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Do decoupled payments really encourage farmers to work more off farm? A micro-level analysis of incentives and preferences

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Abstract—According to neo-classical theory, farm operators' labour allocation is determined by the relative wage they can earn from their labour on and off the farm. At the equilibrium, time should be allocated so that the marginal returns from on- and off-farm work are equal. Thus, a move from coupled to decoupled payments should have important impacts on labour allocation, as it reduces the return to farm labour and increases the unearned income of operators. However, empirical studies on decoupling have shown so far only limited impact from decoupling and sometimes contradictory findings. In this paper, individual preferences and constraints are taken into account to try and identify potential barriers to labour allocation adjustment. Empirical analysis based on the intentions to adjust to decoupling of a sample of French farmers confirms a limited impact of the change in policy and calls for further investigation of the potential barriers to adjustment.

Keywords— Decoupling, time allocation, farm operators.

I. INTRODUCTION

With the implementation of 2003 Common Agricultural Policy (CAP) reform, supports provided to operators shifted towards more decoupled payments, i.e. payments with no link to the current production decisions. This decoupling of support is meant to reduce policy-induced production incentives and to make operators more responsive to economic signals. Operators are, thus, expected to make adjustments to their farming activities. In particular, a shift from coupled to decoupled payments leads to a change in the remuneration of production inputs, including labour. Therefore it should have an impact on operators' decisions regarding time allocation to on- and off-farm activities.

According to neo-classical theory, labour allocation is determined by the relative wage in each job (on and

off farm). The incentive to allocate labour to production to receive subsidies being reduced with decoupling, operators' labour is likely to move away from agriculture. Although some studies indicate that decoupling has led to a reduced incentive to work on farm and an increased appeal for off-farm hours, empirical evidence is limited.

In this paper, we attempt to contribute to the debate by investigating operator's time allocation including often unaccounted for individual preferences and constraints. This more comprehensive framework of time allocation decisions may help explain why farmers do not always respond as expected to policy change. We investigate whether French operators' plans to adjust to decoupling in the context of the 2003 CAP reform are consistent with the neo-classical model of time allocation or more strongly influenced by potential constraints in time allocation and specific job preferences.

The paper is structured as follows. The next section presents the basic model of labour allocation and policy change traditionally used in the literature, while the following section incorporate the likely effect of tastes and time constraints on time allocation. The fourth section describes the methodology and data used, as well as our expectations. Section five provides the analytical results and section six concludes.

II. LABOUR ALLOCATION AND DECOUPLING THE NEO-CLASSIC APPROACH

According to neo-classical theory, operators' labour allocation is determined by the relative wage they can earn from their labour on and off the farm. At the equilibrium, time should be allocated so that the marginal returns from on- and off-farm work are equal. If the wage they can get off their farm is lower than the marginal on-farm return, then operators will

be supplying all of their labour to the farm, and *vice versa*. Thus, a move from coupled to decoupled payments should have important impacts on labour allocation, as it reduces the level of earned income from farm production and increases the unearned income of operators. The change in earned income should have both a wealth and substitution effects, due to a reduction in farm wages and overall income that could thus make off-farm, on-farm or even leisure hours more attractive to different groups of farmers according to their off-farm wage opportunity and their preference for leisure. Additionally, the increase in unearned income should have a compensating wealth effect likely to lead farmers to decrease their total labour supply.

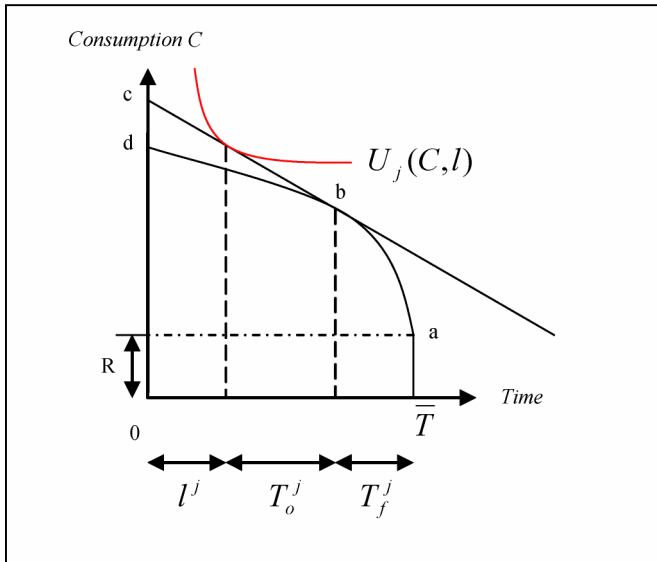


Figure 1: Time allocation of operator j under a coupled policy

This can be illustrated as in Figures 1 and 2 with a representative operator j working off farm prior to the policy change. The operator was receiving an unearned income R under the coupled policy, and had a marginally decreasing on-farm income depicted by the curve passing through points a , b and d (Figure 1). As for the off-farm income, it is represented by the straight line (fixed hourly wage) passing through points b and c . Under those circumstances, the operator's time is shared optimally between T_f^i hours

off farm, T_o^j hours on farm, and the rest of the time for leisure (l^j). After the policy change (into a decoupled scheme), the curve depicting the operator's on-farm income flattens, as decoupled payments are scrapped, and the unearned income increases by the total amount of direct payments received (Figure 2).

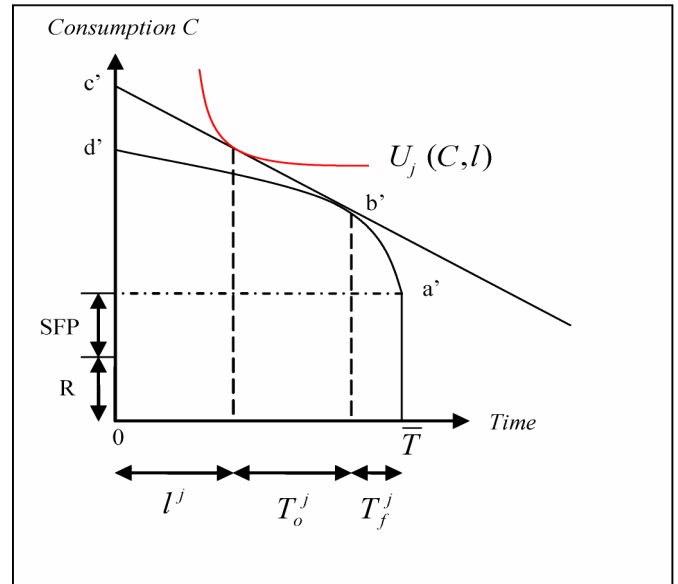


Figure 2: Time allocation of operator j after a switch to a more decoupled policy

Therefore, we can expect that operators' responses to the 2003 CAP depend on the induced reduction in earned on-farm income, the extent of the compensating direct payment, and their potential off-farm labour wage.

Several empirical studies did indicate that a shift from coupled to decoupled payments have led to a decrease in on-farm and an increase in off-farm labour supply. Indeed, while all payments (decoupled or not) are found to decrease operators' off-farm hours (El-Osta *et al.* [1]; Ooms and Hall [2]), coupled payments only increase on-farm hours, the impact of decoupled payments being insignificant (El-Osta *et al.* [3]; El-Osta *et al.* [1]). It was also shown that the receipt of coupled payments is associated with larger farms (where the demand for labour for farming is high), while decoupled payments are associated with smaller and more diversified holdings (Goodwin *et al.* [4]). In the specific context of the SFP implementation,

Hennessy [5] found that, in Ireland, decoupling would lead to an increase in off-farm participation and hours. By contrast, a study of the impact of the Agenda 2000 implementation on French operators' off-farm time allocation indicated that off-farm labour participation should increase for cereal producers due to the reduction in price support and the set-aside requirements, but that compensatory direct payments would also reduce the likelihood of participation, leading to only limited impact on off-farm hours (Benjamin [6]). Similarly, a US study found no significant difference in the negative impacts of coupled and decoupled payments on off-farm labour participation (Ahearn *et al.* [7]). Finally, Serra *et al.* [8] indicated that the 1996 US Farm bill had only had a very limited impact on off-farm labour allocation.

III. LABOUR ALLOCATION AND DECOUPLING: ACCOUNTING FOR NON MONETARY ASPECTS

As the previous section shows, empirical analyses have reported only small variations in operators' time allocation after decoupling. There is little in the literature so far to help understand whether those small changes are due to the policy design itself (i.e. an overall limited change in incentives) or if other factors may have led operators to limit their adjustment.

However, there exist another streams of research that have recognised that operators' time allocation may be affected by other factors such as tastes for non-monetary aspects of their jobs or time constraints. This has been referred to as the subjective equilibrium theory in the Agricultural Economics literature (Findeis, [9]), but the framework has never been applied in the context of decoupling. The underlying idea is that individuals may share their time between different jobs even though the marginal wage received differs across jobs (Heineck and Schwarze [10]; Shishko and Rostker [11]; Smith Conway and Kimmel [12]). Operators' marginal returns to on- and off-farm labour may not need to be equal at the equilibrium. The first argument is that the two jobs may be heterogeneous, that is to say that they may have attributes that are not reflected in the wage rate that contribute in a different way to individuals' utility function (Boheim and Taylor [13]). The second argument relates to the characteristics of the on- and

off-farm labour markets and the fact that working hours may be restricted or not perfectly flexible. For example, on-farm labour demand can be quite irregular throughout the day, the week or the year, depending on the production activities and the size of the holding, leading operators to take off-farm job outside of the peak period of production to avoid under-employment of their time (Olfert [14], [15]). On the other hand, off-farm work contracts may not be flexible enough to allow farmers to adjust. Therefore, constraints on time allocation both on and off the farm, as well as heterogeneity in preferences across jobs should be considered in analyses of farmers' adjustment to decoupling.

For this reason, this study expand the usual framework and considers operators' constraints and tastes when elucidating the determinants of time allocation.

IV. METHODOLOGY, DATA AND PRIOR EXPECTATIONS

French operators' plans to adjust to decoupling are investigated based on a survey of intentions carried out in 2005 in France. Respondents were asked to state their intentions to alter their time allocation to on- and off-farm work in the next five years under three different policy scenarios with increasing level of decoupling. First, a continuing Agenda 2000 policy is assumed over the next decade (benchmark scenario). The second scenario is the 2003 CAP reform as applied in France, that is to a historical SFP (i.e. based on the level of payments received by the operators during the reference period 2000-2002) with additional coupled payments (for specific crops and livestock). The third scenario is a hypothetical scenario of full decoupling, that is to say implementing flat-rate area payments without coupled payments.

Operators' intentions collected through the survey are augmented by partial matching FADN records for the farms. The sample used contains 151 farmers. It is representative of the FADN whole sample, except that no farmers from the Alps and Pyrenees mountains are included. Intentions to alter time allocation on and off farm under each scenario remain quite stable, as less than ten percent of the respondents change their

intentions across scenarios for both on- and off-farm labour (Table 1). Overall, the changes in intentions between scenarios are so small that, based on those results only, it is difficult to expect any strong impact of decoupling on labour allocation. In particular, no clear move towards more off-farm work is observed, confirming that a further analysis of the impact of decoupling and farmers' incentives and opportunities to adjust is required.

Table 1: Share of respondents intending to decrease, increase or not change the amount of time they work on- and off-farm (%)

	On-farm work		
	Decrease	No change	Increase
Agenda 2000	24	55	21
SFP	23	49	28
Full decoupling	28	48	24
	Off-farm work		
	Decrease	No change	Increase
Agenda 2000	7	77	16
SFP	9	75	16
Full decoupling	8	74	18

In the following, we investigate the determinants of operators' plans through two linked multinomial regressions for each of the three scenarios considered: one regression focuses on off farm allocation plans and the other on on-farm allocation plans. Similarly to El-Osta *et al.* [1], to reduce endogeneity issues and to take into account the likely jointness of the intention to alter time allocation on and off the farm, variables denoting the expected off-farm behaviour (i.e. probabilities of increasing and decreasing off-farm time estimated from the off-farm labour multinomial regression) were included as explanatory variables of the regression on on-farm time allocation. The other explanatory variables range from social capital characteristics (age, education, experience, presence of a successor) to farm characteristics (farm type, reliance on external factors and subsidies), but also include operators' tastes and perceived time restrictions.

Explanatory variables are chosen to test the following expectations about the adjustment strategies of French operators, formulated on the basis of sections 2 and 3. 1) Operators who were previously

heavily supported through the Agenda 2000 coupled payments will see their earned on-farm income reducing as more decoupled policies are implemented, and they are more likely to reduce their on-farm time allocation. 2) Experienced off-farm workers and more educated operators are more likely to gain good wages off-farm and therefore to consider increasing their off-farm hours under more decoupled policies. 3) Operators' taste may limit adjustment (i.e. those valuing highly the non-monetary benefits of farming or disliking off-farm work are less likely to move away from on-farm work). 4) Operators with time constraints on or off-farm may find it more difficult to adjust (those believing it is difficult to increase off-farm hours or that they have too much to do on the farm).

V. RESULTS

The multinomial regressions are significant at one percent or less and offer good level of correct predictions (between 60 and 80 percent). Due to space limitation, the tables reporting the estimation results are not presented here.

First, it appears that operators' decision to adjust their time allocation is conditioned by life-cycle patterns, as under all scenarios older operators are more likely to decrease the time they allocate off farm and, under all scenarios but SFP, they are more likely to decrease the time they allocate on farm. Second, under all scenarios more educated operators are more likely to decrease the time they spend on farm. However, contrary to our expectation 2), education has no impact on off-farm allocation. Both results thus suggest that education has a positive impact on on-farm returns, leading more educated operators to allocate more time to leisure. Operators' off-farm experience has, however, a complex impact as the variable has no strong impact on off-farm time adjustment but increases the likelihood of operators to decrease or increase their on-farm time allocation. This shows that operators with previous off-farm experience are more likely than others to adjust their time allocation under all scenarios, possibly demonstrating that they also are those with greater opportunities to do so. Third, under all scenarios operators employing a larger number of hired workers

are more likely to increase their off-farm labour. They are also less likely to decrease their on-farm working hours under Agenda 2000 and more likely to increase them under the two decoupled policies. This is consistent with the idea that employing labour can either allow operators to free time from the farm and work elsewhere or require them to spend more “supervision time” on the farm. This also reflects a greater dynamism from operators managing larger farms, as they are globally less likely to passively keep their time allocation the same as time passes. Fourth, operators for whom subsidies constitute a large share of their total output value are less likely to decrease their on-farm time allocation under Agenda 2000 only. Additionally, farmers involved in previously more supported production activities (i.e. having a high share of crop in the total value of production) are more likely to increase their on-farm hours under Agenda 2000 only. The combination of those two results confirm our expectation 1) that operators who are more likely to loose out from the policy change are less likely to increase their on-farm hours under decoupled policies. Finally, it is interesting to note also that, under all scenarios, operators whose revenue heavily depends on subsidies are less likely to decrease their off-farm hours. This suggests that less competitive operators may use off-farm work to increase their total income while keeping their farm running.

The results further confirm that operators’ preferences and constraints matter, as they are often significant regressors. First, operators’ positive attitudes towards part-time farming make them less likely to increase the time they spend working off farm under all scenarios. This indicates that operators might intend to increase their off-farm time allocation out of necessity rather than because they are happy with their part-time operator status. It reinforces the idea that operators holding an off-farm job may do so to keep their farm running. Second, operators valuing less the non-monetary benefits from farming are less likely to decrease the time they spend on farm. This contradicts our expectation 3), but might indicate that such operators do not want their on-farm income to fall. Third, operators stating that they are too busy on-farm plan to increase even further their on-farm time allocation under all scenarios. Finally, although our

expectation was that operators who feel that they are constrained in their ability to increase their off-farm hours should be less likely to increase those under all scenarios, the related statement seems to have no impact on labour allocation.

VI. CONCLUSIONS

Contradicting expectations, operators’ intentions regarding their labour allocation are little affected by the level of decoupling of the support they get. Most of the respondents plan the same adjustments in their time allocation under continuing Agenda 2000 or under decoupled policies. From our empirical analysis, variables relating to the life cycle of operators (age) or translating operators’ tastes and constraint in labour allocation appeared to be stable predictors of decisions under all scenarios. These results call for further investigations of operators’ time allocation decisions and opportunities to be able to better understand their behaviour under various policy schemes.

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