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Josef Efken, Jochen Schmitz, Sascha A. Weber, Heinz Wendt

josef.efken@vti.bund.de

Institut für Marktanalyse und Agrarhandelspolitik des Johann Heinrich von  
Thünen-Instituts, Bundesallee 50, D-38116 Braunschweig



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# INVESTMENT SUBSIDIES IN THE FOOD INDUSTRY: EXPERIENCES IN THE GERMAN DAIRY SECTOR

*Josef Efken<sup>1</sup>, Jochen Schmitz<sup>2</sup>, Sascha A. Weber<sup>1</sup> and Heinz Wendt<sup>1</sup>*

## Agricultural Policy, Investment Promotion, Competitiveness, Evaluation

### 1 Introduction

It is often asked whether subsidies, defined as public payments to private persons or firms, are an acceptable market intervention to correct market failure or an undesirable distortion of national and international competition (WTO, 2006). However, many governments use these types of subsidies likewise the EU and their member states – see Council Regulation (EC), No. 1257/1999<sup>3</sup>. One of several support measures offered by this regulation was public investment aid to improve the processing and marketing of agricultural products by contributing “to increasing the competitiveness and added value of such basic products” and ensuring “that the farmers have a share in the economic benefits of the action taken (ibid: 81 and 90).

### 2 Methodology and Data

Because support schemes according to Council Regulation (EC) No. 1257/1999 were implemented separately in Germany by each of the federal states, they can be differentiated in the evaluation. Thus, some include the dairy sector and others do not. This in turn enables to compare the situation with and without investment aid. Furthermore, in the case of dairies, milk is the key factor on the input side and also the principal ingredient of final products. As the processing of milk is the core, often sole, business activity of dairies, it is possible to assume a strong correlation between the success of dairies and the success of connected milk farmers, represented by the prices paid to the farmers.

To evaluate competitiveness of a single firm there is the need for a standardized and comparable indicator. Such a suitable comparable indicator is a credit rating<sup>4</sup> (CZARNITZKI and KRAFT, 2004: 378). These ratings predict not only the probability of default for specific bank loans, but also provide an opinion on the creditworthiness of companies (HUANG et al., 2004: 543). Thus, creditworthiness displays the financial strength of a company. The development of creditworthiness between supported and not-supported dairies is used as indicator, assuming that **supported dairies show a better development in their ranking than not-supported ones (H1)**. We use data from 2000 to 2006 from Creditreform, which is the largest German rating agency. Another objective of the policy is that farmers take part in the benefits of the subsidies. The development of producer prices paid to farmers could be used as an indicator of farmers’ benefits, assuming that **the development of producer prices paid by supported dairies should be above prices paid by not-supported dairies (H2)**. We use annual producer prices from 2000 to 2007 offered by ZMP and AMI, respectively.

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<sup>1</sup> Johann Heinrich von Thunen-Institute, Institute für Marktanalyse und Agrarhandelspolitik.

<sup>2</sup> External Consultant.

<sup>3</sup> For more detailed information see also EU COMMISSION, 1999a: 80-102.

<sup>4</sup> Creditreform uses a Credit-Standing index which ranges from 100 to 600, where 100 represent the best rating (Creditreform 2011). For better use, Creditreform groups comparable debtors into creditworthiness groups, the so called Credit-Standing classes – ranging from 1 (excellent) to 5 (major payment delays).

Both assumptions can be examined with appropriate statistical techniques. To analyze differences in parameters classical t-tests are used. Giving greater focus on the potential correlation between support and parameters, cross tables (contingency tables) are applied. For interpretation of the contingency tables beside the Pearson coefficient the 'odd-ratio' is used.

### 3 Results

With regard to all dairies creditworthiness shows only a small decline (-6.45) between 2000/01 and 2005/06 (see Table 1). But this decline is significant, thus, the null hypothesis has to be rejected. This is particularly important as the rating declined on average from the rating 2 (very good credit standing) to rate 3+ (good credit standing). A more differentiated look reveals that not the not-supported dairies are responsible for the decline in creditworthiness but the supported ones (see p-values). In case of not-supported dairies the null hypothesis has to be accepted. Additional test (not presented here) reveal that the proposition that both groups have evolved differently is not possible. But with regard to the parameter creditworthiness it is possible to say, that each group, individually, developed differently. This convergent development process is confirmed by additional comparisons of starting point and ending point analysis. Thus, despite support, the supported dairies approached the worse initial level of not-supported dairies during the observation period. Further test indicate that the correlation between support and creditworthiness are stochastically independent and that the chance that creditworthiness increases during observation period is noticeably lower in supported dairies than in not-supported dairies. These results illustrate that the posited targeted policy effect of investment aid could not be achieved with regard of the parameter creditworthiness as an approximation of competitiveness.

**Table 1: Change of creditworthiness in observed dairies in Germany**

	All dairies		Not-supported dairies		Supported dairies	
	2000/01	2005/06	2000/01	2005/06	2000/01	2005/06
Sample mean	198.3	205.38	203.65	206.92	193.56	203.59
Sample difference	-6.45		-3.31		-10.03	
df	106		56		49	
Test statistic	-2.23		-0.92		-2.18	
p-value	0.01		0.18		0.02	

Quelle: Own computations

From the comparison of mean producer prices in 2000/01 and 2006/07 follows that producer prices declined over time (see Table 2). Because of estimation results the alternative hypothesis has to be accepted. The decline is significant in both analyzed groups. The decline 0.25 Eurocent less in supported dairies but, however, not being statistically significant. From this follows that only the statement that both groups show a decline in producer prices regardless of support is permissible. Analogously to analysis before, the characteristic creditworthiness and price differences in supported and not-supported dairies are stochastically independent. Results show that the chance of price differences of supported dairies is lower than of not-supported dairies. On other words, supported dairies had the chance to perform better than the mean but regarding results of t-tests it becomes clear that this was not significantly implemented.

**Table 2: Change of producer prices in observed dairies in Germany**

	All dairies		Not-supported dairies		Supported dairies	
	2000/01	2006/07	2000/01	2006/07	2000/01	2006/07
Sample mean	33.22	31.57	33.16	31.40	33.28	21.78
Sample difference	1.64		1.76		1.51	
df	101		54		46	
Test statistic	17.59		12.05		14.02	
p-value	0,00		0,00		0,00	

Quelle: Own computations

### **3 Conclusions**

Public support of German dairies under Council Regulation (EC), No. 1257/1999 should strengthen their competitiveness and should guarantee benefits for connected dairy farmers. But results show that no significant differences in the development of producer prices, as indicator for farmers' benefits, of supported and not-supported dairies are observable. The analysis of creditworthiness, as indicator for dairies' competitiveness, reveals that supported dairies developed worse than not-supported dairies. Looking to these key indicators there is strong evidence that conversely in this promotion scheme deadweight losses exist, and windfall gains realized by supported dairies can be assumed. Even worse, not-supported dairies were negatively affected through this support scheme due to distortion in competition. Altogether, the investment subsidies in the dairy sector cannot be seen as well-targeted measure and could be abolished in order to avoid further deadweight losses.

Note: references could be asked from authors.