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**Abstract**

This paper contributes to the research about the relationship between off-farm employment and public support, by taking the issue upside down: does off-farm employment give an advantage to farms regarding the level of public support? Our hypothesis is that a higher degree of decoupling enables part-time farms to capture more easily direct payments than full-time farms. To test this, we compare the largely decoupled direct payment system in Switzerland in 2004, and the rather production-oriented payment system in France in 2003. Results show that Switzerland's policy favoured farmers with an off-farm employment, while the French direct payment system had the opposite effect.

**Keywords:** direct payments, distribution, part-time farming, Switzerland, France

**JEL Classification:** Q12, Q18

**Un autre regard sur la distribution du soutien :  
Le lien avec la pluriactivité**

**Résumé**

Cet article contribue aux recherches existantes sur la relation entre la pluriactivité des exploitations agricoles et le soutien public, en considérant la question à l'envers : la pluriactivité permet-elle aux exploitants de capter le soutien public ? Notre hypothèse est qu'un degré de découplage plus important permet aux exploitations pluriactives de capter plus facilement les aides directes que cela ne le permet aux exploitations à plein temps. Pour la tester, nous comparons le système d'aides directes largement découplées en Suisse en 2004 et le système d'aides plus orienté sur la production en France en 2003. Les résultats montrent que la politique suisse favorise les exploitants pluriactifs, alors que les aides directes en France ont l'effet opposé.

**Mots-clefs :** aides directes, distribution, pluriactivité, Suisse, France

**Classification JEL :** Q12, Q18

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The link with part-time farming**

**1. Introduction**

Since governments support the farming sectors, the question about the distribution of this support bothers agricultural economists (Blandford, 1987; Jones, 1994). After market support has become increasingly sidelined by coupled and decoupled direct payments, this question has become even more relevant. Some researchers have focused on the redistributive effects of public support, i.e. whether subsidies can equalize incomes across farms (e.g. Allanson, 2006; Schmid et al., 2006). Other studies are concerned with the first step of identifying which farms receive most of the support. For example, Chatellier et al. (2007, Table 5) calculated that in France direct payments accounted for 87 per cent of the family farm income for all professional farms on average for 2001-2005, and that the main beneficiaries in terms of specialization were oil- and protein-seeds farms (183 per cent) and beef farms (148 per cent) and that the smallest beneficiaries in terms of size were farms above 100 European Size Units (1 European Size Unit is equivalent to 2,000 euros of Standard Gross Margin) (74 per cent). The authors also claimed that the dependence of farm incomes on direct payments in France would increase in the next years.

Studies on support distribution have not been concerned, however, about the part-time characteristic of farms. There is a trend of research that has investigated how public subsidies influence off-farm labor. For example, some papers have shown that farm households' off-farm labor supply decreases when the farm income part that is certain, such as government support, increases (e.g. Ahearn et al., 2006; Kwon et al., 2006). It can be expected that, with an increased degree of decoupling, farmers would increase their off-farm participation, but this has not been proved for certain in the United States (Ahearn et al., 2006) or in France (Butault et al., 2005; Douarin et al., 2007). Serra et al. (2005) even found weak evidence for the opposite, namely that fixed, decoupled payments may have reduced the likelihood of off-farm labor participation from Kansas.

However, the reverse link between off-farm labor and subsidies has, to our knowledge, never been considered. The common view is that part-time farms, being not fully involved in farming, receive fewer subsidies than full-time farms. For example, Laurent et al. (2002) came to this

conclusion after studying the agricultural policy laws for five countries in the European Union (EU). Although such view might be true in absolute value or relative to total farm income, it is not so sure when considering subsidies per farm labor unit. This paper contributes to the research concerned with the relationship between off-farm employment and public support, by taking the issue upside down: does off-farm employment give an advantage to farms regarding the level of public support?

We expect that the answer to this question depends on the type of support considered, and our hypothesis is that more decoupled payments, because they provide incentives to extensify, are more easily captured by part-time farms. To test this proposition, we do not use the approach of comparing several hypothetical scenarios in the same group of farmers (which requires using modeling or intention surveys), as it is done usually (e.g. Colson et al., 1998; Breen et al., 2005; Douarin et al., 2007). Instead, we adopt the original approach of comparing two existing policies in different countries: the largely decoupled direct payment system in Switzerland where, according to our hypothesis, part-time farmers are rewarded by the system, and the rather production-oriented payment system in France, where we suspect a disincentive for off-farm work. This, we believe is particularly true for the period considered (2004 for Switzerland, 2003 for France), before the latest reform of the Common Agricultural Policy (CAP) (the 2003 Luxemburg reform) applied in 2006 in France.

In the next section, we argue that the Swiss direct payment system is one of the most decoupled systems, whereas, by contrast, the French government is one of the most ardent supporters of coupling within the framework provided by the EU. A brief attempt is made to explain the different political strategies. In the following section, we argue why coupling provides a disincentive for off-farm occupations, and draw our hypothesis. The method how to test this hypothesis and the data used are presented in the next section. The following section provides evidence showing how the Swiss direct payment system favors part-time farmers, while the French system does the opposite. The last section concludes.

## **2. A tale of two direct payment systems**

Switzerland as one of the few non-EU-member states in Western Europe follows an own Agricultural Policy which is largely based on direct payments. It was not until the people evinced

their will for a change in the agricultural policy paradigm by a referendum in 1996 that interventions in agricultural product markets by tariffs, product allowances and export subsidies were displaced as the most important policy instrument. Ever since, 2.3 billion Swiss francs out of the 3 billion Swiss francs federal budget for agricultural policy have gone into two categories of direct payments. It rests firmly on the principle of cross-compliance (Curry and Stucki, 1997; Mann, 2005). Direct payments are grouped into General Direct Payments and Ecological Direct Payments. The General Direct Payments are also tied to ecological restrictions which are met by more than 60,000 out of Switzerland's 70,000 farms. The so-called "proof of ecological performance (PEP)" which farmers have to furnish in order to qualify for direct payments has led to a halving of mineral fertilizer applications compared with Germany over five years. Crop rotation restrictions and the need to extensify 7 per cent of the farmland are also unique to Swiss agriculture. Ecological Direct Payments are linked to agri-environmental programs like restrictions on fertilization and pesticide application and to ethological farm programs where farmers are paid for particularly animal-friendly housing systems and for keeping animals outdoors. Regarding the General Direct Payments that are based on the number of hectares and ruminants, an evaluation has tested the responsiveness of production to direct payments by applying an optimization model (Mann and Mack, 2004). While the payments for ruminants were shown to somehow influence the production of meat and milk, the payments based on land had hardly any impact on the amounts produced by Swiss farmers.

In WTO negotiations, not only Ecological Direct Payments, but also General Direct Payments of the Swiss system made it into the Green Box. This seems justified with regard to the cited model calculations. The level of decoupling of Swiss direct payments seems to be relatively high. By contrast, it is not rare to find much more critical words on the level of decoupling in Europe's CAP, such as those by Watkins and von Braun (2003, p. 11) as regards the 2003 CAP reform: "At the end of the process of member-state wrangling, decoupling has been only partially introduced in cereals, but countries can delay this until 2007. Sectors such as sugar and dairy that account for the bulk of export subsidies are either untouched or subject to only modest reforms." Desjeux et al. (2007) explain this for France by the strong farmers' lobbies, by the late arrival of ecologists on the decision sphere, and by the continuous ardor of France's government to ensure high returns from the European budget to the French agriculture.

France was indeed the most exposed opponent of decoupling within the EU (Cunha, 2004).



Based mainly on the argument that a high degree of decoupling would lead to land abandonment in sensitive regions, French governments have always tried to keep payments to farms as much coupled as possible under the CAP schemes. The most recent example regards the 2003 CAP reform. The objective of this reform was to give more market-oriented incentives to European farmers, in order to limit over-production and to reduce the EU budget devoted to agriculture. However, using the most of the flexibility given to Member-States, France chose to apply the minimum degree of decoupling to the payments (e.g. 25 per cent of the direct payment to arable land is still tied to the specific crops) and to implement the reform not in the first possible year of application (it was applied in 2006). During the period of interest in this paper, 2003, the agriculture of France was under the CAP regime of the Agenda 2000. Within this frame, despite a reduction in the level of intervention compared to the previous CAP regime, farmers were still receiving guaranteed prices for cereals, oil- and protein-seed crops and for beef, and a new livestock premium, based on the number of slaughtered heads (Guyomard and Le Bris, 2003).

This reveals a very different strategy between the Swiss and the French government. While the French government considers direct payments as a tool for competitiveness on agricultural markets, the Swiss government stresses the multifunctionality of agriculture (Wiggering et al., 2003; Mann and Wüstemann, 2008), whereby farmers provide a number of positive non-market goods in exchange for payments.

### **3. Expectations and hypothesis**

The term “coupling” implies that the level of direct payments which a farm receives is positively correlated with the production of food and feed on the farm. The term “decoupling”, however, is only defined in a negative sense. While it shows the intention to leave the physical farm output as a reference, it does not make clear what takes its place. In fact, one could argue that decoupling as a term is misleading, because every payment must be coupled on something. Regarding the CAP in particular, “decoupling” has intensified the link (or “coupling”) both between the land of the farm and the level of payments, and the farm as a unit itself and the level of payments. In a process that is thus wrongly termed as “decoupling”, the Swiss government has used a different way for quantifying the level of direct payments. As explained in the previous section, many non-market goods are now paid for by the government. The farmer can now decide to which extent

he/she wishes to earn his/her money through food production, via the market, and to which extent he/she provides non-market goods like biodiversity, beautiful landscapes and clean water for which he/she is reimbursed by the government.

Public goods provided by agriculture are rarely labor-intensive. Extensively used grassland, for example, provides the best base for biodiversity and uses very little labor on the asset of land. Set-aside arable land can be most valuable for the undisturbed development of flora and fauna, but, again, the ratio between the necessary labor and invested capital (mainly farmland) is low. Ellis et al. (1999) have for example showed that the biodiversity of grassland on part-time farms tends to be higher than that on full-time farms.

However, the opportunity costs for labor differ between full-time and part-time farmers (Schmitt, 1988; 1989). For full-time farmers, the opportunity costs can be assumed as zero. For part-time farmers, however, opportunity costs will equal the wage rate for their off-farm employment. While labor costs differ between full-time and part-time farms, capital costs will be equal, given that banks do rarely care about off-farm occupations of their agricultural clients. This difference implies that the profit-maximizing ratio between capital and labor will be higher for part-time farms than for full-time farms. This is for example true for Swiss farms (Mann and Latruffe, 2007), while the general intensity has been repeatedly shown to be lower for part-time farmers in Scotland (Phimister and Roberts, 2002; 2006).

In summary of the above discussion, we make the three following causal propositions. Firstly, so-called decoupling measures favor the provision of public goods compared to “coupled” support systems. Secondly, the provision of public goods requires relatively more capital than labor compared to food production. Thirdly, part-time farms, with their relatively high opportunity costs will specialize on capital-intensive activities. Based on these three propositions, we draw our hypothesis that decoupled support systems, like the Swiss one, favors part-time farmers, whereas coupled payment systems, like the one in the EU and especially in France before the latest CAP reform implementation, favors full-time farmers, albeit none of the two systems explicitly take off-farm work into account. In other words, a higher degree of decoupling gives an advantage to part-time farms in terms of public direct payments over full-time farms.

#### **4. Data and method**

To test the above hypothesis, farm-level data were used, of 2003 for France and of 2004 for Switzerland. These were years where support in France was still strongly coupled to production activities, whereas the decoupled system of Switzerland was already in place, as explained above. Data were extracted from the Farm Accountancy Data Network (FADN) database in each country. For France, however, information about off-farm incomes is not part of the FADN system as in many EU countries. Therefore, for this country, data from the tax records were used and linked with the FADN data set. This matching process is carried out by the Ministry of Agriculture in collaboration with the Statistical Office (INSEE) and has been done only three times since its first implementation in 1991. In order to account for potential income variability, the agricultural income that is compared to the non-agricultural income declared in the tax register at year  $t$ , is an average of agricultural incomes over the three consecutive years preceding the year  $t$  (Chatellier et al., 2007).

The Swiss sample is composed of 2,513 farms in the 2004 national FADN, whose utilized agricultural area (UAA) is 19 hectares and labor use is 1.6 annual working units (AWU; one AWU is equivalent to 2,200 worked hours) on average. The French sample used consists of 6,941 farms, for which information about non-agricultural income is available and reliable, out of the 7,314 farms included in the 2003 French FADN data set. The sample's average UAA is 90 hectares and average labor use is 2.4 AWU, which is much larger than the Swiss sample but representative of the full French FADN data of this year.

In order to test the hypothesis about the relationship between off-farm employment and the different types of governmental support, direct payments per farm labor unit were used as a the dependent variable in a regression. Regarding the explanatory variables, as no data are available about the time spent off farm, the share of off-farm income in the total income was taken as a proxy for the part-time character of farms. We assumed that a larger share indicated a larger time spent off the farm. We used the share and its squared value, in order to investigate potential non-linear effects. While this proxy would be sufficient to test the hypothesis developed above, other important variables had to be included to avoid the prevalence of background variables. As Hennessy and Thorne (2005) have shown, the age of farmers may influence the level of direct payments. Younger farmers may be more able to adapt to a new support system and receive more

transfer payments. The area where the farm is located may also play a role on the level of direct payments in both countries. Switzerland is divided into three production zones in accordance to their sea level. Hill farms receive more direct payments than lowland farms, but less so than mountain farms. In France, as in other EU Member States, specific CAP payments are handed out in disadvantaged areas labeled as Less Favored Areas (LFA). In both countries, a considerable share of direct payments uses land or animals as a reference. Since our dependent variable refers to direct payments per labor unit, we also need to use land and animals per labor unit as important predicting variables. Another variable of interest is the share of hired labor. In Switzerland, there is the traditional objective to support explicitly family farms. It can therefore be assumed that external labor would decrease the level of direct payments per farm worker. The farm system may play an important role, in particular in Switzerland. While most direct payments are subject to cross-compliance, i.e. to the application of integrated farming principles, the share of organic farms is around ten per cent, being relatively high even on European standards. Organic farmers enjoy additional support by the Swiss government, in opposite to French farmers who receive support only during the process of conversion to organic production. The potential endogeneity of several explanatory variables (part-time character; land per labor; livestock units per labor) was tested for and accounted for with the help of instrumental variables.

Table 1 presents some descriptive statistics of the variables used in the regression. In 2004 Swiss farms benefited of slightly more public direct payments per farm labor unit than French farms did in 2003 (21,683 euros against 18,540 euros). The former relied to a much lesser extent on off-farm income than the latter (18 per cent against 30 per cent in the total income). Head farmers were on average the same age in both countries (45.5 against 46 years). Intuitively there were relatively more Swiss farms in the mountainous areas (regional category 3) than French farms. The discrepancy in the ratios of land and animals per worker between both samples confirm the earlier description, namely that Swiss farms are much smaller than French farms (13.6 hectares and 13.6 livestock units per labor unit against 41.9 hectares and 103.1 livestock units per labor unit). However, both samples used on average a similar share of hired labor (18 per cent). As for the farming systems, they were more environmental-friendly (farm system categories 2 and 3) in Switzerland than in France.

**Table 1: Descriptive statistics of the variables used**

Variable	Definition and unit	Average CH	Standard deviation CH	Average F	Standard deviation F
Direct payments	Euros / real labor unit	21,683	11,572	18,540	16,625
Part-time character	Off-farm income divided by total income	0.18	0.48	0.30	0.30
Farmer's age	In years	45.5	9.2	46.0	8.8
Region	1-valley, 2-hills, 3-mountains (CH); 1-not in LFA, 2-LFA not mountains, 3-LFA mountains (F)	1.81	0.82	1.51	0.72
Land per worker	Hectares per real labor unit	13.6	7.6	52.0	41.9
Animals per worker	Livestock Units per real labor unit	13.6	8.0	44.2	103.1
Hired labor to farm labor	Labor units hired workers divided by total on-farm labor units	0.18	0.20	0.18	0.26
Farm system	1-conventional, 2- integrated (CH) or in the process of conversion to organic (F), 3-organic	2.15	0.38	1.04	0.24

F: France. CH: Switzerland. LFA: Less Favored Areas.

## 5. Results

The regression results are presented in table 2. They are for a two-stage least square model accounting for endogeneity. The model's specification chosen is highly satisfactory, judging by the large R-square values. The regression coefficients for the variable part-time character and its square value are significant for both countries but present different signs depending on the country. Such results primarily confirm our hypothesis. In Switzerland, a rising level of off-farm revenue leads to increasing direct payments per worker (positive estimated coefficient of the part-time proxy). This effect, however, weakens with a growing off-farm income share (negative estimated coefficient of the squared part-time proxy). In France, however, it is the opposite. The more the farmer works off farm, the less direct payments per labor unit he/she receives. Likewise, this effect fades the more the farmer participates to off-farm work. This illustrates the different effects of coupling and decoupling on the attractiveness of part-time farming.

The other effects which the regressions reveal are less surprising and more uniform if compared between the two countries. Particularly in France, young farmers seem to be more skilled in maximizing their claim for direct payments. More disadvantaged regions in both countries receive more direct payments per labor unit than other regions. As for the ratio of land per worker, it strongly positively influences the amount of direct payments which a farmer receives in Switzerland and in France. As expected, this reflects the fact that most of the payments were still tied to hectares in both countries. The same influence could be expected for the ratio of animals per worker, but the impact is positive in Switzerland only, while it is negative in France. This discrepancy may be due to the fact that the French sample includes a larger share of crop specialized farms than the Swiss sample. In France there is a dependency from the share of hired labor. French farms that rely a lot on external labor receive less direct payments per labor unit (negative significant coefficient for the ratio of hired labor to total farm labor). This may confirm our hypothesis that family farms receive particular support for cultural reasons. It may also be an indicator for higher labor intensity of the farm which is apparently not rewarded by direct payments. For Switzerland, one more factor determines the amount of direct payments received per labor unit on the farms. The more environmentally sound the farming system is, the more direct payments are paid (positive significant coefficient for the farm system categories, representing increasing organic character). This confirms our claim that direct payments in Switzerland are only decoupled from production, but not from the delivery of public goods. This

connection does not exist in France, probably due to the lack of support to organic farming *per se*.

**Table 2: Regression results (direct payments per labor unit as dependent variable)**

	Switzerland	France
Number of observations	2,513	6,941
<b>Part-time character</b>	<b>8,870*** (5.92)</b>	<b>-4,026*** (-3.07)</b>
<b>Part-time character squared</b>	<b>-3,873*** (-2.94)</b>	<b>4,177*** (3.69)</b>
Farmer's age	-15 (-5.12)	-32*** (-2.90)
Region	5,908*** (16.18)	777*** (5.99)
Land per worker	1,949*** (9.65)	323*** (26.2)
Animals per worker	591*** (2.88)	-18*** (-5.75)
Hired labor to farm labor	-1362 (-0.77)	-2,458*** (-2.70)
Farm system	5,689*** (11.45)	584 (1.59)
Constant	-24,057*** (-7.40)	2,264* (-1.87)
R-square	0.72	0.79

Estimated coefficients in the table, with *t*-value in parentheses. \*\*\* means  $p < 0.01$ ; \*\* means  $p < 0.05$ ; \* means  $p < 0.10$ .

## 6. Conclusions

The declaration by Mariann Fischer Boel on part-time farming in 2006 had caused uproar among

French farmers. The European Commissioner for agriculture reckoned that farmers in Europe would need a second source of income, besides agriculture, to survive in the next decade (Bounds, 2006). The uproar that followed this quote is not surprising. The farming profession in France is one of the most traditionalists with regard to the role of agriculture, supporting food production against farming for the provision of public goods and hobby farming. For example, a study of farmers' opinions in several EU countries in 2005 revealed that French respondents strongly agreed with the statement that farmers should not have to resort to off-farm work in order to keep up their farm (Gorton et al., 2008, Table 3).

Part-time farming may however be a model to divert surplus labor and to enable extensive land management, particularly for small-structured farming systems prevailing in Europe. Direct payment systems that mainly use the delivery of public goods as a reference do support such forms of labor regimes. In this paper we have shown that Switzerland is a case in point where cross-compliance and agri-environmental programs favor farmers with an off-farm employment. This favored status, however, does not increase proportionally with increasing occupation of farm family members outside agriculture. By contrast, direct payment systems that are still strongly coupled to agricultural production have the opposite effect. Within this system, part-time farms, having other obligations but to produce intensively, are disadvantaged in terms of public transfers. This is the case in France, where full decoupling has always been rejected by the national government.

It is nonetheless clear that direct transfers to farms will, to a large part, more and more determine the scope of future farming. The more targeted payments to farmers are, the more society will be able to steer agriculture into the direction it intends. This applies particularly to the question whether direct payments should be coupled with production activities. Supporters of coupling stress the importance of a viable food production (Commission des Communautés Européennes, 2006, p. 45), whereas economists are mostly in favor of decoupling which decreases welfare losses through misallocation (Swinbank and Tangermann, 2004). While we have shown that direct-payment systems with a high degree of decoupling can support labor-extensive part-time farming, future research might want to find out what possibilities the government has to steer rural labor markets outside agriculture in order to support the extensive use of farmland.



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