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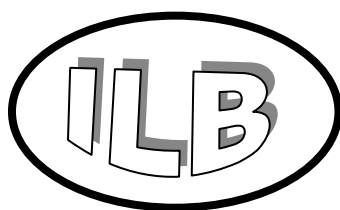
System Dynamics and Innovation in Food Networks 2013

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EU School Fruit Scheme: Strengthening Local Businesses

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Abstract

The EU School Fruit Scheme (SFS) provides children with fruits and vegetables (F&V), aiming to promote consumption of F&V among European school children. In addition, another objective of the program is to stabilize the fruit and vegetable market in the EU. The program varies between EU countries and with respect to some countries, e.g. Germany, even between the different federal states involved. This paper will concentrate on the specific situation in North Rhine-Westphalia (NRW), Germany.

Our research therefore aims to map and analyze the situation of companies involved in the SFS in NRW, to reveal the social and economic driving forces for those companies to get engaged in the SFS, identify the networks that have developed as well as the factors that lead to success for those companies. For this purpose quantitative data of commodity flows of delivered goods and the logistics are combined with case studies gained from qualitative Interviews.

The results show, that companies involved in the school fruit scheme range from small farms and one man retail businesses to large multinational retail companies. According to our findings especially small and medium sized enterprises (SME) benefit from the SFS in NRW. In urban areas some firms have developed relationships with more than 30 schools leading to high turnover for these companies from their engagement in the SFS. Generally supply relationships vary in economical characteristics (variety, product value, origin) as well as in social attributes (motivation, social embedding).

Keywords: *Alternative foot networks, Local production, Rural development, SME, Farm-to-school, Regional food procurement*

1 Introduction

The structural changes in the German fruit-growing and horticultural sector and its production, marketing measures and sales over the distribution channels are still in progress. A decrease of the number of producing enterprises can be noticed coming along with an increase of the total acreage for fruits or an intensification of cultivation methods (Steinborn, Bokelmann 2007). Between 1994 and 2005 more than 40 % of all fruits and vegetables growing farms had to give up production. This was especially the case for small sized farms, which are particularly affected by structural changes (Dirksmeyer 2009). Policy driven initiatives to foster the marketing of regionally produced food to institutional buyers have been realized as a new instrument to bring producers and consumers together in more sustainable food networks (Peterson et al. 2010). To bring more locally grown food into the school food supply within the framework of institutional purchasing school programs have proven to be a common way. The European School Fruit Schemes (SFS) initiated by the European Union belongs into this group. The SFS provides children with fruits and vegetables (F&V), aiming not only to promote consumption of those products among European school children but also to stabilize the F&V market in the EU by supporting local production (Europäischer Rechnungshof 2011). For the school year 2009/10,

24 EU Member States had declared their intention to participate in the EU School Fruit Scheme (SFS). While the effect on the nutrition of school children has been evaluated in several scientific studies (European Commission 2013), an analysis of the impact of the SFS on the local economy is so far missing.

Also in other countries like the US the interest in school programs have raised from concerns about the reduced viability of local agricultural production in several regions, along with a deterioration of the health status among children related to diet and lack of access to fresh F&V (Bagdonis et al. 2009; Vogt, Kaiser 2008). In fact, these US programs have proliferated in the past several years, with estimates of over 1,000 programs active in 34 federal states (Kalb 2008). Over the last decade a research stream has gradually evolved, investigating other sustainable food system initiatives, such as farmers' markets and community supported agriculture. Especially in the US also schools are included in this research. But empirical investigations on the US farm-to-school and fresh fruit and vegetable programs are in contrast still scarce (Peterson et al. 2010; Izumi et al. 2010a). The analysis of local school procurement schemes as one form of alternative (agri-)food networks (AFN) and local food networks has only recently gained attention in the academic literature (Izumi et al. 2010a). Otherwise especially case studies from self-initiated school supply systems can be found (Bridger 2004). The results can't be applied reliably to school programs in general.

Izumi et al. focus in their study on the role of farmers (Izumi et al. 2010b) and regional-based food distributors (Izumi et al. 2010a) participating in farm to school programs. They analyze the economic outcome as well as the social benefits generated by food programs between local suppliers and schools. Farmers participating in the survey indicated that their school food service sales make up only a very small percentage of their farm income ranging from less than one percent to about four percent (Izumi et al. 2010b). Also other studies show that revenue generated through school food service sales have only a small to negligible impact on farmers' incomes (Joshi, Beery 2007; Ohmart 2002). However, though school food service sales often make up only a tiny percentage of farmers' total sales, the results of those studies also indicate that farm to school programs were consistent with farmers' overall strategy to spread their risk across different markets. Diversifying their markets is considered by farmers as an important strategy to remain economically viable given the volatile climate that is prevalent in agricultural markets (Izumi et al. 2010b). This holds to a similar extent for small- and medium-sized enterprises (SMEs) trading fruits and vegetables. Given the increasing concentration within the production-to-retailer chain imposes a challenge for agricultural and other rural SMEs. Thus, one response of SMEs to the existence of large and partly multinational competitors and supply chain partners in the value chain has been differentiation (Hinson 2005).

While those economic aspects and the perceived future market potential of school food service are considered by farmers as an important reason for participating in those programs farmers also emphasize non-economic motivators. Those include the social benefits expressed in terms of children's dietary habits and farmers' desire to support the local community (Izumi et al. 2010b). This reveals that social embeddedness plays a role for farmers' participation in such programs. The theoretical approach of social embeddedness is consistent with the often quoted definition of alternative and local food systems which "are rooted in particular places, aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practices, and enhance social equity and democracy for all members of the

community.”(Feenstra 1997) In addition to this broad definition there are four key characteristics claimed for AFNs compiled in a literature review by Tregear (2011): First, local limitation, which may be through production, processing, retailing and consumption taking place within a prescribed geographic area (Marsden et al. 2000) embodying natural or cultural features of that area (Ilbery et al. 2006). This may not exclude, that the latter are retailed and/or consumed at some distance from the area of production (Renting et al. 2003). Second, economic viability which is obtained by increased margins (La Trobe 2001) or opportunities for diversification and entrepreneurship (Carol Morris 2003). Third, ecological sustainability which implies e.g. reduced food miles and carbon emissions (Renting et al. 2003) and fourth social justice. The latter is achieved by reconfiguring relations between producers and consumers in a more trustful and committed way (Ilbery, Maye 2005). The many existing forms of AFN are not always in line with all of these characteristics. Thus AFN is sometimes defined in a broader sense and uses as a universal term for a diversified set of food systems in contrast to mainstream food systems (Tregear 2011).

As well as the US farm-to-school the SFS in NRW should be discussed within the background of AFN. Thus, it seems of interest to get a better understanding of the characteristics of those firms involved in the SFS in NRW, their motivation to enter this program and the key factors that determine the success for a firm’s participation in the SFS. This also leads to the question whether the incentives of the SFS are set in the right way. An additional objective of the paper is to investigate the market structure (concentration) and its development over the last years in this market segment.

2 The specifics of the SFS in NRW

The SFS in NRW started in 2009/2010 in 355 schools providing F&V for 65.000 pupils. The number of schools rose to 851 in 2012/2013 with a total of 110.000 pupils benefiting from the program. While in the first year the rules requested that every pupil gets daily a portion of F&V, in the meantime the frequency of intervention has been reduced and schools can now choose whether they prefer on 3 or 4 days a week a portion of F&V for their students. The price the F&V suppliers receive is fixed (30 cents/100 g in 2012/2013) as is the quantity of F&V each child receives (100g/portion). Firms interested to provide schools with F&V in the framework of the SFS in NRW can apply for authorization without any company-specific requirements as long as the firms accept the mentioned framework. Schools eligible to receive F&V in the context of the SFS can choose from the list of authorized suppliers, which is published on the official NRW SFS website¹. The schools, taking part in the SFS, are published on the same website. Normally² both sides can cancel the supply relationship within a short period of time. Thus, if schools are not satisfied with the quality or service of their seller they can terminate this relationship and choose another authorized supplier. Along the same lines providers can decide to terminate the relationship if e.g. the co-operation with the school is not felt beneficial. This procedure secures a direct relationship between suppliers. There is no maximum number of schools an enterprise can provide with F&V. Also the variety of different F&V is not prescribed by administration. There is only the suggestion to deliver a variety of F&V if possible with an appropriate share of

¹ www.schulobst.nrw.de

² This is not possible in those periods where the budget for NRW has not been approved.

local and organic production supplemented by a list of recommended F&V³. This way suppliers can differentiate themselves from their competitors not via price but through the quality, origin and variation as well as the service of their offer.

3 Methods

Little is known about schools and suppliers in the specific market segment of the SFS. Thus, qualitative interviews are considered as the most appropriate method for gaining an understanding about this local food network (Duval, Moy 2011), (Bruno 2009), (Spiller, Lülfs-Baden 2007), (Bridger 2004), (Izumi et al. 2010b), (Izumi et al. 2010a). Based on the SPSS⁴ method of Helfferich (Helfferich 2011) a guideline for semi-structured interviews was developed. A group of five researchers with different research focus took part in this process. According to the SPSS method the first step „S“ is the gathering (sammeln) of relevant questions. It is an open brainstorming process in which as many as possible questions should be collected. All questions are seen as desirable in this first step. In the second step „P“ (prüfen) questions are examined regarding their suitability and those which do not seem to fit are dismissed. Helfferich considers pure fact questions, Yes/No questions, questions which only confirm prior knowledge and those which the respondent is not able to answer as not suitable. In the third step „S“ questions are sorted according to main themes and then in the final step „S“ subsumed in the interview guideline starting with a narrative-generating introductory question for each main topic (Helfferich 2011). As interview partners a stratified random sample of 12 SFS suppliers were selected based on the following criteria: different business types (e.g. farmer, retailer, greengrocer or wholesaler), company size, production type (organic or non-organic), number of served schools and geographical area (urban or rural).

The interviews were conducted mostly face-to-face and, in some cases, over the phone between February and September 2013 and all were digitally recorded and later transcribed verbatim by external transcribers. For the analyses a coding template has been developed and tested by two people separately on the same interview to test for intercoder reliability. The analyses were compared for differences and similarities and adjustments were made to get a match over 80 %. After that all interviews were coded by the coding template using the Qualitative Data Analysis (QDA) software Atlas.ti.

To gain an additional insight into the overall market we combined the obtained results of the qualitative study with a quantitative data analysis. The data is analyzed by univariate statistical analysis. This includes a general market overview as well as daily data of sale volumes of all companies participating in the SFS 2011/2012 in NRW. To investigate the F&V variety we calculated the Gini coefficient of the relative amounts of delivered F&V per school in the whole population of all schools involved in 2011/12 by the following general gini formula:

$$gini = \sum_{i=1}^n h_i \frac{2i - n - 1}{n} \text{ with } 0 \leq gini \leq 1 - \frac{1}{n}$$

(h_i = characteristic value in ascending order, n = constant)

³ www.schulobst.nrw.de/fileadmin/Dokumente/Formulare-Downloads/Anlage1-Produktliste.pdf

⁴ SPSS stands for „Sammeln“, „Prüfen“, „Sortieren“ and „Subsumieren“ which refers to „Gathering/Collecting“, „Examining“, „Sorting“ and „Subsuming“.

A respective coefficient of 0 implies that every kind of all potential F&V has the same share in the total delivery and thus a very high variety. A coefficient close to 1 in contrast indicates that one kind of F&V is provided to the schools.

4 Results

In this section we first provide a general overview with respect to the development of the supply and demand side of the SFS market based on quantitative data. In a second step we combine the results of the qualitative survey and a quantitative analysis of firm specific sales volumes of all firms participating in the NRW SFS.

4.1 The structure and development of the SFS market segment

While from 2009 to 2010 and thus from the first to the second year of the NRW SFS the number of active suppliers in the SFS significantly increased from 87 to 100 (15%), the rate of growth considerably slowed down to only 1% in the following year leading to 103 participating suppliers in 2012/2013. As already mentioned, over the same period the number of schools increased from 355 to 851. As a result of this development, the average number of schools per suppliers rose from 4.1 to 5.7. The majority of distributors supplies only one or two schools with F&V (fig. 1). The share of this group, however, has decreased over time from 55.2 % to 45.6 %. In contrast the group of companies supplying three to up to five schools remained almost constant. It fluctuated over the period 2009/10 to 2012/13 between 21,5 % and 26,2 %. Overall the share of those suppliers that provide more than 5 schools with F&V has increased from about 19,6 % to 28,2 %. Interesting is that especially the group of suppliers that supply between 21 and 30 schools show a high growth rate (from 1,2 % in 2009/10 to 6,8 % in 2012/13).

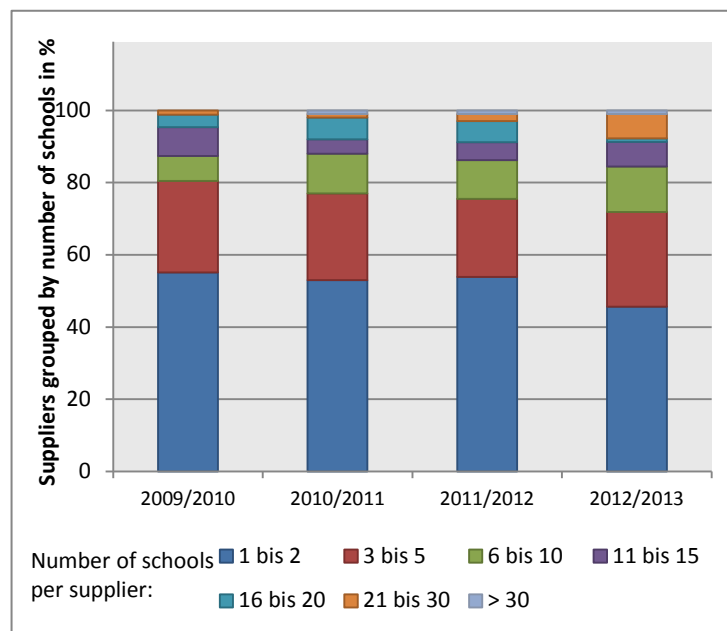


Figure 1. Supplier structures grouped by number of schools between 2009/10 and 2012/13

Though, according to Figure 1 most suppliers (45.6%) fall in the group of ‘small’ suppliers in that they only provide 1 or 2 schools with F&V, the picture changes when considered from the perspective of the schools. Only 11.9 % of all schools involved in the NRW SFS receive their F&V from this group. By contrast the relative small group (7.8 %) of ‘large’ suppliers with more than 20 schools provides F&V to 37.3 % of the participating schools (fig. 2).

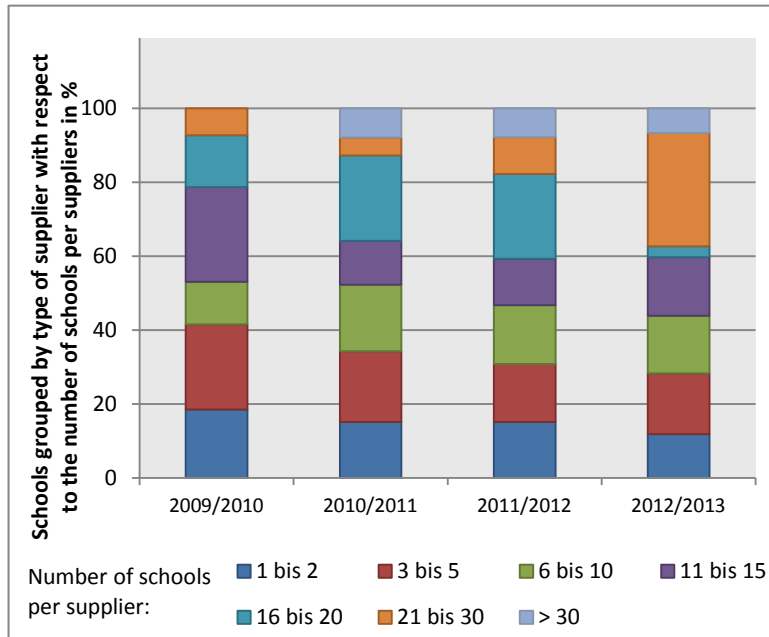


Figure 2. School structures grouped by suppliers with respect of number of schools between 2009/10 and 2012/13

Figure 2 also reveals that the share of schools supplied by providers with up to 5 schools is declining, whereas especially those suppliers that distribute F&V to between 21 and 30 schools have increased their market share.

Year	Gini coefficient
2009/2010	0,526
2010/2011	0,561
2011/2012	0,588
2012/2013	0,577

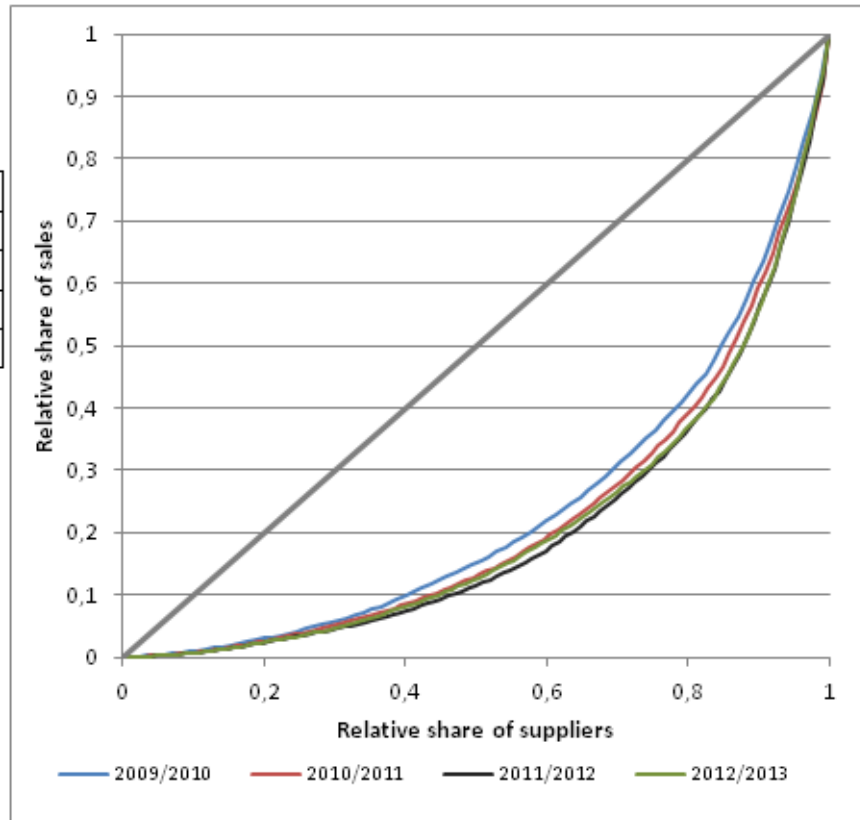


Figure 3. Sales distribution of SFS suppliers between 2009 and 2013

The development described above is also revealed in Figure 3 using the Lorenz curve of sales distribution. Within the first three years of the NRW SFS a downwards shift of the curve can be observed indicating an increased concentration. This is also revealed by the corresponding Gini coefficients. The school year 2012/2013 in contrast is characterized by a slight upward shift of the associated Lorenz curve and accordingly a decrease of the Gini value.

4.2 Characteristics of the qualitative sample

A total of 12 enterprises involved in the NRW SFS have been interviewed in the school year 2011/2012. The main characteristics of the survey participants are summarized in table 1. Based on our sample we can show that companies involved in the SFS range from small farms and one man retail businesses to large multinational retail companies. In urban areas some firms have developed relationships with 30 or more schools leading to high turnover for these companies generated from their engagement in the SFS.

Table 1. Characteristics of interviewed suppliers in the SFS

Firms	Number of employees (farms without seasonal workers)	Business type	Geographical area (by DESTATIS)	Number of schools (SFS market share by volume of sales 2011/2012)	(Percentage of total sales to SFS sales (2011/2012))	Gini coefficient of F&V variety
Firm A	150	Food retailer with a very high share of delivery service.	Rural/semi-urban (urban delivery area)	7 (1,5 %)	≤ 2 %	0,74
Firm B	120	Importer / wholesaler F&V	Urban	2 (0,3 %)	≤ 1 %	0,61
Firm C	≤ 5	Greengrocer	Urban	19 (4,7 %)	80 %	0,59
Firm D	≤ 10	Farmer / Greengrocer	Urban	7 (1,4 %)	15 %	0,75
Firm E	≤ 10	Farmer	Urban	2 (0,3 %)	≤ 5 %	0,69
Firm F	≤ 10	Farmer (organic)	Rural/semi-urban	5 (1,2 %)	20 %	0,69
Firm G	≤ 5	Supermarket franchisee (specialized in niches)	Urban	1 (0,4 %)	5 %	0,47
Firm H	≤ 10	Farmer (single crop)	Rural/semi-urban	1 (0,1 %)	≤ 1 %	0,87
Firm I	≤ 30	Farmer	Urban	40 (7,4 %)	20 %	0,72
Firm J	> 500	Wholesaler	Urban	3 (0,9 %)	≤ 1 %	0,69
Firm K	≤ 30	Farmer (no F&V), organic delivery service	Urban	3 (1,2 %)	3 %	0,77
Firm L	≤ 10	Food retailer with a moderate share of F&V delivery service.	Rural/semi-urban	1 (0,2 %)	≤ 1 %	0,67

Table 1 reveals that four out of all twelve interviewed suppliers (C, D, F, I) were able to generate between 15 % and 80 % of their total revenues via the SFS and thus a considerable share of their total sales. Three of these large suppliers (C, D and I) indicated that their participation in the SFS has led to an increase in their sales as well as in their profits. In contrast supplier F confirms an increase in sales, however, without generating any additional direct profit due to higher purchase prices for organic goods.⁵ For all other enterprises the sales generated through the SFS is 5 % (Firm G) or below.

4.3 Motives of firms to get engaged in the SFS

One objective of the qualitative study was to obtain insights with respect to the main motives for companies to get involved in the SFS. Nearly all respondents mentioned direct or indirect economic reasons for entering the SFS. Seven of the twelve suppliers expected a significant growth in turnover (Enterprise C, D, F, G, H, I, L), in some cases to compensate a general decline in sales (e.g. Firm C). Enterprise A did not expect a direct increase in its turnover, but hoped to

⁵ This statement is confirmed by the second organic supplier (K).

reduce the costs in terms of its core business by combining the deliveries in the framework of the SFS with existing delivery routes. Firms B and J, which represents large scale enterprises, expected that the program would cover its costs. Their primary motive for joining the SFS was, however, to generate general market information and they planned to intensify their engagement only if the involvement in the program proved to be rewarding. Other suppliers believe in children as today's or tomorrow's customers (Firms B, C, H) or want to fill capacity gaps (Firm L) in their daily operations. Several small companies in rural and peripheral regions (E, F, L) state that there has not been a direct increase in their profits due to their involvement in the SFS, however, they believe in indirect benefits due to positive image effects and new costumers among parents and children, because of their close and personal contact developed through the SFS.

Furthermore several suppliers underlined the willingness to support children's nutrition. Case F stated explicitly the goal to enable the access to healthy, locally produced organic F&V to children and the need for personal interaction between suppliers and schools. Another clear example for the social linkage is supplier H, who continues supplying the school, though this activity generates no profit. Nevertheless he remains engaged because he has his own children in one of the classes. The delivery of the F&V is combined with the transportation of the children to school. Farmer E, located in a peripheral region, noted the close cooperation with the children, who often pick up the F&V themselves or help at the harvest in summer holidays. Firm K is another interesting case as this firm already had delivered F&V to schools prior to the start of the NRW SFS financed by the parents of the school children. Due to this linkage and for image reasons supplier K continued the supply relationship with these schools, although the owner didn't believe to generate an additional profit. Also a wholesaler had indicated in the interview that their further participation in the SFS is not economically but socially motivated. The company sees their involvement in the SFS as a social commitment which is desired by the corporate management (J). The cases described in the previous section underline the social level within the supply relationship. These findings confirm the thesis of social embeddedness in AFN mentioned in the introduction.

4.4 Success factors for participation in the SFS

To identify those factors that determine the success of participating in the NRW SFS, we first take a closer look at the characteristics of those four companies (C, D, F, I) with relatively high shares of SFS sales in relation to their total sales. All those firms are small in size and state this to be an advantage in customer acquisition as it generates a positive image at the level of the schools. In addition, the small size is seen as a benefit as it allows the firms to react flexible to the requests of the schools on a very personal level (C, I). Own local production (D, I) is as well considered as a plus especially in the acquisition of schools. This holds as well with respect to organic production. Those suppliers attract schools with specific organic requirements. Thus, the ability to supply organic F&V provides those suppliers with a differentiation criterion and thus a competitive advantage vis-à-vis their competitors (F, K). The latter proves to be especially important in urban areas. In those more densely populated areas schools with a high number of pupils are lucrative for suppliers and are thus contacted by a huge number of providers. In contrast to suppliers in rural areas those from an urban delivery area are aware of existing

competitors or see themselves in a direct competition with other suppliers. In order to gain significant market shares an active customer acquisition is considered indispensable. Suppliers (A, C, D, I) do this by personal visits, free product samples or by inviting schools to visit the farm in case of own production. One of the suppliers, which mentioned in our interviews that big schools are more attractive from an economic, confirmed that these schools are sometimes better treated e.g. by a higher delivery frequency (C). We are interested also to see whether that holds with respect to the delivered variety of F&V. To investigate this we calculated the Gini coefficient of the relative amounts of delivered F&V per school in the whole population of all schools involved in the SFS in 2011/12. A respective coefficient of 0 implies a very high variety and thus that every kind of all potential F&V has the same share in the total delivery. A coefficient of 1 in contrast indicates that one kind of F&V is provided to the schools. The results are slightly though significantly correlated ($-0,21$, Pearson, $p = 0,01$) with the size of the schools (fig. 4) indicating that the F&V variety is slightly higher in bigger schools. Comparing the average Gini coefficients of suppliers located in urban and rural area, however, shows no significant difference.

Those suppliers that wait to be contacted by the schools and thus rely on the public suppliers list at the administration website or word-of-mouth recommendation seem to have in general a lower market share (B, E, F, G, H, J, K, L).

It is striking that those three firms (C, D and I) in our qualitative survey that not only generate a high share of their sales through the SFS but also indicated that this activity has been very profitable lie in urban areas. To see whether this phenomenon might also hold for the whole population of firms active in the SFS we compared the sales of urban suppliers with those of their rural counterparts for the year 2011/12. The results reveal that average sales of urban suppliers generated by the SFS are more than 55 % higher than those of rural/semi urban suppliers (tab. 2).

Table 2. Comparison between urban and rural suppliers with respect to their average sales quantities

Geographical area	n (n=103)	Average sales in kg 2011/2012	Std. Error	T	df	Sig.
Rural/semi-urban	43	9394	1856,10	5,0610	42	0,00
Urban	60	16448	2748,14	5,9851	59	0,00

Early entry in the SFS market is mentioned in the qualitative interviews as a further success factor. Thus, companies that entered the program at an early stage are perceived to have a first mover advantage. They are assumed to be better positioned in the market compared to those competitors that got involved into the market at a later stage. To investigate whether this perception indeed holds for the SFS market we run a correlation analysis with all 103 suppliers involved in the SFS in 2011/2012 between sales volume of each supplier and their entrance in the SFS (every supplier was allocated a number in chronological order of their entrance in the

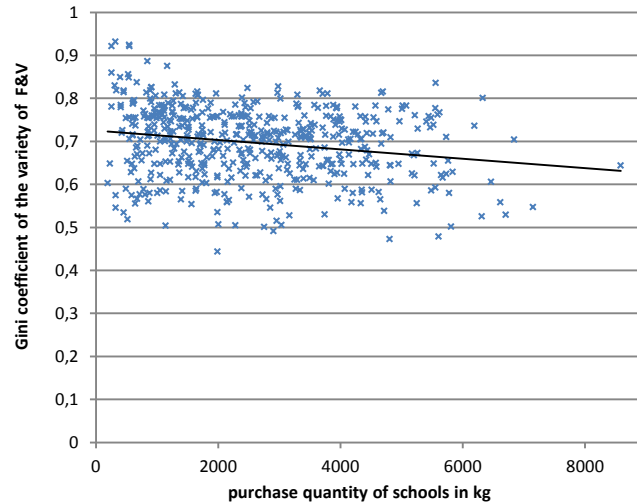


Figure 4. Relation between delivered variety of F&V and purchase quantity of schools 2011/2012

market⁶). We obtained a correlation of -0.58 (Spearman, $p = 0,01$), which supports the insights we gained in the qualitative interviews that first movers have an advantage in the SFS market. Further our interview partners mentioned that the supply of the F&V service to schools in the framework of the SFS is linked to economies of scale (I). Those scale economics exists in the procurement of the F&V, as firms that order larger quantities benefit from lower per unit prices. Firms involved in the SFS can in addition realize economies of scales for some parts of paperwork and bureaucracy which are emphasized as a huge problem by nearly all respondents. For those firms that have a higher sales volume e.g. the introduction of specific software programs to ease the bureaucratic burden can be reasonable. Though larger companies have the advantage of specialized accounting staff (B), otherwise the SFS processes are for those companies highly resource and time consuming, and lead to a disruption of the main operations (J). Processes and facilities (e.g. transportation capacities or packaging conventions) of large companies are described as being in general oversized for an efficient implementation of the SFS in these firms. From the neoclassical economic view the question arises why those latter firms remain in the SFS. Indeed one of the wholesalers from our qualitative interviews quit their participation in the SFS a few weeks after the interview. So from economic perspective, the SFS appear to be economic rewarding only for some companies while others seem not to benefit from the participation in the program.

5 Conclusion

While the findings of previous studies indicated that regional programs in relation with F&V school procurement has a minor impact on the overall business of the involved companies, our results reveal that the SFS offers the possibility to become an important part of local producers and retailers sales. According to our findings especially SME benefit from the SFS in NRW. For

⁶ These numbers indicate the order of entrance, not the exact date.

some suppliers the program induced a complete shift in their core business, meaning that old relations were more or less completely abandoned.

Combining qualitative information of firms with sale volumes allows to distinguish different types of actors:

1. Small F&V retailers and F&V producers in urban areas: These firms are active in the acquisition of new schools, have as a group a high market share in the overall SFS, and the SFS sales make up a considerable share of their respective business sales. Participation in the SFS seems to be commercially rewarding. These firms can respond quickly and flexibly to the requests of schools.
2. Big firms (e.g. wholesalers): The logistics of these firms are oversized for the small quantities to be delivered to schools. Their relevance in the overall SFS in NRW is low and the sales of the SFS are negligible relative to the size of their overall business. Either they leave the program or seem to have no primarily economic interest in the program.
3. Small F&V retailers and F&V producers in semi-urban areas: Those firms are often highly social embedded in the communities where they supply schools. They are in general not active in the acquisition of new schools. Some of these suppliers offer organic F&V and a personal level of communication. Their involvement in the SFS is often not primarily profit motivated.

The results show different key determinants of economic success. The first mover effect of suppliers is a relevant advantage. As already mentioned an active customer acquisition is necessary to attract enough schools. A quick and flexible reaction is needed, especially when new schools are published on the official SFS website. Because of this, especially schools with a high number of pupils which are economically rewarding, tend to receive a better treatment with respect to delivery conditions to strengthen their loyalty towards their respective suppliers.

Suppliers in rural areas generally have more difficulties because schools are often smaller which implies a lower sales volume per school. In addition, distance between schools is higher. The demand for organic products is both a curse and a blessing for farmers. On the one hand organic products are attractive to several schools and therefore ease the acquisition of schools. On the other hand it is hardly possible to make profit with organic products given the higher product costs but the fixed price that suppliers receive. In case policy wants to promote the delivery of organic products to schools it seems questionable whether incentives in the present SFS with the same price for conventional and organic products are set in the right way. In addition, it seems that in the present system rural suppliers are disadvantaged which in some cases makes it difficult for schools in rural areas to even find a supplier. A more differentiated payment system might be an option to also remedy this problem. In spite of the fact that some of the suppliers do not make profits, it is remarkable that some of them continue their participation because of social embeddedness. This, however, seems to hold only as long as they are able to cover their direct costs. Due to this the SFS as a whole covers most key characteristics of AFNs with respect to locality, economic viability, ecological sustainability and social justice, while the implementation can noticeably differ in individual cases. It needs to be noted that our findings underline that AFN are not free of classical market processes like

concentration and displacement. While this paper focuses on the situation in NRW, further research covering other regions in Germany and/or other countries in the EU would offer the possibility to compare different forms of the implementation SFS with respect to their effects regarding the promotion of the local economy.

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