The direct and indirect impact of CAP on farm income level in Italy

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Abstract

Background and motivation - The Common Agricultural Policy (CAP) provides a large amount of support to enhance farm income level by several instruments.

Annual payments provided by Direct Payments (DP) and Rural Development Policy (RDPa) (mainly agro-environmental payments and Less Favoured Areas allowances) directly affects farm income level (Y) in the year these are granted. This is represented in Figure 1 referring to Total Annual Payment (TAP = DP+ RDPa).

Figure 1. Graphical representation of the possible direct and indirect role of CAP on farm income enhancement.
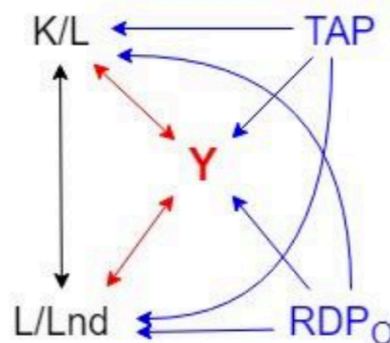
However, TAP could also affect farmers decisions regarding production choices and the use of land, labour, and capital. Because policy support relaxes farm financial constraints, TAP should influence the relative amount of capital (K/L). Furthermore, TAP could in principle affect labour intensity (i.e., the relative amount of labour per unit of land or L/Lnd) (Figure 1).

Finally, other RDP not based on annual payments (RDPo), support farmers to invest and to innovate (e.g., measure 4). The support provided by such measures is expected to affect the amount of capital and of labour (see lower part of Figure 1).

Clearly, further factors other than policies influence farm income level. Among them, the relative amount of capital (K/L) and the relative amount of labour (L/Lnd). Hence, if a policy influences the amount of capital and/or labour and these are found to influence income level, such policy indirectly affect farm income. Note that the opposite causal linkage could also be found: the level of income can influence the relative amount of capital and of labour (Figure 1).

That calls for a comprehensive assessment of how CAP support enhances the farm income.

$$Y_i = \alpha_0 + \alpha_1 \, TAP_i + \alpha_2 \, RDPo_i + \alpha_3 \, K/L_i + \alpha_4 \, L/Lnd_i + \ldots + \alpha_n \, X_{ni} + \varepsilon_i \qquad (1)$$

$$K/L_i = \beta_0 + \beta_1 \, TAP_i + \beta_2 \, RDPo_i + \beta_3 \, Y_i + \gamma \, \beta_4 \, L/Lnd_i + \ldots + \beta_n \, X_{ni} + \eta_i \qquad (2)$$

$$L/Lnd_i = \gamma_0 + \gamma_1 \, TAP_i + \gamma_2 \, RDPo_i + \gamma_3 \, Y_i + \gamma_4 \, K/L_i + \ldots + \gamma_n \, X_{ni} + z_i \qquad (3)$$

Methodology - In order to do so, the following 3 regression equations have been estimated:

Where:

> Y_i is the farm income, calculated as Farm Net Value Added per unit of labour (i.e. normalized on Agricultural Work Unit as FNVA/AWU),

> K/L_i is the ratio of available capital per unit of labour (Euro/AWU);

> L/Lnd_i is the ratio of used labour per unit of land (AWU/ha);

> TAP_i is the total amount of annual payments (i.e., Direct Payments and annual payments provided by RDP policy) (DP + RDPa),

> $RDPo_i$ is the sum of non-annual RDP support (e.g., support for farm investments) in the considered year plus the previous two years (i.e., 2015, 2014, 2013).

> TAP and RDPo are normalized with respect to AWU.
> X_{ni} are further regressors used within the equation (1), (2) and (3); ε_i, η_i and z_i are regression errors.

Data - The analysis uses individual farm data of the Italian Farm Accountancy Data Network for the 2015. It means a cross-sectional analysis with 5082 individual farm observations.

Regressors refer to key farm characteristics, such as the amount of capital, labour intensity, farm size, farm production orientation, farm location (i.e., altimetry regions), relative importance of intermediate consumption and depreciation, relative amount of family labour, available land and use of organic production technology.

Main results and policy considerations - The goodness of fit for each estimated model is satisfactory. TAP play a positive role on income level, while RDPo has not a significant effect (Eq. 1). It is important to note that, as expected, the relative amount of capital, and farm size, are positively correlated with farm income level (e.g.,

$\uparrow K/L \rightarrow \uparrow Y$). Differences among farming typologies are found to be significant. This is not the case for farms located in different altimetry regions.

Income level, TAP, and RDPo are positively correlated to the relative amount of capital, whereas the correlation turns negative with the relative amount of family labour (Eq. 2).

In general, CAP does not affect labour intensity (Eq. 3). Other regressors, such as the relative amount of family labour, increase labour intensity.

Results provide a basis for policy considerations. As expected, CAP annual payments support farm income. On the contrary, RDPo is not found to have a direct impact on farm income. However, the analysis shows that both policy measures increases the amount of capital per unit of labour. This in turns has a positive indirect effect on farm income. Finally, there is no evidence that CAP measures affect the labour intensity.

These results are expected to feed the debate within the Conference regarding the role of CAP in Italy.