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# Trends in Family Labour, Hired Labour and Contract Work in French and Swiss Agriculture

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# Two Central Questions

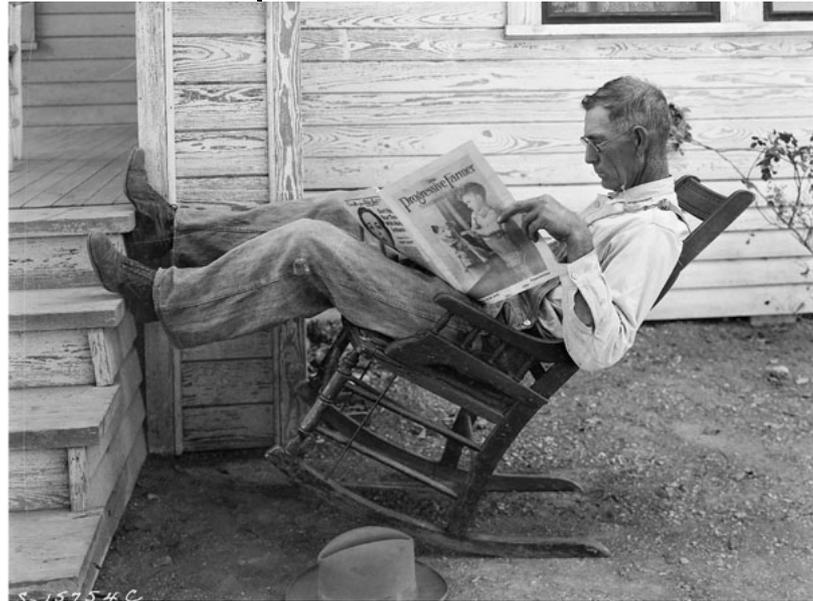
- What is the relation between using the three types of labour on a farm?
  - *Family*
  - *Hired*
  - *Contract*
- How does agricultural policy influence the composition of labour input?





# Theoretical framework

- Household's utility is function of consumption (function of income) and leisure
- Hired labour and contract labour increase leisure and reduce income
- Agricultural policy will have an impact on relation between production and income



# Data

French and Swiss FADN-data, 1990-2007

Arable farms only (F: >75% of gross margin from fieldcrops; CH: >70% of land for fieldcrops, < 1 LU/ha)

Family and hired labour measured in Annual Working Units (AWU)

Contract labour measured by expenditure (inflation-adjusted)



# Econometric Specification

The uses of the three labour types are simultaneously estimated with the maximum likelihood estimator which accounts for

- the censure of hired work (about two thirds of farms have no hired work).

- the correlations between the errors of hired work, contract work and family labour equations.

A logarithm transformation of contract work expenditures enables a better fit of the econometric specification.



# Descriptive Statistics

**TABLE 1.** Descriptive statistics for France and Switzerland; averages for the whole period

	France	Switzerland
UAA (ha)	118	25
Total labour use (AWU)	1.71	1.58
Total output produced (euros)	144,307	138,785
Share of crop output in total output (%)	66	54
Total area subsidies (euros)	-	9,290
Total crop subsidies (euros)	26,145	2,954
Total animal subsidies (euros)	1,182	365
Total agri-environmental subsidies (euros)	298	2,414
Total LFA subsidies (euros)	59	109
Total investment subsidies (euros)	398	12,086
Farmer head's age	46.0	45.9
Hired labour (AWU)	0.37	0.46
Family labour (AWU)	1.34	1.11
Total expenditure on contract labour (euros)	6,967	6,955
Approximated contract labour (AWU)	0.60	0.28
Price of hired labour (euros per hour)	5.27	11.14
Number of observations over the period	35,113	2,665

Source: national FADN databases and authors' own calculations

**French farmers use 1.6 as much contract labour as hired labour, in Switzerland vice versa**



# Swiss Results

TABLE 2. Econometric for results for Switzerland

	Estimate for log of contract labour cost	Estimate for hired labour	Estimate for family labour
Intercept	9.3813 ***	0.3837 ***	1.6089 ***
Price of hired labour	0.0003	-0.0005 **	-0.0001
UAA	0.0170 ***	0.0280 ***	0.0094 ***
Share of crop in total revenue	-0.0011	-0.0014 *	-0.0035 ***
Farmer head's age	-0.0056 ***	-0.0059 ***	-0.0014 **
Dummy LFA	-0.2348 ***	-0.2117 **	-0.0969 *
Altitude	-0.0005 ***	-0.0003 *	-0.0008 ***
Dummy period 99-07	0.4794	-0.3026	-0.3024
Area payments to land 99-07	-0.0002	0.0001	0.0002
Crop subsidies to land 99-07	-0.0007	-0.0014 ***	-0.0009 ***
Animal subsidies to land 99-07	0.0010	0.0012 *	0.0003
Agri-environment subsidies to land 99-07	-0.0001	0.0002	0.0000
LFA subsidies to land 99-07	-0.0014	0.0011	-0.0005
Number of observations		2,664	
Log likelihood		-6,669	
Correlation contract labour - hired labour		-0.007 **	
Correlation contract labour - family labour		0.015 **	
Correlation hired labour - family labour		0.061 **	

Source: authors' own calculations

Note: \*\*\*, \*\*, \* represent significance at 1, 5, 10 percent.



# France: Differences to Switzerland

- Contract labour price is measured by a regional index and negatively influenced contract labour as expected (there is a misinterpretation in the paper)
- Land price increases hired labour use and contract labour costs
- Share of rented land increases external and decreases internal labour
- Inverse effect of specialization, increasing hired and family labour
- High education increases use of external and reduces family labour
- Agri-environmental subsidies have significant positive effect on external labour
- Investment subsidies have positive effect on all kinds of labour



# Conclusions

- Contract Labour and family labour are substitutes, while hired labour and family labour are complements
- Crop area payments discourage different labour demands
- Environment and investment payments favor external labour