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### The Crisis of Small Farms in Central Italy: Can Farmer Turnover Slow Down the Downfall?

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#### Abstract of the paper

We use original data to assess if the current incentives to farmer turnover may help the competitiveness of small farms in the Lazio Region (central Italy). Our results show that substantial changes in the policy may be needed.

The paper analyzes sharp declining trend in small farm number, discusses its causes and evaluates the policies that have been adopted to stop or slow down this downfall. The regional policy makers consider the aging of the farmers is a key determinant of the decline of small farms. Consequently, they have designed an incentive policy to generational turnover mainly based on installation payments. Given our empirical findings we conclude that this policy may fail to achieve the stated objectives. Firstly, farms that had a generational turnover in the last seven years do not show higher propensity to investment than the control group. These results suggest that farmers’ turnover per se may fail to increase the competitiveness of small farms. Secondly, in almost half of the cases the change in ownership is the result of a long process. Thus the timing of the policy may be wrong. Thirdly the policy is difficult to monitor and opportunistic behavior is possible.

JEL Codes: Q10, Q18

Keywords: Generational turnover in Agriculture, Installation payments

## **1. INTRODUCTION**

Between 2000 and 2007, the number of farms in Central Italy decreased by 28.5% with a spike of 36,7% in the Lazio Region (source ISTAT). This general trend is driven by a sharp reduction of the number of small farms (i.e., less than 5 hectares, the average farm size in Italy is 6.4 hectares), which can be dramatic in local areas. For example, in the hilly areas of Lazio Region, 44.9.% of small farms closed their operations in the eight-year period.

In this scenario, the policy-makers are obviously worried about the future trends in small-scale, family farming. In particular, farmers' aging is regarded as a major concern and a key determinant of the decline of small farms. Older farmers are less able to adapt their strategies to the new economic environment, and have a shorter time horizon that discourages new investments. Entrant farmers are, on average, younger and more innovative than the incumbents and are more suited to take the challenges of the market. From this perspective, the incentives to farmers' turnover can improve the competitiveness of small farms. Installation payments (i.e, a lump-sum transfer of max 55,000 euros to young farmers taking over a farming business has been The main policy measure that has been adopted in this regard).

This paper focuses on the small farms of the Lazio region and uses micro-level data from 2007 ISTAT farm structure sample (FSS) survey and an original dataset to investigate these trends and evaluate the success of turnover policies in facing the crisis of small farms. We found that, in the Lazio region, the association between farmers' turnover and new investments is weaker than expected, because of the presence of a non-negligible numbers of new farmers who disinvested. Consequently generational turnover has a smaller impact than expected. Also, we conclude that installation payments may not be an effective incentive to promote turnover.

The paper is organized as follows: in section 1 we present background information about the general trends in the agriculture of the Lazio region, in section 2 we propose descriptive statistics illustrating the effects of farmers' turnover and section 3 concludes.

## **2. BACKGROUND: SQUEEZE ON AGRICULTURE, GENERATIONAL TURNOVER AND AGRICULTURAL POLICIES.**

In the last decades the farms of the Lazio region have change dramatically to meet the challenges of an evolving economic and social environment. New organizational models and new issues in

agriculture arose, following the decoupling of agricultural policy, the evolving consumer preferences, the new links between farming and the rural environment, the restructuring of the agri-food chain and many other determinants that are deeply affecting the way farmers run their operations. Although a thorough and complete analysis of the economic scenario for the Lazio agriculture goes beyond the scope of this paper, the main issues can be effectively summarized into the notion of *squeeze on agriculture*, which is the steady increase of the competitive pressure that is exerted on farmers. Originally, the notion has been developed in the '60s to describe the issues arising from the faster increase of input prices compared to the growth of agricultural commodities prices (Gruen 1970; Owen 1966). More recently, agricultural economists have applied this notion to the increasing difficulties in competing that farmers have been facing since late '80s (Ploeg et al. 2000). Such *squeeze* took the form of a rapid increase in factor prices (including farmers' reservation salary) and a sluggish trend in commodity prices, due – among other factors – to agricultural policy decoupling. The constant reduction of profit margins from farming activities has determined an increasing difficulty in covering fixed costs and the reservation salary. To escape the squeeze, the farming sector has developed new organizational models. For instance, both multifunctional activities and the industrialization of production can be considered as examples of the great diversity of reactions to the increasing competitive pressure.

From a theoretical standpoint, agricultural economists debate if the squeeze on agriculture has determined either a change in the farming paradigm or a boundary shift of farming activities (e. g. Goodman 2004; Ploeg and Renting 2004). For our purposes, it is sufficient to remark that, in general, the increasing competitive pressure resulted in a greater diversity in the organizational models of farms (e. g., Ploeg 2005). The squeeze on agriculture did not force Lazio farms toward a single organizational model; empirical studies have shown that a great diversity of strategies have been adopted by farmers to face the evolving economic environment (Russo and Sabbatini 2005).

Competitive pressure had a strong impact on Lazio farms. Table 1 summarizes the variation in the number of farms, total farmland and average farmsize between the last agricultural census (2000) and the last available FSS (2007). The number of farms dropped by 36.7% and the total cultivated farmland decreased by 4.7%. The decline in farm number results in an increase of the average farm size that goes from 4,4 hectares to 6,6. This result is driven by the heavy losses among small farms (-41,5) that almost halved in number over the seven-year period. In general, large farms (larger than 20 ha) increase in number, but slightly decrease in average size. The net effect is a slightly increase

in total farmland held by large farms. Table 1 shows that the trend is not homogeneous across the region.

**Table 1: Number of farms, total farmland (Ha) and average farmsize (Ha/farm) per altimetric zone, and dimensional class (years 2000 and 2007)**

Dimensional class (Ha of farmland)		Year 2000			Year 2007			Var. % 2000-2007	
		N. farm	Farm land	Avg. farmsize	N. farm	Farm land	Avg. Farmland	N. Farms	Farm land
<b>Mountain</b>	-  5	26,749	31,292	1.2	17,003	25,617	1.5	-36.4	-18.1
	5 -  20	2,169	19,486	9	1,968	18,033	9.2	-9.3	-7.5
	> 20	534	97,708	183	711	138,250	194.4	33.1	41.5
	<b>Tot. Mountain</b>	<b>29,452</b>	<b>167,971</b>	<b>5.7</b>	<b>19,682</b>	<b>181,900</b>	<b>9.2</b>	<b>-33.2</b>	<b>8.3</b>
<b>Hill</b>	-  5	99,799	130,334	1.3	55,028	100,582	1.8	-44.9	-22.8
	5 -  20	10,324	92,874	9	9,624	88,895	9.2	-6.8	-4.3
	> 20	2,859	196,339	68.7	2,852	177,250	62.1	-0.2	-9.7
	<b>Tot. Hill</b>	<b>112,982</b>	<b>419,547</b>	<b>3.7</b>	<b>67,504</b>	<b>366,726</b>	<b>5.4</b>	<b>-40.3</b>	<b>-12.6</b>
<b>Plain</b>	-  5	14,628	25,752	1.8	10,527	21,067	2	-28	-18.2
	5 -  20	3,836	34,980	9.1	3,720	33,701	9.1	-3	-3.7
	> 20	1,076	78,122	72.6	1,139	70,617	62	5.9	-9.6
	<b>Tot. Plain</b>	<b>19,540</b>	<b>138,854</b>	<b>7.1</b>	<b>15,386</b>	<b>125,385</b>	<b>8.1</b>	<b>-21.3</b>	<b>-9.7</b>
<b>Lazio</b>	-  5	141,176	187,378	1.3	82,558	147,266	1.8	-41.5	-21.4
	5 -  20	16,329	147,340	9	15,312	140,629	9.2	-6.2	-4.6
	> 20	4,469	372,169	83.3	4,702	386,116	82.1	5.2	3.7
	<b>Tot. Lazio</b>	<b>161,974</b>	<b>706,886</b>	<b>4.4</b>	<b>102,572</b>	<b>674,011</b>	<b>6.6</b>	<b>-36.7</b>	<b>-4.7</b>

Source: ISTAT, V General Census of Agriculture 2000, FSS 2007

In 2007, the percentage of young farmers (i.e. less than 41 years old) in the Lazio region was 6.3%, sharply declining compared to 2000 (when it was 10.4). In the same year, the percentage of farmers 65 years old or older was 55,8%.. In this perspective, it becomes clear why aging is considered a major problem for Lazio agriculture. To favor turnover and help young farmers to start a new business, the regional Rural Development Plan has designed an incentive policy based on Reg. 1974/2006 (EC). The policy (the so-called measure 112) consists of two major tools: a lump-sum transfer of a maximum of €40.000 and interest rate subsidies of a maximum of €30.000. The two measures are cumulative up to a maximum of €55.000. The beneficiaries are young farmers (age between 18 and 40) who have certified competencies in agriculture and submit a business plan. The plan must:

- Be consistent with the objectives of the regional rural policy;

- Include a detailed description of the investments aiming at improving the business performances in terms of income, production quality, environmental impact and animal welfare.

The stated objective of the policy is to give incentive to generational turnover in agriculture, favoring new investments and innovation. However vast anecdotal evidence suggested that the installation payments did not achieve the objectives. Cases have been reported that although the legal ownership of the farm has been transferred, the management is still in the hands of elder generations.

## 2. GENERATIONAL TURNOVER AND POLICY: A SURVEY

In order to investigate the effectiveness of the regional policy we run an ad-hoc sample survey involving 524 farms. The sample is representative of the Lazio universe at 96% confidence level. The survey was designed to collect data about expectations, investment intentions, generational turnover and socio-economic characteristics of the farm. In order to ensure a comparison with the FSS survey, the data of our survey refer to 2007. The joint interpretation of the FSS data and our original dataset allows us to evaluate the major trends in Lazio agriculture. In particular, we aim to find out i) if the current trends will continue in the future, ii) if there is an association between farmers' aging and the probability of shutting down the farm operation, iii) the basic mechanism of the generational turnover in the Lazio region.

### 2.1 Will the downfall slow down? Turnover expectations in the short run

The sample survey shows that 10,8% of Lazio farmers plans to quit farming in the next 3 years (Table 2). The result is consistent with the trend of the last seven years. The decision of giving up farming in the short run does not seem to be associated with old age. In particular 10.8% of young farmer is planning to quit: a percentage that is only slightly lower than elder farmers.

**Table 2: Time horizon of the farming activities broken down by farmers' age**

The Farmer plans to	Age of Farmers				Total
	40 years or younger	Between 41 and 60	61 or older	No answer	
Quit farming in 3 years	10.8	8.5	13.1	0.2	10.8
Quit between 3 and 10 years		11.4	19.7		14.8
Keep farming for at least 10 years	28.3	10.6	5.1	0.0	8.7
Keep farming until retirement	13.6	11.9	8.3		10.0
Doesn't have a plan	26.0	30.1	26.6	0.0	27.7
No answer	21.2	27.6	27.1	99.8	27.9
<b>Total</b>	100.0	100.0	100.0	100.0	100.0



Table 5 shows that 35.6% of the farmers that will retire in the next three years does not plan to sell or give away the farm. This behavior may find a rationale considering both the residential function of the farm and the structure of the single payment scheme, which may grant a small rent to the retiring farmers. Given the small average size of these operations (1.9 hectares) the farmland that is expected to be retired from production is 2.2% of the total. This result is consistent with the 2000-2007 trends identified by ISTAT.

**Table 5: Turnover expectations and investment/divestment plans (data expressed as a percentage of the total number of farms belonging to the class of turnover expectations; the percentages may not add to 100 because the question allowed for multiple answers)**

The Farmer plans to	Keep the farm as it is	Change productions	Expand operat.s	Sell or give away part of the operations	Sell the whole farm	Give away the whole farm	Quit farming keeping the farm	Doesn't have a plan
Quit farming in 3 years	31.7	0.0	2.0	3.6	11.7	11.3	35.6	16.1
Quit between 3 and 10 years	66.7	8.4	17.9	2.4	5.6	4.2	5.1	16.8
Keep farming for at least 10 years	71.1	2.3	35.1	0.0	0.0	0.0	0.0	17.0
Keep farming until retirement	83.5	4.7	21.3	0.0	0.0	1.6	0.0	2.1
Doesn't have a plan	78.5	3.0	8.4	0.6	4.9	0.3	1.1	6.1
No answer	62.7	0.1	7.7	1.1	0.0	0.4	5.3	25.4
<b>Total</b>	67.1	2.8	12.5	1.2	3.4	2.2	6.4	14.7

## 2.2 Effects of generational turnover.

The data from ISTAT FSS show that in the time period 2000-2007 only 2.3% of the farm had a generational turnover (Table 6).<sup>1</sup> In the same period 7.7% of farmers moved from young to mature age class. The data shows that the generational turnover is not sufficient to offset the ageing in Lazio agriculture.

**Table 6: percent frequencies of farms per age class in 2000 and 2007 (the data excludes new farms and incorporated farms)**

		Age of farmers in 2007		
		<=40	>40	Total
Age of farmers in 2000	<= 40	3.7	7.7	11.3
	>40	2.3	86.3	88.7
	Total	6.0	94.0	100.0

<sup>1</sup> The percentage was calculated excluding new farms and incorporated farms

The data suggest that in many cases the retiring farmers have been replaced with people of the same generation. To test this hypothesis the ad-hoc survey collected specific data about change in farm management between 2000 and 2007.

**Table 7: Characteristics of the farmer turnover in the Lazio region (2000-2007)**

	<b>Generational turnover</b>	<b>No generational effect</b>	<b>Ageing</b>	<b>No answer</b>	<b>Total</b>
<b>Outside family</b>	19.4	3.4	7.6	-	30.4
<b>Within the family</b>	2.3	55.3	-	-	57.6
<b>No answer</b>	0.9	0.0	-	11.1	12.0
<b>Total</b>	22.6	58.7	7.6	11.1	100.0

Our data estimate that 9.1% of the existing farms in 2007 had changed the farmer in the previous seven years. Table 7 shows that 57.6% of the new farmers belong to the same (extended) family of the previous farmers, almost twice as much the farms that have been sold to non-family member. Only in 22.6% of the cases the change in management resulted in a generational turnover (i.e. the new farmer was at least 20 years younger than the retiring one). The change in management had no generational effect in 58.7% of the cases.

The survey showed that 44.7% of the new farmers was already working in the same farm before taking over the management. In these cases the change in management can be considered as the result of a long process in which ownership is transferred only after a sort of “apprenticeship” (see for example Pesquin, Kimhi and Kislev 1999). Consequently focusing on the change in ownership when analyzing the turnover may be misleading because the “new” farmer is likely to be already active in the farm. This result may also imply that change in ownership may not necessarily increase the propensity to innovation, because in almost half of the cases the new farmer was already working in the farm.

Our survey shows that new farmers are, on average, more satisfied of the financial performances of their farm operations. Table 8 shows that, in percentage, the degree of satisfaction of financial performance is higher in the case of change of management. However, financial satisfaction is lower when the change in management determines a generational turnover. This result may imply that farming operations may fail to meet the income expectation of young farmers.



**Table 8: Degree of satisfaction of the financial performances of farm operations per type of turnover**

	Is the farmer satisfied of the financial performances?					
	No answers	Very unsatisfied	Unsatisfied	Satisfied	Very satisfied	Totale
No Change	5.9	31.6	41.1	21.0	0.4	100.0
Change in management	0.0	8.8	47.0	43.4	0.9	100.0
Generational turnover	0.0	13.6	54.5	28.1	3.9	100.0
Within the family	0.0	13.7	47.2	39.1	0.0	0.0

**Table 9: Percentage of farms with increase or decrease of farmland greater than 15% in the period 2000-2007 and average increase or decrease (Ha) per age of farmers.**

% of farms with increase in farmland > 15%				
		Age of farmer in 2007		
		<=40	>40	Total
Age of farmer in 2000	<=40	19.7	24.4	22.9
	>40	30.1	19.0	19.3
	Total	23.8	19.4	19.7

% of farms with decrease in farmland > 15%				
		Age of farmer in 2007		
		<=40	>40	Total
Age of farmer in 2000	<=40	23.9	23.3	23.5
	>40	26.5	23.0	23.1
	Total	24.9	23.0	23.1

Average increase in farmland for farms with increase in farmland > 15%				
		Age of farmer in 2007		
		<=40	>40	Total
Age of farmer in 2000	<=40	1.5	0.5	0.8
	>40	0.5	0.2	0.2
	Total	1.0	0.3	0.3

Average decrease in farmland for farms with decrease in farmland > 15%				
		Age of farmer in 2007		
		<=40	>40	Total
Age of farmer in 2000	<=40	-0.5	-0.3	-0.4
	>40	-2.6	-0.3	-0.4
	Total	-1.4	-0.3	-0.4

The effects of generational turnover per se on investments may be ambiguous. If we consider farm-size as a proxy for total capital investment, we have that 30.1% of farms with generational turnover increased their farm-size by more than 15% after the change in management and 26.5% decreased their investment in farmland by at least 15% (Table 9). In both cases the percentage is above the sample weighted average, suggesting that generational turnover do increase the probability of farm restructuring. However the new organization may involve a substantial divestment from the farm operation (on average -2.6 hectares).

### 3. CONCLUSIONS AND POLICY IMPLICATIONS

In the seven-year period from 2000 to 2007 the number of farms in the Lazio region decreased dramatically. The magnitude of the decline and the fact that it concerned mostly small farms questioned the persistence of family farming in the area, especially giving the aging of the resilient farmers. We used official statistics by ISTAT and an original dataset to assess if the declining trend

is expected to slow down in the short run and if generational turnover can improve the performance of the agricultural sector.

Our data suggested that the overall declining trend is expected to continue at least until 2010. Although the rate of decrease of small farm is expected to slow down, acceleration in the decrease of medium farms will keep the trend approximately at the same magnitude. The decline is not determined by aging alone. Instead, unsatisfactory financial performance and increasing competitive pressure seem to be the main determinants of the phenomenon.

Generational turnover is slow in the Lazio Region. In a eight-year period, only 2.3% of the farms changed a over-40 manager with a new, under-40 one. Moreover, generational turnover is not associated with a higher degree of economic satisfaction, once we controlled for the effect of change in ownership. In the 26.5% of the cases, generational turnover was associated with a substantial divestment from farm operation (i.e., more than 15% of farmland, -1.4 hectares on average). This result suggests that generational turnover is not a solution per se, because a relevant part of the new generations are not willing to invest in the farming business.

The regional agricultural policy consider generational turnover as a priority, under the assumption that young farmer are more efficient, more willing to invest and more able to deal with the competitive pressure. The most important policy tool is the installation payments, i.e., lump-sum transfers to new farmers under 40 years of age. In order to avoid financing those new farmers that plan to divest, the payments are conditioned to a business plan that is consistent with the regional rural development objectives. Our analysis suggests that these payments may fail to achieve the objective for the following reasons:

1. The policy is costly to monitor, because it is costly to control that the farmers' business plans are actually implemented.
2. The decision of abandoning farming operations is driven by financial determinants. A potential new farmer may not considered a single lump-sum transfer sufficient to change his/her allocation of capital and personal labor resources, especially if the reservation salary is high.
3. The timing of the payment may be late. In approximately 44% of the cases, the change in ownership happens as the result of a sort of "association" of the new farmer, who has been already working in the farm for a long time. In these cases the responsibilities are gradually transferred and the change in management is just the last step of a long process. In these

situations, obviously, the investment decisions are taken long before the installation payments happen.

In our opinion, policies aimed at improving the overall financial performance of farms are already more effective incentives to generational turnover than installation payments. These policies are consistent with economic theory and would not incur in the monitoring problem.

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