their shares on a long-term basis to the co-heir who is continuing the farm operation. In a similar way, the Italian law prescribes that if an heir is operating the farm, the other co-heirs have to rent him/her their shares of the relevant land. On the opposite side, in the UK it is possible to introduce limitations on the destination of land by creating trusts, though the law tends to limit the extent of the disposition (Commission of the European Communities, 1980). A final remark

on this issue concerns the demographic and employment variables. The problem of the fragmentation of farms was more serious when the average number of children was high, but has been alleviated by the decrease in fertility, and by the increasing job opportunities in other economic sectors that induced many farm children to leave agriculture.

General agricultural policies may influence farm income and/or land value. Without going into details, most agricultural policies in developed countries have the goal of raising farm income, though in different ways and with different effect by type and size of farms. Regardless, the effect of farm income for the potential successor is clear, inasmuch it renders farming more attractive relative to other jobs and makes succession acceptance more likely. It is nevertheless unclear whether it makes intra-family transfer more likely from the parent's perspective. From this point of view, the crucial points are whether the farm value is higher if sold to the child than to anyone else, and whether the parent cares for the child or not. If the value of the farm is higher if passed on to the child, then the intra-family succession is of mutual interest, and any policy increasing farm income and farmland value will encourage it. Provided that some form of informal or formal agreement between the parties can be reached, parent's altruism or selfish attitude will not matter, though it obviously would affect the distribution of the benefits. The value of the farm, and the effect of agricultural policies affecting it, may be ambiguous in other cases. A parent interested in the child's utility will encourage him/her to take on the farm if he think that this is in his/her best interest and, hence, if it provides a good income. In this case, parent's concern goes in the same direction as the child's (which would explain the common finding that farm income favors family succession), and policies enhancing farm income should favor family succession. On the other hand, even altruistic parents are constrained in their generosity towards the children by the necessity of having an old-age income. In countries where public welfare system are widespread, old farmers can count on pensions, which should make them more willing to leave the farm to a child, as they do not need make their living in old age only from the farm asset. However, Mishra and El-Hosta (2008) note, with reference to the USA, that for many farmers the farm is the only source of income for retirement, but they also find that passive income like Social Security, income from disability, and other public retirement programs and assistance, as well as government payments, have a negative effect on family succession. Their explanation about the effect of government payments is that they are capitalized into higher rents and/or

higher land values. This seems to suggest a non-altruistic attitude, since if the transfer of farm assets to the children were only constrained by the retirement income needs of the parents, then both passive income and government payments should relieve the constraint and have a positive effect on succession. However, Pietola et al. (2003) have showed that farmers do respond to early retirement programs, that favor both the exit from farming and the transfer to a new entrant (which can be the child). Mishra et al. (2014) have shown that the intensity of government payments decreases the intention of exiting farming, hence implying more likelihood of an intrafamily succession. Overall, the evidence for a selfish attitude of parents is not strong, and cultural values concerning the intergenerational transfer can differ between countries and, in each country, between individuals. The discrepancy between the finding of a negative effect of government payments in favor of agriculture and the general finding of a positive effect of farm income calls for more research on the issue.

Among policies directly affecting farm succession, fiscal and retirement policies are also relevant. However, this issue has not been investigated, probably for the reason that in studies concerning the same country the legislation is the same, which prevents detecting the effect of different rules. Only Glauben et al. (2009) assess the subjective importance of tax and pension consideration for the timing of succession, since they note that "In Germany, there are various ways in which farm succession can lead to tax benefits for the family of the farm owner […]. Furthermore, there is a highly subsidized old age pension system for German farmers. Apart from age requirements, one of the conditions for receiving benefits from this system is that the farm was transferred to the successor". Copus et al (2006) ascribe to this rule the low share of farmers over 65 in Germany.

Policies potentially affecting farm succession also comprise Early Retirement Schemes (ERSs) and New Entrants Schemes (NESs). Such programs have operated for a long time in the European Union (they started with the so-called Structural Directives in the 1970's), and are typically implemented together; they are now under the general framework of Rural Development Programmes (RDPs, i.e., in the EU jargon, the second pillar of the Common Agricultural Policy (CAP)). ERSs aim at incentivizing the exit of older farmers, NESs at supporting the entry of new ones. In this case, the rationale is that substituting older farmers with younger ones should enhance the efficiency of the sector. Basically, the issue is one of timing of succession, since the argument for adopting such schemes is that younger farmers are more efficient, and that a delay in the old farmer's retirement might reduce the

opportunities for the successor or for the new entrant (Davis et al., 2009). Notice that this goal is based on the assumption of a higher productivity of younger farmers which, though is commonly retained (see the discussion above), has also been questioned (Davis et al. 2009). Also social objectives, such as guaranteeing a sufficient income to low-income farmers, are at the origin of some national scheme, like the ones adopted in France (Allaire and Daucé, 1999). The related NESs, in addition to the efficiency issue, are motivated by the concern for the aging of the farm population and by the risk of desertification in disadvantaged areas (European Parliament, 2008).

The effectiveness of such schemes as to the desired goals has been largely questioned. Examining the French Early Retirement Scheme 1995-97, Daucé et al (1999) conclude that it encouraged farmers to accelerate their retirement decision, but in the following period the retirements were less. Bika (2007) concludes that ERS did not change retirement rates on the long term. Actually, ERSs have little uptake: Regidor (2012) in a study for the European Parliament reports that "in 2007-2010, the number of beneficiaries (some 19,200) and of applications approved (around 19,800) in the EU-27, 80 % of whom were in the EU-12, was negligible". Copus et al. (2006) also state that "early retirement schemes have had relatively little effect" on the age structures. Among the factors that in the survey done by Davis et al. (2009) farmers stated as important for their willingness to participate in an ERS, the value of pension and health considerations were rated first, while the desire to establish a successor on the farm was far less important, even if the majority intended to transfer the farm to their children. Apparently, the ERSs have little impact in general on the age structure and little impact on farm succession, too.

The uptake of EU NES schemes has been higher. Under RDPs, beneficiaries less than 40 years of age setting up for the first time as head of an agricultural holding could receive a support up to 50,000 euro (70,000 after 2009). In 2007-2013 around 126 thousand young farmers were assisted in the whole EU-27, with a total expenditure of 3.65 billion Euro, or 75.8% of the programmed expenditure (ENRD, 2014). However, the effects have not been the actual entry of new young farmers. Rather, the general view is that the Scheme has been mainly utilized to pass on the farm to a young family member. Carbone and Subioli (2011) document with data from some Italian Regions that the large majority of applications concerns transfer within the family, which is confirmed by INEA-OIGA (2006). The measure is subject to a strong risk of deadweight losses, as young farmers that would otherwise self-finance investments or use commercial loans can use the support as an alternative

source of finance (Davis et al., 2013). As to its effect on succession, the measure can, in the best case, accelerate it, in the worst determines an only formal transfer, directed to get the subsidy but with no real effect on the management of the farm.

6 Conclusions

The theoretical models concerning succession are quite varied and conflicting, since the basic assumptions are much different. Altruistic or selfish parents is a crucial assumption, since motivation for succession from the parents' side is a prerequisite for the conceptually following choice by the child to take on the farm. But there is another possible component in the interplay, i.e., utility stemming from farm continuity. In some cultures, this can be a powerful motivation, especially where the tradition of farming is deeply rooted in a community, and is a value transmitted from father to son. Regardless, the diversity of theoretical models might also be explained with the coexistence in real world of different attitudes. After all, it is realistic to imagine that there are parents caring for their children as well as indifferent ones and, on the other side, children caring for their parents as well as selfish ones. The models can therefore correctly represent different behaviors, of which the results are a weighted average. It would then be unfeasible to check the theoretical models on the basis of their predictions, unless one is able to divide a priori the population between the different attitudes.

These considerations might help explain why the empirical studies do not find many clear-cut determinants of succession. The only two that are significant in virtually the totality of the papers are the farmer's age, and some measure of farm income or wealth. It should nevertheless be added that another potentially important determinant, retirement rules and provisions, has not been investigated, and would require a comparative analysis across countries.

The effects of policies concerning farmers' pensions have not been investigated in depth, even if they might be important determinants of succession choices. More information is available on the impact of Early Retirement Schemes and New Entrant Schemes, that is apparently modest, being limited, at best, to accelerating the intrafamily succession where it has already been envisaged. Also general agricultural policies have arguably an impact on the evolution of the industry through their effect on farm succession, but this issue has not been much studied, though it would deserve the effort.

The most important policy variable concerning succession is probably inheritance laws. They respond, in different group of countries, to different policy goals and principles, among which equity, freedom of will and productive efficiency are the main ones. Some compromise among the different goals is visible in some legislation, mainly in the sense that egalitarian rules tend to have an impact in terms of farm fragmentation, so that various mechanisms have been envisaged to cope with this drawback. More research would nevertheless be needed on the effect of inheritance rules on farm structures, since the effect of fragmentation is not homogeneous among countries with similar rules, as shown by the diversity of average farm sizes in Italy and France, both adopting the egalitarian rule. It is a long-term effect, so detecting the implications of different inheritance rules and disentangling them from the ones of other policies and from changing economic and demographic conditions is not a trivial task, but it is an import issue for the long-term future of the industry.

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Determinants of farm succession in the literature

	Sample type and size	Indicator of succession	Marginal effects included	farmer's age	farmer's age squared	farm size	owned land	farm assets/wealth	debts	farmer's education	farmer's male gender	farmer's part-time	type of farming	regional variables	labor market conditions	N. children	public policies	child's education	child-father age difference
Calus et al., 2008	panel 713 farms							+											
Corsi (2009)	cross-section 8,134	Child working on the farm	X	+	-	+ (SGM)				-	-	- (minor PT); + (main PT)	X		X				
Glauben et al. (2009)	cross-section 233	stated		-		+ (profits)	+			ns			X (dairy +)			ns (M); - (F)		+ (non-agric.)	-
Glauben et al. (2004)	cross-section 1650	stated		+	-	+ (SGM, LU)			-	+ (experience)	-	ns (+)	X (specialization +)	X		+ (M); ns (F)			
Hennessy (2002)	cross-section 300	stated	X			+ (area & income)			ns							ns		-	
Kimhi and Nachlieli (2001)	cross-section 133	stated	X	+	ns	-				-		ns (+)	X (fruitveg -; dairy +; poultry -)	X		ns + (M); ns - (F)			-
Mishra et al. (2010)	cross-section 3,471	stated	X	+		ns (income)				-		-		X		ns			
Mishra and El-Hosta (2008)	cross-section 4,161	stated	X	-				ns		+		+		X		ns	+		
Stiglbauer and Weiss (2000)	panel 50,000	identified by age difference between 2 periods	X	+	- (max 69.6)	+ (LU)				-	-	-	X (specialization -)	X (region and hardship zones)					
Väre et al. (2010)	panel, 97	stated and realised		+		ns		ns	ns				ns	X					

Note: LU= Livestock Units; ns = not significant; SGM= Standard Gross Margin. + and - mean positive and negative effect, respectively