Non-standard activities on farms in the Province of Zeeland in the Netherlands: an export base approach

Nestandardní faremní aktivity v nizozemské provincii Zeeland: hodnocení exportní základny

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Abstract: In this paper, the economic impact of non-standard activities on farms (NSAF) is analysed. After a discussion of NSAF, the export base theory is introduced as the analytical tool to assess its regional economic impact. The theory is applied to the Province of Zeeland in the Netherlands for the period 1998–2008. The first conclusion is that employment will increase by an estimated 193 full-time equivalents per year in this decade. This growth is mainly attributed to an expected rise in agri-tourism. The second overall conclusion is that the export base theory is a fruitful method to assess the regional economic effects of NSAF. The method may be applied to other regions as well.

Key words: rural development, non-standard activities on farms, export base theory, regional employment

Abstrakt: Práce analyzuje ekonomické dopady nestandardních faremních aktivit (NSAF). V úvodní části je definován a diskutován pojem NSAF a je zavedena teorie exportní základny jako analytický nástroj k hodnocení regionálních ekonomických dopadů. Uvedená teorie je pak aplikována na nizozemskou provincii Zeeland a období let 1998–2008. Prvním závěrem je, že tyto aktivity povedou k růstu zaměstnanosti, který je pro danou dekádu odhadován na 193 ekvivalentů zaměstnání na plný úvazek. Tento předpokládaný nárůst lze převážně připsat na vrub předpokládanému růstu objemu agroturistiky. Dalším souhrnným závěrem je, že teorie exportní základny je vhodnou metodou k hodnocení regionálních ekonomických dopadů NSAF. Tato metoda může být aplikována také v jiných oblastech.

Klíčová slova: rurální rozvoj, nestandardní faremní aktivity, teorie exportní základny, regionální zaměstnanost

INTRODUCTION

Like in other parts of Europe, the rural area in the Netherlands finds itself in a process of change. Next to its historical function as a place of traditional agricultural production, non-standard economic activities like agri-tourism, biological production and nature in landscape management emerged in the past decades of the last century. An increasing demand for recreational activities and new biological products offer opportunities for farmers to procure a higher income from more diversified sources. The integration of water management, agriculture, nature conservation and recreation is also a policy goal of the national government and, therefore, farmers are encouraged to engage in landscape management and agri-tourism (Van der Ham and van der Schans 1999).

A European research project named FAIR started in the year 2000 with the aim to identify the consequences of all innovations and changes in the rural areas. In line with the research projects' objectives, this paper deals with the regional economic impact of NSAF in rural areas. It tries to assess them in terms of regional income and employment. In this way, one gets an idea of the significance of NSAF.

The export base theory offers a frame of reference to assess the economic impact of NSAF. The theory is based on the idea that each region contains two sets of economic activities. One set comprises export activities, while the other consists of all other regional economic activities. In this view, regional economic growth can only take place if exports increase. Because of this, export related activities and activities aimed at the local market are designated respectively as "basic" and "non-basic" (Figure 1).

Extra income from basic activities (export) is partly spent in the region. This creates a multiplier process with respect to non-basic activities. In this paper, the export base theory is applied to the Province of Zeeland in the Netherlands. The area has been chosen because of the availability of relevant information. Another reason is the potential growth of NSAF in this province (Hillebrand and Koole 1999).

The remainder of this paper is organised as follows. In Section 2, NSAF will be briefly reviewed. Section 3 contains an elaboration of the export base theory and a description of the assumptions. The results will be presented in Section 4. Finally in Section 5, the conclusions are presented and discussed.

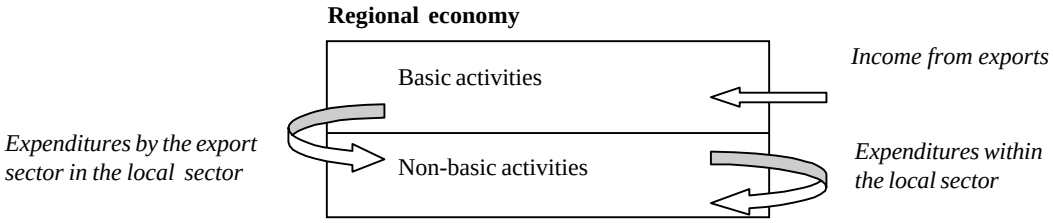

Figure 1. The regional economic impact of export

Source: Lambooy (1980)

NON-STANDARD ACTIVITIES ON FARMS (NSAF)

Since the World War 2, agricultural policy in the Netherlands was aimed at establishing a more efficient agricultural production. This should be realised by production on a larger scale of agricultural commodities, specialisation within the sector and more exports. NSAF were seen as inefficient and should not be pursued (De Vries 1992).

From the 1980s onwards, the agricultural sector in the Netherlands has been confronted with overproduction. Furthermore, environmental degradation as a consequence of the intensification of agricultural production became visible. These threats induced some farmers to develop non-standard activities on their farms.

In the 1990s, the interest for NSAF became more pronounced as is shown by the increase in the number of scientific publications on this topic. For instance, Hermans and Vereijken (1998) described the possibilities of farming in combination with landscape management and Hillebrand and Koole (1999) published a study in which the future perspectives for wider activities on farms are discussed and analysed. They distinguish between four categories of NSAF. First, sale of agricultural products on the farm. According to the authors, this is widely spread in the Province of Zeeland. Second, landscape management. This activity is mainly carried out by farmers in the Province of Utrecht, the south of Limburg and in the north of the Netherlands. Third, agri-tourism. This branch is growing fast and is especially to be found in the Province of Zeeland and on the isles in the north of the country (Waddeneilanden). Fourth, activities on the farm aiming at giving care to temporary residents (for example mentally disabled persons). This form is expected to grow fast as well in the coming ten years (FAIR 2000).

In the research project FAIR, a new classification of NSAF is developed. By means of this classification, it is possible to compare the impact of NSAF in the participating EU countries. Twelve categories are discerned and for nine of them the economic impact in terms of (expected) value added (GDP) is computed. Table 1 presents the nine categories.

Table 1. Categories of NSAF

	Categories of NSAF
1	Biological Production
2	Quality Production
3	Agritourism
4	Short PC Chains
5	New Economic Activities
6	Diversification
7	Nature and Landscape Management
8	Cost Reduction
9	Off-farm Income

Source: FAIR (2000)

METHODOLOGY AND DATA

Export base theory and multiplier effect

The export base theory is the relevant method to apply in this setting. The method is based on the distinction made between basic and non-basic activities. Basic activities are activities connected with production of goods and services for markets outside the region. Non-basic activities are the activities connected with production of goods and services for regional markets. All economic activities in Zeeland can be divided into basic and non-basic. This means that:

$$GDP_t = GDP_{nb} + GDP_b \quad (1)$$

GDP_{nb} is assumed to be a function of GDP_t. When income in Zeeland increases, people will spend more in Zeeland itself on non-basic goods and services. Therefore, income out of non-basic activities will increase. Assuming a linear relationship between total income and income out of non-basic activities, we get:

$$GDP_{nb} = \mathrm{B}\ GDP_t \quad (2)$$

In this equation, B is the fixed ratio between the GDP_{nb} and GDP_t. Substitution of (2) in (1) gives us:

$$GDP_t = \mathrm{B}\ GDP_t + GDP_{b,} \quad (3)$$

and

$$GDP_t = \frac{1}{1-\mathrm{B}} GDP_b \quad (4)$$

In the final equation, the term 1/(1 – B) represents the export base multiplier. In theory, B is assumed to be stable. When B is known, the total economic effect of the basic activities, which equals GDP_t, can be computed at any given level of GDP_b. For Zeeland, total turnover in 1992 equals Euro 11.76 billion from which Euro 4.25 billion originated from non-basic activities (RUG/CBS 1999). Assuming a linear relationship between turnover and value added, B equals 0.361. Substituting B in (4) gives an export-base multiplier of 1.57. The interpretation of this is that an increase in GDP_b of 1 Euro will lead to an increase of GDP_t of 1.57 Euro.

On the basis of the multiplier, it is possible to compute the total economic impact of NSAF. Not all of these activities can be considered basic. Therefore, a distinction must be made between basic and non-basic NSAF. This is done in the next section.

Data and basic ratios

In this section, the basic ratio of nine categories of NSAF is determined. The basic ratio is defined as the percentage of the value added which can be considered 'basic', *i.e.* meant for export.

For *biological production,* it is assumed that the basic ratio equals the basic ratio of the agricultural sector in Zeeland. The basic ratio of the agricultural sector of Zeeland equals 70% in 1992 (RUG/CBS 1999). This implies that the basic ratio of biological production is also 70%. *Quality products* are being sold in local markets and non-local markets. Because the ratio between these two markets is unknown, the basic ratio of quality production is based on the basic ratio of the agricultural sector in Zeeland; 70%. The category *diversification* consists of activities related to horse business, energy production, and water storage. With the available data, it was not possible to compute a reliable basic ratio for this class of activities. Therefore, it is assumed that these activities have the same basic ratio as the agricultural sector as a whole: 70%.

Agri-tourism consists of activities which all can be stated as basic. The assumption is made that most of the income out of activities related to agri-tourism is from other regions. Therefore, the basic ratio of agri-tourism will be 100%. Income out of activities related to *nature and landscape management* is mostly generated by national subsidies. Consequently, the basic ratio will be 100%.

New economic activities is a category, which consists of caring activities on farms and non-agriculture related uses of farm buildings. On the basis of impact data provided by FAIR, it is calculated that new economic activities have a basic ratio of 63% (the calculation is shown in Appendix 1).

The category s*hort production consumer chains* is characterised by the small number of intermediates. In practice, this will mean a short distance between production and sales, with almost no export involved. For this class of activities, it is safe to assume a basic ratio of 0%. *Cost reduction* activities are not involved in money transactions between Zeeland and other regions, which leads to a basic ratio of 0% as well.

Off-farm income is a category basic ratio of which can be based on the total export base multiplier of Zeeland. The value of this multiplier is 1.57, which implies a basic ratio of 100/1.57 = 64%.

RESULTS

Impact on value added

On the basis of the basic ratios above, it is possible to distinguish between the basic and non-basic part of the

Table 2. Value added of NSAF in Zeeland in 1998

Activity	Basic ratio (%)	Value added in 1998 in Millions of Euros	
		total	basic activities
Biological Production	70	0.91	0.64
Quality Production	70	5.91	4.14
Agritourism	100	3.18	3.18
Short Production Consumer Chains	0	5.00	0
New Economic Activities	63	12.73	8.02
Diversification	70	0.91	0.64
Nature and Landscape Management	100	0.45	0.45
Cost Reduction	0	10.45	0
Off-farm Income	64	63.18	40.44
Total	56*	102.72	57.51

* Weighted mean
Source: Based on data provided by FAIR (2000)

Table 3: Value added of NSAF in Zeeland in 2008

Activity	Basic ratio (%)	Value added in 2008 in Millions of Euros	
		total	basic activities
Biological Production	70	5.45	3.82
Quality Production	70	18.64	13.05
Agritourism	100	11.82	11.82
Short Production Consumer Chains	0	7.73	0
New Economic Activities	63	18.18	11.45
Diversification	70	1.82	1.27
Nature and Landscape Management	100	2.73	2.73
Cost Reduction	0	27.27	0
Off-farm Income	64	92.73	59.35
Total	56*	186.37	103.49

* Weighted mean
Source: Based on data provided by FAIR (2000).

Table 4. Share of basic NSAF in total value added of basic NSAF in 1998 and 2008

Activity	Value added 1998 in Millions of Euro's	Share (%)	Value added 2008 in Millions of Euro's	Share (%)	Growth 1998–2008 (%)
Biological Production	0.64	1	3.82	4	497
Quality Production	4.14	7	13.05	13	215
Agritourism	3.18	6	11.82	11	272
New Economic Activities	8.02	14	11.45	11	43
Diversification	0.64	1	1.27	1	100
Nature and Landscape Management	0.45	1	2.73	3	506
Off-farm Income	40.44	70	59.35	57	47
Total	57.51	100	103.49	100	80

Source: Based on data provided by FAIR (2000)

activities concerned. Tables 2 and 3 contain the results for the years 1998 and 2008 respectively. Table 4 shows the share of basic NSAF in the total value added of basic NSAF in 1998 and 2008.

The share of agri-tourism in total GDP of basic NSAF will increase from 6% in 1998 to 11% in 2008. The share of biological production, quality production and nature and landscape management will increase as well. These shares demonstrate the growing importance of some non-standard economic activities on farms.

Impact on employment

In order to estimate the total impact F of NSAF on total employment in Zeeland in 1998 and 2008, we divide the amount of value added by the value added per full-time equivalent (FTE). This is Euro 56.648 (see Appendix 2), and is assumed to be constant. With the help of Equation (5) the results F in terms of employment for 1998 and 2008 can be computed.

$$F = \frac{1.57\,GDP_b + GDP_{nb} - [(0.0185)\,0.57\,GDP_b]}{56.648} \qquad (5)$$

In Equation (5) the term $1.57GDP_b + GDP_{nb}$ represents the initial economic impact including the multiplier effect. The term $[(0.0185)0.57\ GDP_b]$ represents the double counting in the multiplier effect which must be deducted from the initial economic impact to avoid double counting. The theory behind this is as follows. The value added of the multiplier effect in Zeeland in 1998 equals $0.57 \times GDP_b = 0.57 \times$ Euro 57.51 million = Euro 32.78 million. This is the value added generated by non-basic activities. A part of these non-basic activities is already counted in GDP_{nb}. The remaining part of the value added consists of non-basic activities, which are not generated by NSAF. The value added of all non-basic activities in Zeeland in 1998 equals Euro 2450 million (CBS 2001). The value added of all non-basic NSAF in that year equals Euro 45.21 million, which is 1.85% of all non-basic activities. This percentage is assumed to be constant.

Substituting the value added numbers of Table 2 in equation (5) generates the results listed in the upper part of Table 5. From this table, it can be concluded that the total economic impact of NSAF in 1998 equals Euro 134.89 million, which is equal to 2381 fte in terms of employment. Substituting the value added numbers of Table 3 in Equation (5) generates the results listed in the lower part of Table 5. The expected total impact of NSAF in 2008 equals Euro 244.27 million, which is equal to 4312 fte.

The data in Table 5 are based on a basic ratio of 56%. In order to get an idea of the sensitivity of the results to changes in the basic ratio, we now assume that the basic ratio equals 100% for all NSAF. So, in this scenario, non-basic NSAF do not exist. The results of this scenario are presented in Table 6.

In both scenarios (low and high basic ratio), the number of FTE will grow over the period of ten years with

Table 5. Impact of NSAF, in 1998 en 2008, with a basic ratio of 56%

	Value added in Millions of Euros	Multiplier effect	Multiplier	Impact in Millions of Euros	Double counting in multiplier effect	Total impact in Millions of Euros	Total impact in fte
Basic activities in 1998	57.51	yes	1.57	90.29	–0.61	134.89	2 381
Non-basic activities in 1998	45.21	no	1	45.21	0		
Basic activities in 2008	103.49	yes	1.57	162.48	–1.09	244.27	4 312
Non-basic activities in 2008	82.88	no	1	82.88	0		

Table 6. Impact of NSAF in 1998 and 2008, with a basic ratio of 100%

	Value added in Millions of Euros	Multiplier effect	Multiplier	Total impact in Millions of Euros	Total impact in fte
1998	102.72	yes	1.57	161.27	2 847
2008	186.37	yes	1.57	292.60	5 165

Table 7. Increase in employment (fte) generated by NSAF in the period 1998–2008

Basic ratio	fte in 1998	fte in 2008	Increase of fte 1998–2008	Increase per year
56%	2 381	4 312	1 931	193
100%	2 847	5 165	2 318	232

more than 80%. In the period 1998–2008, on the basis of a basic ratio of 56%, NSAF would generate an increase in employment of 193 FTE per year. With a basic ratio of 100%, NSAF would even generate an increase of 232 FTE per year (Table 7).

CONCLUSION AND DISCUSSION

Two main conclusions can be drawn from the foregoing. It is estimated that employment will show an increase of 193 full-time equivalents per year in this decade as a consequence of an increase in non-standard economic activities on farms. This growth is mainly caused by the expected rise in agri-tourism. A second overall conclusion is that the export base theory is a fruitful method to assess the regional economic effects of non-standard economic activities on farms. The method presented in this paper may be applied to other regions as well. In this way, regional disparities can be studied.

In applying the model, we made several assumptions. They can be divided into two categories: firstly, assumptions with respect to substitution and, secondly, assumptions with respect to data and the computation of multipliers and basic ratios.

Firstly, in our approach the role of substitution is not taken into account. An increase of NSAF may lead to a decrease of traditional agricultural activities. Assuming that substitution occurs, the growth of employment will be less than computed. However, farmers generally consider agri-tourism to be a hobby (LNV 1997). Therefore, agri-tourism is not very sensitive to substitution. Furthermore, we assume that NSAF does not lead to a decrease in demand for goods and services produced by other sectors of the regional economy.

Secondly, the multiplier of both the agricultural sector and the total economy of Zeeland are computed on the basis of 1992 data (RUG/CBS 1999), the latest available data set. We assume that these data are still valid today and further, that multipliers are constant over the years. Therefore, the 1992 multipliers may be used for the impact calculations in 1998 and 2008. The multipliers are computed from turnover data, where FAIR gives value-added numbers for NSAF. We assume that the basic ratios in terms of turnover are identical to the ones in terms of value added. Because of lack of specific data, we determined the basic ratios of biological production, quality production and diversification on the multiplier of the agriculture sector in Zeeland as a whole. The basic ratio of new economic activities is based on national data provided by FAIR (2000). We assume that national ratios also hold for the Province of Zeeland. The basic ratio of off-farm income is computed on the basis of the total multiplier of Zeeland as a whole. Information about the range of activities in this category is not available. We assume that the national figure for GDP per FTE is also valid for the Province of Zeeland and that it is constant over the period 1998–2008.

Nevertheless, notwithstanding the possible neglect of substitution and the other assumptions we have made, this study clearly shows that non-standard economic activities on farms are far from negligible at present and will become more and more important as a part of the farmers income in the near future.

Appendix 1. Basic ratio of new economic activities in former farm buildings

The national impact of new economic activities in 1998, which consists of activities in former farm buildings, counted 154.3 million Euro. Seven different functions of former farm buildings could be distinguished (FAIR, 2000). In Table A1, the seven forms are listed.

The export-base multiplier of trade, car related business and industry equals the one for industry: 1.57. The corresponding basic ratio is 64%. The one for catering and recreation is assumed to be 100%, while the basic ratio of agriculture activities is based on the export base multiplier of the agriculture sector in Zeeland: 70%. Private Sales and Storage are activities, which are not involved in money transactions between Zeeland and other regions. Therefore, it is safe to assume a basic ratio of 0%.

Table A1. Basic ratio of new economic activities

Activity	Basic ratio (%)	Factor	Weighted basic ratio (%)
Car related business	64	0.32	20.5
Industry	64	0.35	22.4
Catering and recreation	100	0.10	10.0
Agriculture activities	70	0.11	7.7
Private sales	0	0.03	0
Storage	0	0.05	0
Trade	64	0.04	2.6
Total		1.00	63

The column factor contains the share of each activity in the total impact (FAIR 2000). The factor multiplied by the basic ratio gives for each activity the weighted basic ratio. All seven weighted basic ratios together lead to a basic ratio of the category new economic activities, which is 63%.

Appendix 2. Calculation of GDP per FTE

In Table A2, the procedure for the calculation of GDP in Euro per FTE is given for the year 1998. The total GDP divided by the total number of full-time equivalents leads to a GDP of 56,648 Euro per FTE in 1998.

Table A2. Calculation of the GDP per fte in Euro in the Netherlands in 1998

	12–19 hours per week	20–34 hours per week	> 35 hours per week	Sum
Labour force	526,000	1,462,000	4,621,000	6,609,000
Number of working hours	8,153,000	39,474,000	173,287,500	220,914,500
Total number of fte's				5,522,863
Total GDP				3.13×10^{11}
GDP per fte (Euro)				56,648

Source: http://statline.cbs.nl/statweb/index.stm

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Arrived on 28th November 2001

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