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Motivations of Swiss citizens to support farmers' incomes

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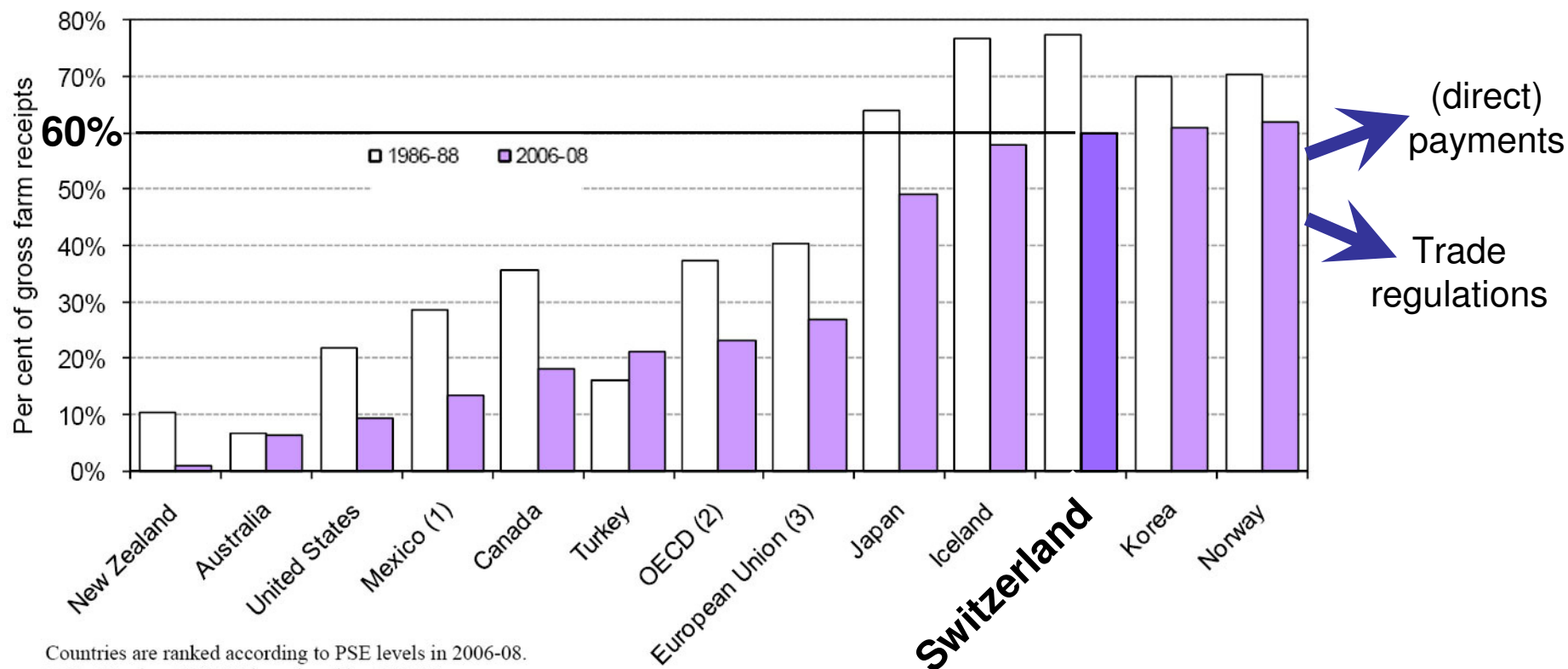


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1. Introduction: Public support to agriculture

International Comparison



Countries are ranked according to PSE levels in 2006-08.

1. For Mexico, 1986-88 is replaced by 1991-93.

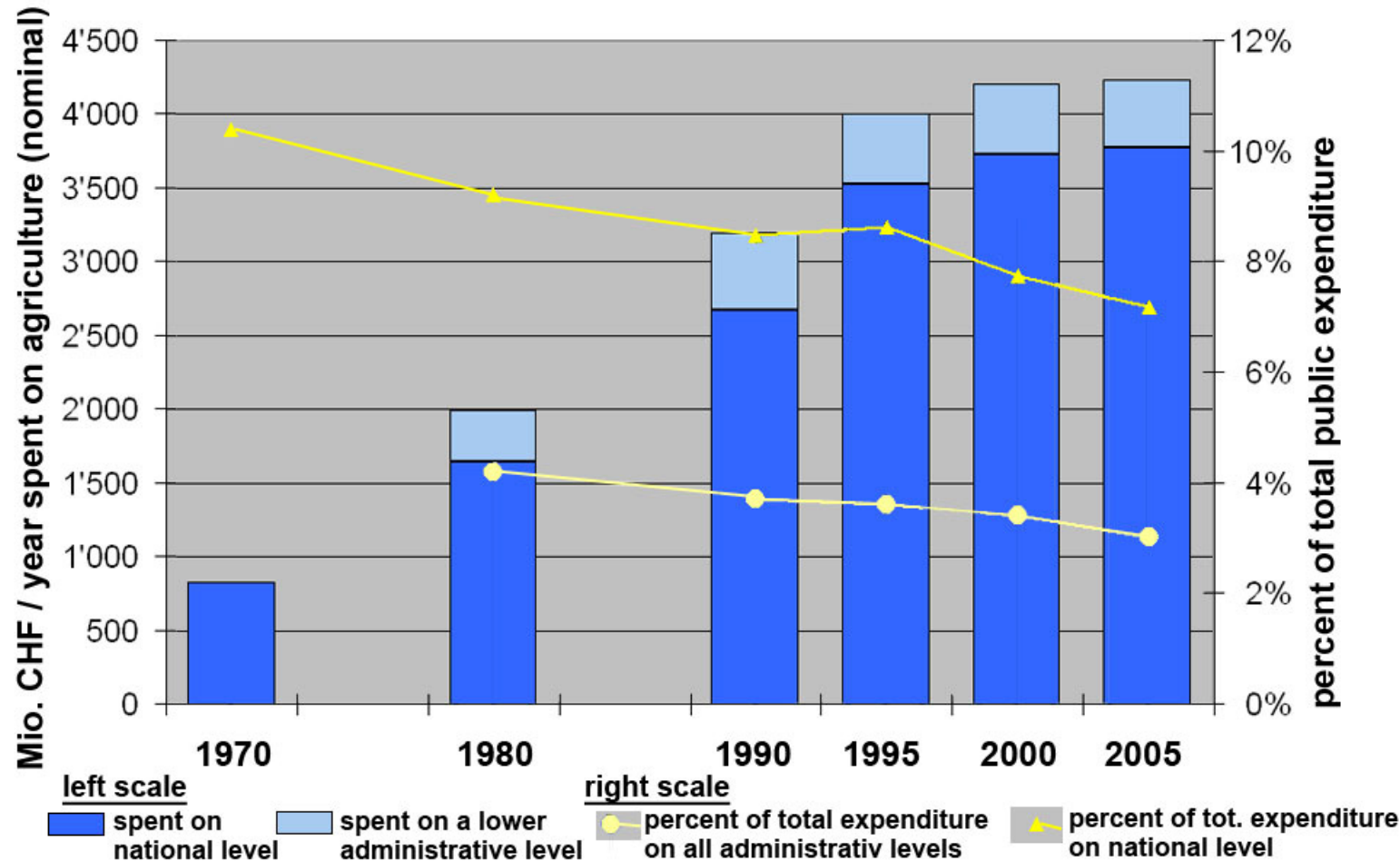
2. Austria, Finland and Sweden are included in the OECD total for all years and in the EU from 1995. The Czech Republic, Hungary, Poland and the Slovak Republic are included in the OECD total for all years and in the EU from 2004. The OECD total does not include the non-OECD EU member states.

3. EU12 for 1986-94 including ex-GDR from 1990; EU15 for 1995-2003; EU25 for 2004-06 and EU-27 from 2007.

Source: OECD, PSE/CSE Database, 2009.

Source:
OECD (2009 p. 13)

1. Introduction: Public support to agriculture *In relation with total public spending*



Source of data:
BFS (2009)

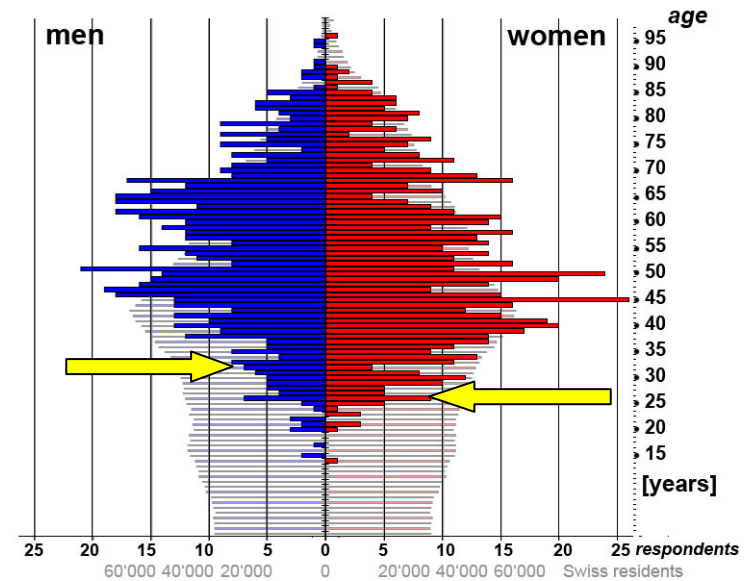
2. Reasons for public support to agriculture

- Scientific view:
 - Apart from market goods, agriculture provides “services” that are public goods (→ Categories of environmental benefit, see Perman et al 1999; also: **Ecosystem services**; De Groot 2002 et al.; Daily 1997; Costanza et al. 1997)
 - Concept of **multifunctionality**: used by various disciplines – different approaches (for an overview see Renting et al, 2009)
 - Political / historic view:
 - **Food security**, esp. the experience of the challenge of providing enough food during the periods of the two World Wars.
 - Today: **Multifunctional agriculture** as defined in the Swiss constitution (Art. 104); the article is a compromise between farmer’s and consumer’s interests and met large approval by Swiss voters in June 1996.
- The population’s opinion is of a major importance.

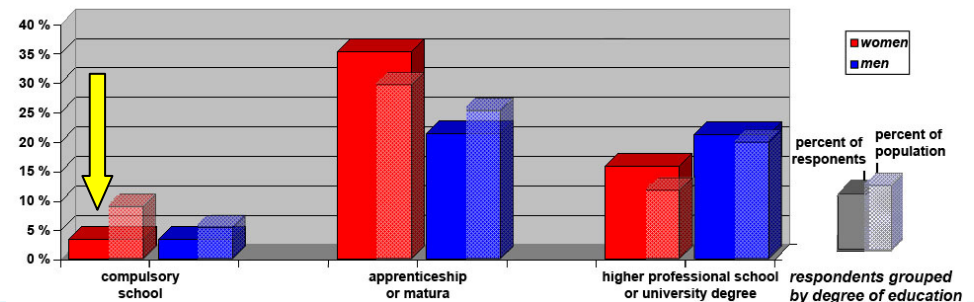
3.1 Survey and sample

- Mail survey on the topic of agriculture
- Random sample of phone book entries, only German speaking part of Switzerland
- Data collection between August and November 2008
- 3000 questionnaires were sent, followed by two reminders to non responding persons
 - response rate: 44% (n=1326)

younger age groups underrepresented



less educated persons underrepresented, especially women



3.2 Questionnaire

- Introduction to the topic:

☞ *Die Schweizer Landwirtschaft wird seit vielen Jahren mit Steuergeldern unterstützt (Subventionen, Direktzahlungen). Um Direktzahlungen zu erhalten, müssen Landwirtschaftsbetriebe heute bestimmte Bedingungen erfüllen, zum Beispiel einen ökologischen Leistungsnachweis erbringen. Im Jahr 2005 wurden etwa 3 Prozent der gesamten öffentlichen Ausgaben (von Bund, Kantonen und Gemeinden) für die Landwirtschaft aufgewendet.*

➤ For many years, Swiss agriculture has been supported with taxpayers' money (subsidies, direct payments). Today, to get direct payments farmers must fulfill certain requirements, such as a "proof of ecological performance". In 2005, about 3 percent of the total public expenses (of confederation, cantons and municipalities) were used for agriculture.

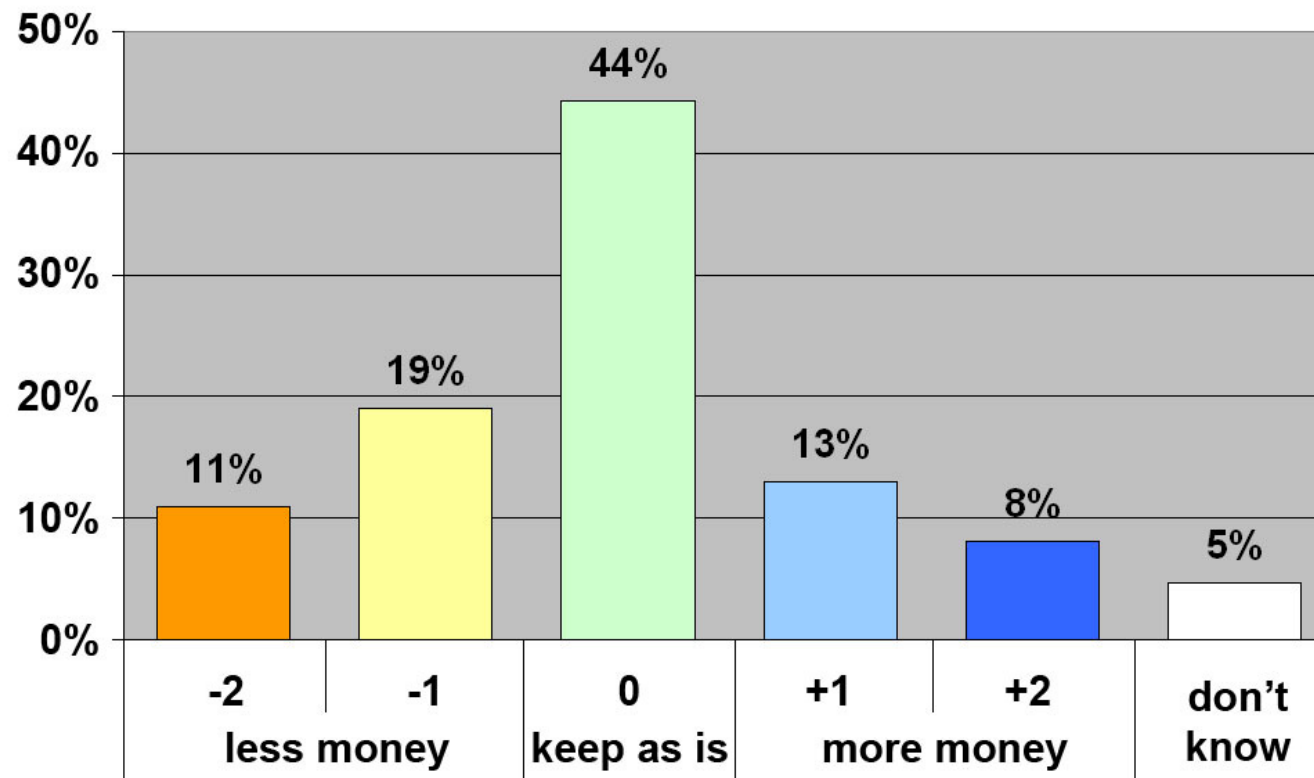
- Closed questions, example:

	weniger Geld -2	-1	wie bisher 0	+1	mehr Geld +2	weiss nicht
Was denken Sie, sollten weniger oder mehr Steuergelder für die Landwirtschaft ausgegeben werden?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

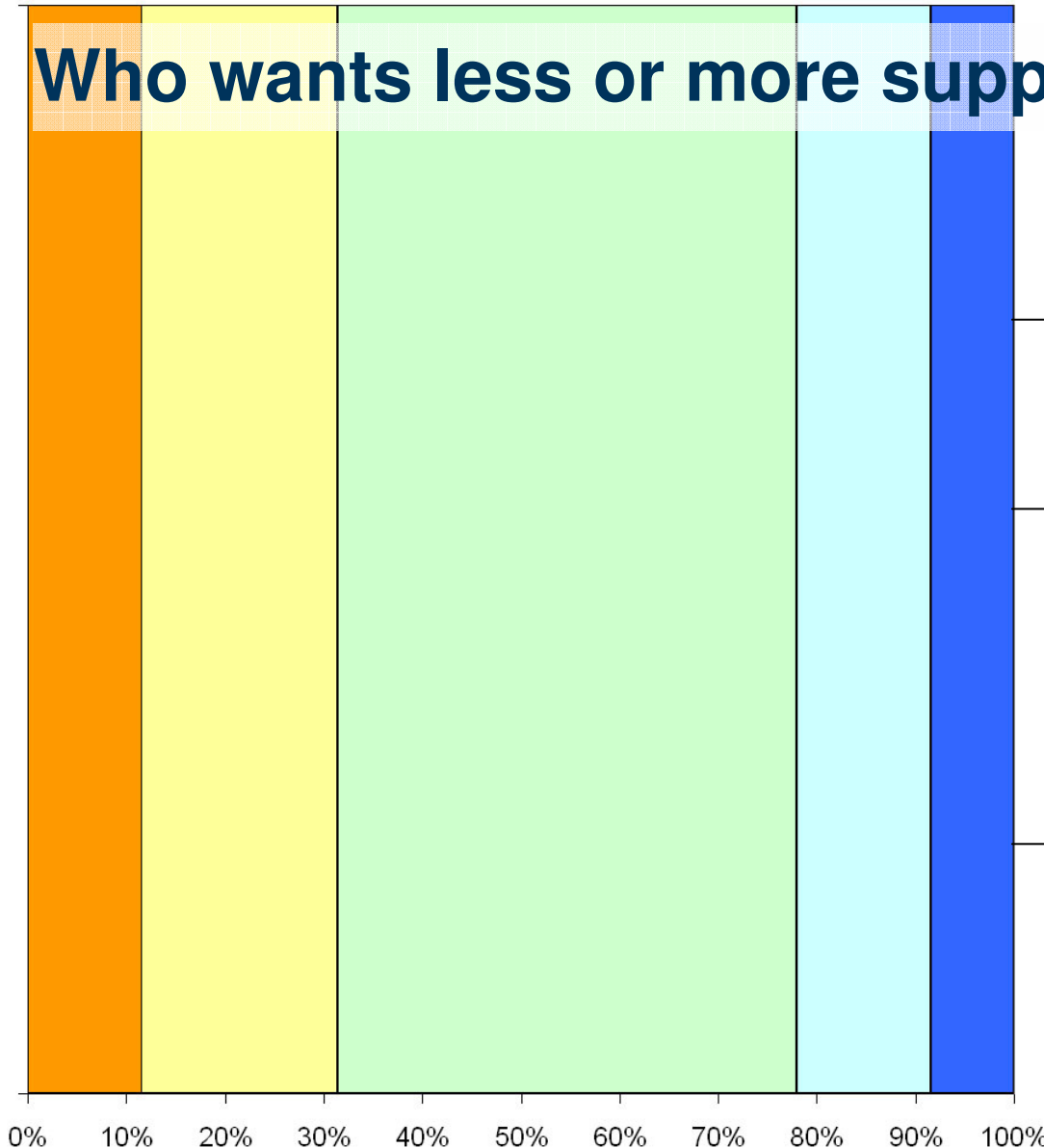
4 Results:

4.1 Opinions on Public Expenses on Agriculture

- “What do you think: should less or more taxpayers’ money be spent on agriculture?”



Who wants less or more support?



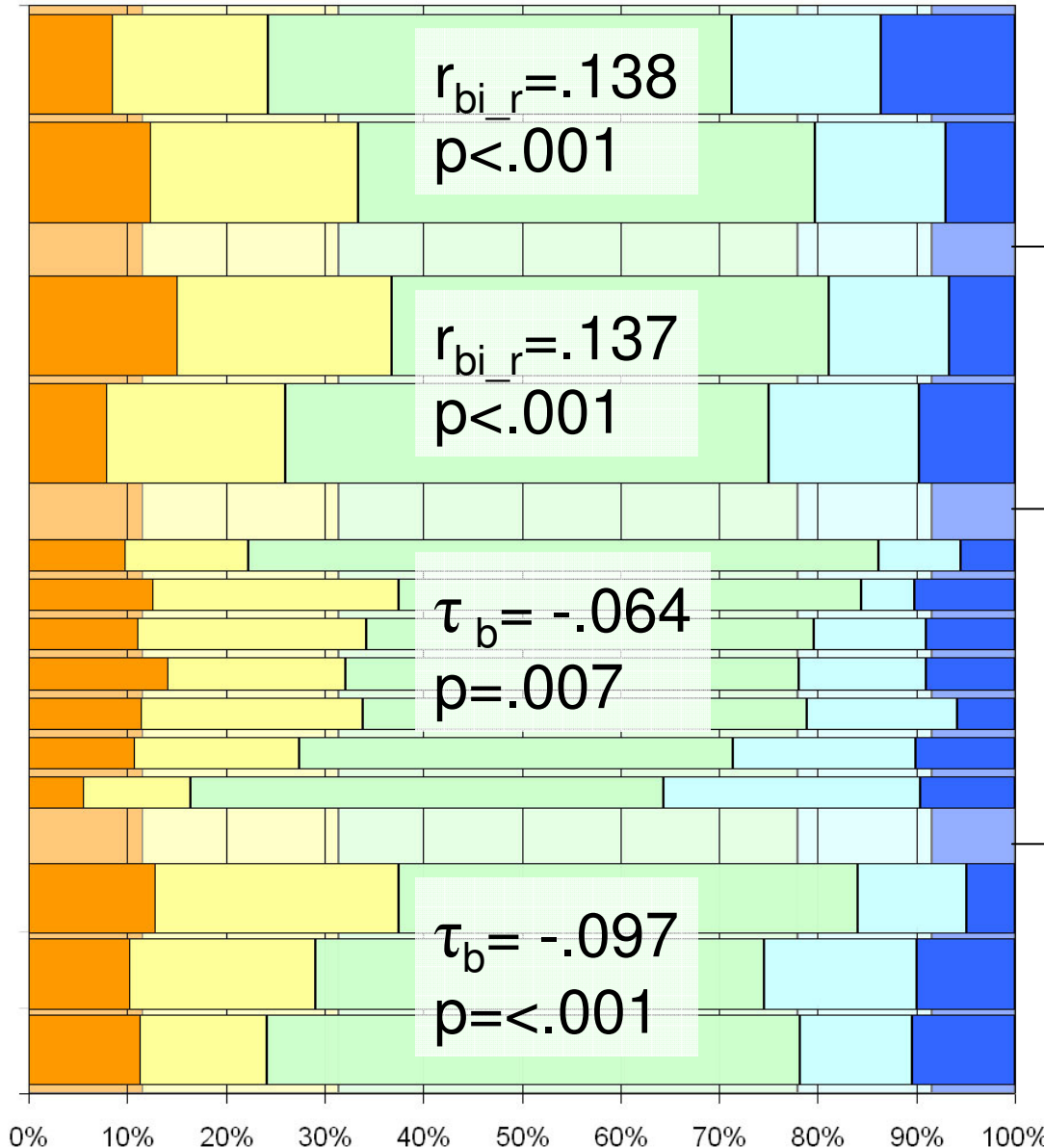
- rural background ?
- no rural background ?

- men ?
- women ?

- eldest (80 y. or older)
- .
- .
- .
- youngest (below 30 y.) ?

- tertiary education
- professional education ?
- compulsory education

r_{bi_r} : biserial rank correlation; τ_b : Kendall's Tau-b



- rural background
- no rural background

- men
- women

- eldest (80 y. or older)
- .
- .
- .
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- tertiary education
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4.2 Model Version 1: Explicit relation to payments

Why (not) support agriculture?

Motives related to agriculture and its production or services

- **Existence**: No necessity of agriculture in Switzerland, therefore no necessity to support it.
- **Public Services**: Provision of goods or services for the welfare of all –
Food Security: Switzerland needs a large share of domestic food provision.
- **Compensation**: Paying farmers to make them produce still more environmentally or animal friendly.

Motives *not* related to agriculture

- **Social State**: Times are difficult for farmers – therefore they need to be supported.
- **Liberalism**: Support impedes / slows down necessary development in agriculture.
- **Federal Budget**: Public spending should be reduced; thereby, agriculture should not be excepted.

Multinomial logistic regression with effect coded variables

Software used: SPSS statistics and Lem (Vermunt 1997)

Model 1

$$\pi_{ilk} = \frac{\exp(\beta_{i0} + \sum_k \beta_{ik} x_{ik})}{\sum_j \exp(\beta_{j0} + \sum_k \beta_{jk} x_{jk})}$$

- Items not related to agricultural activity have the strongest impact.
- The perceived importance of Swiss agriculture is of minor (or no) importance when explaining the willingness to support it.
- Possible problem: “bolstering” → reversed causality

Dependent Variable (n=1283)		DF	Wald	Sig.	Constant			
What do you think: should less or more taxpayers' money be spent on agriculture?	j=1) less money j=2) keep as is j=3) more money j=4) don't know	3	58.2	.000				
Independent Variables		DF	Wald	Sig.	less money	keep as is	more money	don't know
V ₁ : <u>Liberalism</u> : Support impedes development		15	126.2	.000				
Response options: k= 1: don't agree at all, ..., k=5: fully agree; k=6: don't know								
V ₂ : <u>Social state</u> : Farmers need support in difficult times		15	96.4	.000				
Response options k=7: don't agree at all, ..., k=11: fully agree n; k=12: don't know								
V ₃ : <u>Federal Budget</u> : Agriculture should contribute to saving		15	84.8	.000				
Response options k=13: don't agree at all, ..., k=17: fully agree; k=18: don't know								
V ₄ : <u>Compensation</u> : animal & environmentally friendly p.		15	50.3	.000				
Response options: k=19: don't agree at all, ..., k=23: fully agree; k=24: don't know								
V ₅ : <u>Public services</u> : Domestic contribution to food security		15	32.5	.006				
Response options k=25: don't agree at all, ..., k=29: fully agree; k=30: don't know								
V ₆ : <u>Existence</u> : Swiss agriculture is not necessary any more		9	7.9	.547				
Response options k=31: don't agree at all / agree very little, ..., k=33: fully agree; k=34: don't know								

Test results to Model 1

Multinomial Logistic Regression			n=1119		
Global Null Hypothesis		-2LL	Chi²	DF	Sig.
	intercept only	2623.1			
	fitted model	1384.1	1239.0	84	.000
Hosmer-Lemeshow Test			Chi²	DF	Sig.
binary partial models tested	Partial model: j=1 vs. j=2		7.3	8	.507
	Partial model: j=1 vs. j=3		4.9	8	.764
	Partial model: j=2 vs. j=3		10.6	8	.223
	Partial model: j=1 vs. j=4		2.6	8	.958
	Partial model: j=2 vs. j=4		12.9	8	.115
	Partial model: j=3 vs. j=4		1.9	8	.984
McFadden Pseudo R²			.404		
Correct Classifications			71%		



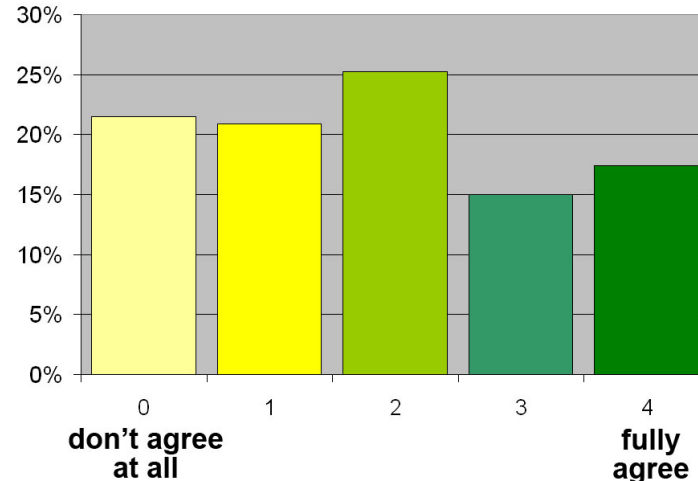
4.3 Model Version 2: More general statements

a) about intervention or social needs

→ Same patterns if there is no explicit connection to a reduction or increase of public support?

- **Public intervention:**

- Is it a public responsibility to maintain farmers' incomes?



- **Solidarity:**

- Does the rural population need support?
- Do farmers deserve support?

4.3 Model Version 2: More general statements b) about agricultural production and services

- **Food Security:**

- $\tau_b = .236^{***}$ ▪ Is domestic food production needed to guarantee a secure food provision?
- $\tau_b = .247^{***}$ ▪ Present domestic share of food supply: Would less be enough? Should it be larger?

- **Food choice:**

- $\tau_b = .266^{***}$ ▪ How important is it for you, that you are offered the choice of Swiss food?

- **Shaping the environment:**

- $\tau_b = .173^{***}$ ▪ If agriculture is visually present in a mountain resort – do you like it less or more?
- $\tau_b = .081^{**}$ ▪ Do you often use rural environments for your recreation or for leisure activities?

- **Regional economy:**

- $\tau_b = .168^{***}$ ▪ What do you think about the economic importance of agriculture in peripheral regions?

- τ_b : n.s. ▪ **Animal / environmentally friendly production**

Model 2

$$\pi_{i \leq j|k} = \frac{\exp(\beta_j + \sum_k \beta_k x_k)}{1 + \exp(\beta_j + \sum_k \beta_k x_k)}$$

- The intervention item has the strongest impact.
- (Food) production related items have some impact.
- Space related items (environment, regional econ.) are insignificant.

Dependent Variable (n=1119)		DF	Wald	Sig.	Constant
What do you think: should less or more taxpayers' money be spent on agriculture?	j=1) less money j=2) keep as is j=3) more money	2	657.2	.000	-2 -1 0 1 2
Independent Variables V _m		DF	Wald	Sig.	β _k
V ₁ : <u>Food security I</u> : Domestic agriculture is needed to guarantee a secure food provision	Response options: k= 1: don't agree at all / agree a little, ..., k=3: fully agree	2	2.9	.229	.6 -6
V ₂ : <u>Food security II</u> : necessary domestic contribution to food provision	Response options: k=4: less would be enough, k=5: keep as is; k=6: more is necessary	2	17.9	.000	.6 -6
V ₃ : <u>Food choice</u> : Importance to have the choice to buy food produced in Switzerland	Response options: k= 7: not / hardly important, ..., k=9: extremely important	2	13.5	.001	.6 -6
V ₄ : <u>Shaping the environment I</u> : Change in attractiveness if agriculture is visually present in a mountain resort	Response options: k= 10: I like it less; k=11: the same; k=12: I like it better	3	0.9	.837	.6 -6
V ₅ : <u>Shaping the environment II</u> : Use of rural environments for recreation / leisure activities	Response options: k= 13: (rather) rarely, ..., k=16: very frequently	2	3.3	.197	.6 -6
V ₆ : <u>Regional economy</u> : Agriculture plays a primary role in the economy of peripheral regions.	Response options: k= 17: don't agree at all / agree a little, ..., k=19: fully agree	2	0.9	.632	.6 -6
V ₇ : <u>Intervention</u> : The maintenance of farmers' incomes is a public responsibility.	Response options: k=20: don't agree at all, ..., k=24: fully agree	4	120.3	.000	.6 -6
V ₈ : <u>Solidarity I</u> : The rural population is a group that is socially disadvantaged.	Response options: k=25: don't agree at all, ..., k=29: fully agree	4	10.3	.035	.6 -6
V ₉ : <u>Solidarity II</u> : Farmers work a lot and have little incomes.	Response options: k=30: don't agree at all, ..., k=34: fully agree	4	34.7	.000	.6 -6

Test results to Model 2

Cumulative Logistic Regression			n=1119			without V ₁ , V ₄ , V ₅ , V ₆			n=1151	
Glob. Null Hypoth.		-2LL	Chi ²	DF	Sig.	-2LL	Chi ²	DF	Sig.	
intercept only		2225.9				1575.3				
fitted model		1729.5	496.4	25	.000	1079.6	495.7	16	.000	
Test of Parallel Lines	$\beta_{1k} = \beta_{2k} = \beta_{3k}$	1729.5				1079.6				
	$\beta_{1k} \neq \beta_{2k} \neq \beta_{3k}$	1701.2	28.3	25	.293	1049.4	20.1	16	.214	
Hosmer-Lemeshow Test			Chi ²	DF	Sig.		Chi ²	DF	Sig.	
binary partial models tested		j=1 vs. j>1	7.6	8	.471		11.6	8	.172	
		j≤2 vs. j>2	4.2	8	.839		5.7	8	.680	
McFadden Pseudo R ²		.211				.205				
Correct Classifications		61%				61%				



} *full model*
} *only significant regressors*

4.4 Summary of the model results

- When explaining differences in the willingness to grant public support to agriculture...
 - ... motives **not related to agricultural activity**, e.g. opinions on public intervention and solidarity, have the largest explaining power.
 - ... the perceived importance of **environmental / animal welfare aspects** differentiate only when explicitly asked as an argument for increasing payments.
 - ... the perceived role of Swiss agriculture for guaranteeing **food security** shows a more stable effect. – However it depends on the opinions about the “necessary” share of domestic provision.
 - ... the degree appreciation of a **choice of Swiss products** explains some of the differences.
 - ... no considerable explaining power is shown by the appreciation of the rural impact on **landscapes or regional economies**.

5. Conclusion

- General political views have a stronger impact on the opinions regarding payments to agriculture than the appreciation of agriculture itself.
- Environmental / animal welfare aspects are important for a positive image of agriculture in the eyes of the ones who in principle are already positive about intervention.
- Production related aspects still seem to have a larger impact on the willingness to grant support to agriculture than landscape/environment related aspects.
- The topic of food security (still) has the potential to moderate the positions of persons who oppose intervention. (→ This shows more clearly when analyzing opinions on a free trade agreement.)

Literature

- BFS (2009): Öffentliche Finanzen der Schweiz 2007, Gesamtübersichten von Bund, Kantonen und Gemeinden. In: BFS – Statistisches Lexikon der Schweiz. Bundesamt für Statistik, Neuchâtel.
<http://www.bfs.admin.ch/bfs/portal/de/index/infothek/lexikon.html> (16.10.09)
- Costanza, R., D'Arge, R., De Groot, R. et al. (1997): The value of the world's ecosystem services and natural capital. *Nature*. Vol. 387, No. 6630, pp. 253-260.
- Daily, G. C. (1997): *Nature's services: societal dependence on natural ecosystems*. Washington, DC etc.: Island Press
- De Groot, R. S., Wilson, M. A. and Boumans, R. M. J. (2002): A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics*. Vol. 41, No. 3, pp. 393-408.
- OECD (2009): *Agricultural Policies in OECD Countries – Monitoring and Evaluation; Highlights*. Organization for Economic Co-Operation and Development, Paris.
- Perman, R., Ma, Y., McGilvray, J. & Common, C. (1999): *Natural Resource and Environmental Economics*. 2. Ed. Harlow: Pearson Education.
- Renting, H., Rossing, W.A.H., Groot, J.C.J. et al. (2009): Exploring multifunctional agriculture. A review of conceptual approaches and prospects for an integrative transitional framework. *Journal of Environmental Management*. Vol. 90, pp. S112-S123
- Vermunt, J.K. (1997). *LEM: A General Program for the Analysis of Categorical Data*. Department of Methodology and Statistics, Tilburg University.