

How Do Smallholders Cope with Food Price Changes?

Insights from a Qualitative Case Study in North-Western Bangladesh

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Abstract

Small-scale producers of agricultural goods are becoming more and more involved in global commodity chains. Increasing and more volatile food prices are major challenges for smallholders who play a key role in achieving food security in many countries of the Global South but at the same time suffer from food insecurity themselves. Paradoxically, small-scale producers cannot fully benefit from increasing food prices as the global food price crisis 2007/08 showed. This paper aims to provide some initial insights into smallholder households' decision-making in their dual role as consumers and producers of food in the light of food price changes and changing market conditions. It presents the empirical results of twelve Focus Group Discussions with smallholder farmers in four villages around Rajshahi City in North-Western Bangladesh, and the findings of additional expert interviews.

Keywords

Food prices, small-scale farming, smallholders, food security, Bangladesh

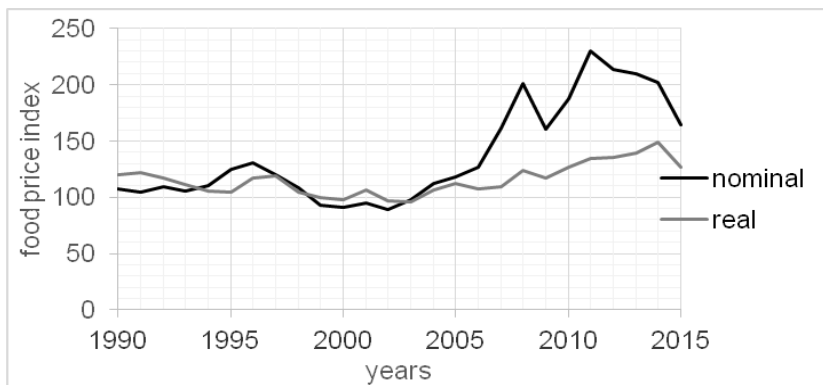
1. Introduction

Small-scale agriculture provides the income basis for a major share of the households in the rural Global South (FAO 2013) – almost 90 per cent of the 450 million smallholder households in the world are located in Asia. Smallholder farming characteristically has a low asset base, with poor financial resources and little cultivated land. 1.5 billion farmers cultivate an average area of not more than two hectares; family members provide most of

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the labour (Conway 2014: 1415; FAO 2015: 31). Since low-income households – and most small-scale farmers fall into this group¹ – typically spend a major share of their income on food, the global food price hikes in 2007/08 (Figure 1) exposed many people in rural Asia to poverty. It seems paradoxical that not only the low-income urban households but also the rural farmers, who produce and sell the food, suffer during times of high food prices.

FIGURE 1: Global Food Price Index 1990 to 2015 (baseline period 2002–2004 = 100)



Source: compiled from FAO data 2016

The political and academic debates on the impact of food prices on the livelihoods of smallholders reached their first peak during the crisis of 2007/08; researchers have still not come to a consensus, and there is ongoing disagreement about whether high or low food prices have a negative impact on food security for people in the rural Global South. The major arguments of this debate are that low food prices harm small-scale farmers, who generate a major part of their income from sales of agricultural products (Conway 2014) but that high food prices are responsible for forcing millions

¹ In research covering 15 low-income countries, Aksoy et al. found that households engaged in small-scale agriculture are significantly poorer than those working in other economic sectors (Aksoy et al. 2010: 90).

of people, including many small-scale farmers, into poverty and hunger (Swinnen / Squicciarini 2012: 405).²

The outcomes of these debates have significantly influenced the policies of several countries. Because the phenomenon of volatile and relatively high food prices is likely to continue in the future (Pritchard 2014), investigating the effect of food prices on the particularly vulnerable sections of the population is highly relevant. In many parts of Asia, where growth in yields is flattening due to the Green Revolution and prices for fertilisers are increasing (Sutton et al. 2013: 12), smallholders could come under severe pressure in the years ahead.

In his pioneering study, Deaton (1989) explored the short-term welfare effects of higher food prices based on household survey data from more than 5,000 households in rural Thailand. He found that the most significant factor for low-income households is whether or not they are net food buyers or net food sellers. Deaton's results suggest positive short-term effects of higher food prices for net sellers of food. However, because smallholder farmers are often net buyers of food, his frequently applied concept does not fully explain food insecurity.

A possible reason that high food prices often do not reach small-scale farmers might be that many smallholders generate only a small segment of their income by selling their produce on the market. Many smallholders have multiple sources of income. But even if their main income source is derived from agriculture, it is not certain that an increase in food prices will lead to substantial poverty reduction. As De Hoyos and Medvedev (2011) point out, an increase in food prices does not automatically lead to a higher income for farmers. Analysing data of price changes from 2005 to 2007, they compared consumer prices to producer prices: increases in the latter were considerably lower than in the former.

There is a general lack of understanding with regard to the complex influences of high and volatile food prices on the smallholders of the world today. As a result, it has become a major concern to analyse the impact of food prices within a complex assortment of long- and short-term effects on different geographical and economic scales. To offset the recent dominance of macroeconomic perspectives in all their complexity, this study focuses on the micro level. It aims to provide an understanding of the structures and processes within smallholder agriculture and related food security issues at the household level. We shall therefore present a summary of empirical case

² More recently, macroeconomic studies have provided some evidence for the positive long-term effects of higher food prices with regard to smallholders in the Global South (Jacoby 2013; Headey 2014; Ivanic / Martin 2014).

studies of four villages in North-Western Bangladesh and take them as a basis to analyse how smallholder households cope with changing food prices both as producers and as consumers.

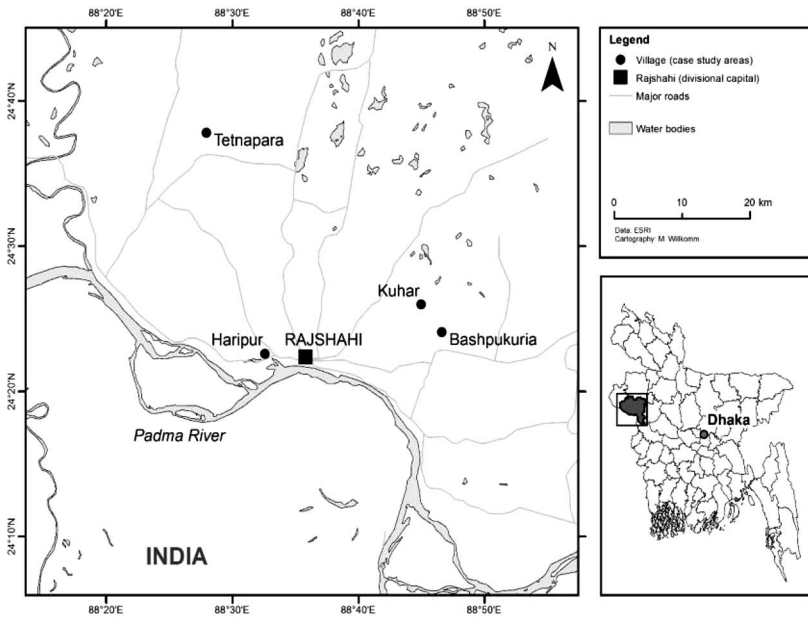
2. Case study areas and methodology

Bangladesh still faces poverty and hunger for substantial sections of its population. The share of rural people exposed to extreme poverty³ is about 19.9 per cent while in the Rajshahi Division, the region chosen for our case study, it is 20.3 per cent (Osmani / Latif 2013). Small-scale farms dominate the agricultural system in the country, representing 96 per cent of all land holdings and cultivating 69 per cent of the total agricultural land. During the food price crisis of 2007/08, Bangladesh had to import food from other countries and experienced an increase in domestic rice prices of 65 per cent (Hossain / Deb 2010: 91).

Four villages in the Rajshahi district – Bashpukuria, Haripur, Kuhar, Tetnapara – were selected for Focus Group Discussions (FGDs) (Figure 2). The area is characterised by a considerable variety of natural resources and provides different opportunities for crop cultivation. The villages are located in an area which enjoys a monsoon climate with moderately dry winters. However, Tetnapara which is located in the Barind Tracts, is a drought-prone area due to its drier winters. Cultivation in and around the four villages is relatively diverse (maize, wheat, vegetables, spices, fruits, sugarcane, pulses) with an emphasis on rice. Besides these features, the main reason for selecting these villages is their proximity to Rajshahi, the capital city of the district and division, and the major regional market for agricultural products. Twelve FGDs were organised and conducted by a binational German-Bangladeshi team (two Bangladeshi co-researchers, one German researcher). Because most people in the area around Rajshahi city speak Bengali, which the German researcher could not speak, Bangladeshi co-researchers took on the role of facilitators in the FGDs. As preparation the team had received facilitation training in role playing with non-directive conversation techniques. The German researcher took on the role of the observer in each FGD and one of the Bangladeshi co-researchers was responsible for translating written notice summaries of the process of the discussion so that the German researcher was still able to follow the discussion and occasionally request information.

³ Osmani / Latif 2013 define extreme poverty as a total expenditure insufficient for the costs of the minimally required food basket (p. 7).

FIGURE 2: Case study villages in the district of Rajshahi



Source: compiled by M. Willkomm

On average, seven smallholders participated in each FGD, lasting around 1.5 hours. The guiding questions of the FGD aimed at attaining information on food price changes, on household food consumption during times of high food prices, on selling opportunities, the access to and use of information for selling crops and on production decisions (e.g.: “If food prices for the agricultural products you want to sell increase, do you change something in your agricultural business/production system?”). Beyond those guiding questions, the FGD facilitator also took up relevant topics that arose during the discussion (e.g. the role of the government and its policies).

The researcher team also met acquaintances of the Bengali co-researchers who live in the selected villages. These acquaintances took on the function of “local informants”. With their help, the research team navigated through the village. They met the smallholders in the fields or at home to chat and invite them directly if they were interested and matched the pre-

determined criteria for participation. Possible participants were able to decide on their own about what to cultivate and where and to whom to sell their produce; their land holdings were to range between 0.2 and 1.0 hectare; and they were to represent a diversity balance with respect to gender, age, membership of cooperatives, and major crops cultivated.

After each FGD, the researcher team had a debriefing with some guiding questions to reflect on the topics of the discussion (“What was different from our expectations?”, “What were the major topics/ideas?”) as well as to give feedback, especially to the facilitator.

The results of the FGD were translated and transcribed from Bengali audio records into an English word-for-word text. In addition, peculiarities such as emotions that came up in the group discussions were marked in the dialogue. A content analysis in line with Mayring (2010) was chosen to evaluate the text material. First of all a structured analysis using the pre-existing categories from the guiding questions of the FGD was conducted. Then new text-immanent categories were added and analysed. The third step involved creating a working typology that included specific information on the villages and on each FGD in order to allow comparisons between different places and gender-related findings. Additionally, the results of the FGDs were enriched by information from eleven informal background interviews with relevant staff from ministries, academia, and non-governmental organisations in Rajshahi and Dhaka.

3. Results

3.1 Dealing with price volatility: Smallholder production between subsistence and profit maximisation

The cultivation of agricultural plants in the area around Rajshahi has changed considerably since the mid-1960s with the implementation of high-yield varieties, irrigation systems and mechanisation as well as chemical fertilisers and pesticides. Yields increased and more harvests were achieved per year. However, these positive effects were counteracted by decreasing farm sizes as a result of land lease divide, population growth, and soil erosion. The average size of land holdings in Bangladesh fell from 1.4 hectares in the 1960s to 1.3 in the 1980s and to 0.3 in the 2000s (Lowder et al. 2014: 28), with the Rajshahi area closely reflecting the national trend. Rice is the major crop in the area, but wheat and maize are also cultivated in increasing quantities. In addition, farmers cultivate a wide range of vegetables (e.g. egg-plant, spinach), spices (e.g. chili), and fruits (e.g. mangoes).

Smallholders in the area around Rajshahi report that they pursue farming activities for a twofold purpose. They provide food for household consumption and earn monetary income by selling some of the harvest on (mostly) local markets. Their production and consumption decisions are not independent of each other.

We have agricultural land. So we decided to produce some crops which we buy from the market. (Female / Male FGD, Kuhar)

The ratio between direct consumption and selling varies from farm to farm and depends on the specific needs and resources of the respective households. Most smallholders state that their product portfolio is oriented towards crops that can be sold at the highest price on the markets. They therefore plan from season to season and carefully observe the market prices before sowing. This strategy results from an unstable price situation. Smallholders reported that price volatility created an uncertain environment:

We cannot make any advance plans for this case. The price is dependent on the day-to-day market environment. (Male FGD, Bashpukuria)

Moreover, some smallholders systematically test different crops to see which are the most profitable to sell.

If we face loss for one sort of crop, we decide to cultivate other things in the next season. It's the only strategy for us to solve these problems. (Male FGD, Bashpukuria)

This testing, however, means that they have to have the flexibility and the financial resources to invest, for example, in expensive vegetable seeds. This is the reason why many farmers do not change from rice to high-value cash crops.

Besides their strategy to try to grow crops which have the highest prices in the markets, smallholders overall try to diversify their agricultural production within the season. For example, they cultivate in different layers in the field but also in different parts of their fields, even if they have limited resources of land. They mainly try to diversify within high-value crops such as vegetable and spices, thus trying to target different value chains with different selling opportunities to make a profit:

We make decisions based on the profit. [...] If we cultivate vegetables, it will be more profitable. It is better to cultivate different crops on different pieces of lands at the same time. You then have many options to make a profit. (Female / Male FGD, Bashpukuria)

We keep different crops on different pieces of land – like the companies of consumer products. The combination of all profits and losses brings a profit in the end. (Male FGD, Bashpukuria)

Depending on the goods they produce and sell, smallholders report on short-term price fluctuations whereby perishable products show higher volatility. Due to their perishability, high-value crops such as leafy vegetables are subject to higher volatility and therefore bring a higher risk of loss. By adopting a diversification strategy, smallholders seem to be willing to take that risk to reduce other risks in times of price volatility. Mahmud et al. (2000: 236) demonstrated that price volatility does not significantly influence the cultivation decisions for products like vegetables and spices when cultivation is broad-based and diversified. Studies by Aggarwal et al. (2004) and Joshi et al. (2003) on farmers in South Asia confirm this observation. They point out that diversification of smallholders' production with high-value crops can be an effective strategy to earn additional income as protection for smallholder households against price volatility.

However, when their main strategy is diversifying, smallholders cannot take advantage of specialisation with economies of scale. On the other hand, investing in high-value crops provides upgrading opportunities (earning more income from another crop) during times of price uncertainty.

Bolwig et al. (2010) also discussed the importance of diversification and participation in multiple value chains as a livelihood strategy to allocate resources and income and to spread risks of small producer household activities. This uncertainty can be partly explained by the critical time lag between sowing and selling. The consequence of this time lag is that there is a seasonal mismatch of supply and demand and related price fluctuations in agricultural markets (this phenomenon of economic behaviour is described in the cobweb theorem, see Mishra / Mishra 2011).

Smallholders' cropping decisions are influenced by the uncertainty of farm-gate prices, and at the same time their production decisions are substantially influenced by prices on input markets. For profitable production, smallholders need information on input costs, i.e. costs for fertilisers, seeds, pesticides, and irrigation. Not all smallholders are able to invest in industrial inputs for high-value crops. These farmers use cheaper alternatives such as manure from local livestock or ash. In Tetnapara, where soil conditions are poor and water availability is limited due to an unfavourable local environment, investments in inputs are even more important for the success of small-scale agriculture.

3.2 Smallholders' market participation

The goal of smallholders, who sell a variable part of their harvest, is to sell their crops at the highest possible price. At the same time they try to keep transaction costs low. Transportation costs as well as travel times are more

favourable for smallholders when they sell their products on the local market (*haat*), even if they could get a higher price on more distant markets in major urban centres. For perishable crops such as leafy vegetables, many smallholders use the nearest local market because of poor post-harvest logistics such as a lack of cool storage facilities and unreliable cool chains.

Storable crops like rice can be sold on markets further afield. Smallholders from Bashpukuria have the advantage of selling to a large wholesale market which is located nearby. Smallholders from Tetnapara, in contrast, have a rather limited choice when it comes to different market places due to their more peripheral location. One participant of a FGD in Tetnapara remarked:

We have to wait for a good price. But if we do not get the price, we must sell in the Mundumala market, because there is no other market besides Mundumala. (Female FGD, Tetnapara)

Transport infrastructure significantly influences smallholders' choice of market places. This not only applies to the distance between the farmer and the market but also to the connections between markets and from markets to the major centres of consumption. Markets along the highway to Dhaka (Haripur), for instance, provide much higher prices compared to less accessible market places. Further, the overall market organisation, such as opening times, influences crop selling. As one participant at an FGD stated:

We prefer Rajabari Haat for its big size. We can sell anything there on Monday or Friday. It is on the highway to Dhaka. (Female FGD, Bashpukuria)

Some smallholders use the option of farm-gate selling. This is, however, only possible for larger quantities of produce (see Fafchamps / Hill 2005: 732). Because neighbouring farms often try to synchronise their field crop, buyers can find it beneficial to come to a certain village. In this way, similar cropping patterns allow economies of scale for the smallholders to be practised at the village level. If the total amount of crops is not sufficient for buyers to come, smallholders organise transport to the market together with other farmers in the village. The literature mentions that cooperation, e.g. in form of cooperatives, can remove smallholders' access barriers and lower transaction costs (Thapa / Gaiha 2014: 97). Moreover, smallholders' cooperatives strengthen the bargaining power of farmers with respect to input procurement (Lyon 2003). In the Rajshahi area, however, many smallholders avoid institutionalised cooperation or membership of cooperatives to be more flexible in their selling strategies and to avoid a repetition of negative experiences with fraud and conflicts in former cooperatives.

International markets are almost inaccessible for smallholders in the rural parts of the Rajshahi region. From the farmers' perspective, international trade is time-consuming, knowledge-intensive and therefore "reserved" for traders. The role of traders is regarded with ambivalence. On the one hand, they are perceived as useful for organising transport, logistics and the distribution of goods. On the other hand, they are criticised by some smallholders for their price arrangements and their high margins. Functioning markets rely on a transparent and accessible flow of information (Byerlee et al 2006: 285f.). In Rajshahi, the widespread availability of mobile phones has considerably improved the accessibility of information on market prices and prevents smallholders from being cheated by buyers. But it also allows traders to fix price agreements which can lead to the building of cartels and limits the chances of farmers to get reasonable prices for their crops. In various FGDs, smallholders refer to traders as a team acting to the detriment of smallholders:

There is a proverb that "Birds of a feather flock together". I think all buyers are in league with one another in our market. They give almost the same price. They do not give a higher price than the other buyers have already stated. (Female FGD, Tetnapara)

Other smallholders see traders also as necessary enablers for marketing their products:

Only the businessmen have interconnections [...] so that they can manage the selling if the price is dissimilar in different places at the same time. When they [the traders] try to get a good deal for themselves, then it is also helpful for us. (Female / Male FGD, Bashpukuria)

Further smallholders show understanding for traders' business and their livelihood activities:

Actually their profits are not as high as they look. They have transport, tax, and other costs. (Male FGD, Tetnapara)

In many areas of the world, limited access to financial resources is a major constraint for smallholders' market participation (Baloyi 2010). This potential constraint seems to be less of a problem in the Rajshahi area. First, there are many NGOs and banks in Bangladesh which provide micro-credits to smallholders. Secondly, very often financial assistance can be efficiently organised within social networks between relatives, friends, and even neighbours.

3.3 Smallholders' perception of policy interventions

The role of the government was discussed intensively in the FGDs. Government intervention is generally seen as not supportive or even as harmful by

smallholder farmers. Many smallholders criticise the government strategy of importing food during high price periods and thus preventing farmers from taking advantage of higher food prices.

Another issue is that the government regularly sells state-owned grain from the public distribution system (so-called collection centres or Local Supply Depots), which also leads to a drop in prices. If smallholder farmers themselves want to sell crops to the collection centres, they have to provide a minimum quantity. This effectively excludes farmers who produce only small amounts. Corruption is another problem mentioned in the FGDs with respect to collection centres:

A selected person who has already established his access through power or bribery can sell his crop to the depot of the Government, no matter what the quality of his product is. We cannot enter there even with our better crop. The main factors are the political power and money there. Small farmers like us can't compete with this. (Male FGD, Bashpukuria)

Another instrument of the government to influence the markets is the setting up of fixed prices e.g. for rice or wheat. Smallholders regard this policy instrument as unhelpful because on the one hand fixed prices are not systematically enforced and on the other hand fixing the prices for some crops can restrict smallholders' chances of making a profit. In contrast to fixed prices on output markets, fixing input prices for e.g. fertilizer or seeds was mentioned as a better move to serve smallholders in their double role as producers and consumers:

Government can fix the price when we are buying input things. That stability will bring a profit for us as buyers and sellers. (Female FGD, Kuhar)

The farmers feel that, overall, the government cares more about the consumers than about them:

Sometimes the government also tries to minimise the price for consumers. That is bad for us. (Female FGD, Kuhar)

Surprisingly, smallholders see themselves as producers rather than as consumers who might profit from reduced retail prices. Moreover, much of the government's support for smallholders is based on information and communication technologies, as was mentioned in the informal background interviews with government employees. So government support of smallholders via web-based information seems to be considered inappropriate for the target group. In remote areas, for example, internet is not always available, with the result that there is a digital divide between different parts of the rural landscape.

3.4 Dealing with high retail food prices: Smallholders' coping strategies and household food consumption

Smallholders are often not able to benefit fully from an increase in retail prices for food. On the contrary, high food prices can have a detrimental effect on the food security of smallholder households. Thus, the exact impact of high food prices on household consumption mainly depends on a household's capability, its resources, and its market access at a certain time:

The selling of them [crops] depends on the need of the family and the market condition. (Female / Male FGD, Bashpukuria)

Some smallholders, for instance, face difficulties obtaining food during the monsoon season because they do not have a harvest to consume or sell. Others report that they do not have enough money to buy foodstuffs during the dry season because they have to invest in fertilisers or irrigation water for their agricultural business. These times are critical for smallholder households managing longer-term value chain activities (continuous investment in the agricultural production for the following seasons) and maintaining their access to food.

Overall, smallholder households in the Rajshahi area are rather heterogeneous with regard to their socio-economic situation. It is crucial to keep this in mind when trying to assess the impact of food price changes. Smallholder households report that they reduce food consumption in times of crisis or eat food of lower quality:

Sometimes we sell all of the fine paddy. Then we buy the coarse rice [the cheaper one] for our family consumption. (Male FGD, Haripur)

My main target is to build up savings. If I eat more meat or fish, I am not able to increase my savings. So I decided to eat fish or meat less often. (Female FGD, Bashpukuria)

I have four daughters and two sons. But in my family we have only one earning man. So we have hard times in our house. I borrow money and try to consume less food. We take one piece of something where two pieces would be needed. (Female FGD, Tetnapara)

Some households even get trapped into a downward spiral if, for example, they have to take out loans for buying food. Other factors for household food insecurity are the number of children, old family members, daughters of a marriageable age, etc. This all leads to different ratios of income earners to total household sizes and to different compositions of household expenditure for food, medicine, or dowry, etc.

Smallholders in the Rajshahi area have developed different strategies to cope with higher food prices. These coping strategies can be categorised as food related and non-food related (Ruel et al. 2010: 174). Besides reducing

overall food consumption or switching to cheaper substitutes, people try to diversify and extend their non-agricultural income (see also De Haas 2010: 19). Social networks also play an important role in this matter. Many smallholders report that they regularly exchange food with neighbours, friends, and relatives. Moreover, village communities support households which are temporarily unable to buy or access food. Some smallholders who are better off temporarily rent the land of poorer smallholders for a limited time, which can enable the latter to get short-term economic access to food:

If someone needs a lot of money that is similar to the value of his land, then I will give him the money and start to cultivate on that land till he pays back. Sometimes we make the agreement on paper. But when I trust him, we don't. (Female / Male FGD, Bashpukuria)

This land lease system has similarities to sharecropping, which is fairly frequent in Bangladesh due to lack of access to land resources (Zezza et al. 2009). This special form of sharecropping can be seen as a short- to mid-term strategy for those who lease out parts of their land to meet urgent cash needs. However, this strategy can lead to negative long-term outcomes for economic and physical access to food. It might even lead to a vicious cycle of indebtedness and some farmers not being able to get back their land and thus losing the opportunity to revive farming activities on a larger scale. As Carletto et al. (2013: 21) point out, sufficient land size is a key resource for smallholder farming. This is especially true if farmers want to benefit from food price increases. Possessing more land simply makes it easier to produce more crops that can be sold on markets, assuming that a large enough labour force is available. Thus, more land increases the chance to become a net food seller. Smallholders in Haripur are able to extend their cultivated land to temporary islands, so-called *chars*, in the Ganges (Padma) River, which can contribute to a longer-term perspective and a more sustainable way to access food.

4. The dual role as producers and consumers of food – Conclusions

Food security for smallholder farmers is determined by a complex interplay of input, farm-gate and retail prices. Smallholders' sales opportunities and their access to food depend on their access to markets and transport infrastructure, information, knowledge and on political institutions. Smallholders in the Rajshahi region take decisions along a continuum between subsistence and commercial farming, according to their family needs and the current price situation. This finding is congruent with studies showing the mixed

purpose of farming in the Global South (MacPherson 1990; von Luebke 2008).

The diversification of production seems to be the most promising strategy for smallholders in the area around Rajshahi to cope with food price volatility. Even if they have limited land resources with only very small pieces of land, smallholders try to diversify their cultivation; in the same or different pieces of their land they cultivate different crops to protect themselves against food price uncertainty as far as possible. A further interpretation raises the question of whether diversified cultivation leads to a diversified diet, suggesting that diversification could also contribute to the nutrition security of the farming households as long as they consume some of their own harvest.

However, diversification of smallholders' cultivation means that farmers have to handle different value chains and sell their products through different market channels. This is especially challenging for smallholders who diversify into vegetable cultivation. Selling perishable crops like vegetables can be lucrative because they are of higher value on the market, but they are also subject to higher price volatility and uncertainty and only farmers who can afford seed and fertilizer are able to diversify in such high-value crops.

Smallholders in the Rajshahi area have developed various coping strategies to ensure physical access to food during times of high retail food prices. Families reduce their food consumption and substitute expensive food items with cheaper ones. Furthermore, smallholders consume more of their own produce. Activating alternative sources of income and social networks are also strategies that can be observed in our case study areas. These findings are in line with several other studies (Longhurst 1986; Heltberg 2013).

Our findings suggest that smallholders' participation in different markets (e.g. input-, output-, and retail markets) have to be thoroughly considered in order to assess the actual impact of food price changes in retail markets. Market dynamics as well as price transmissions, marketing margins and value distribution along the value chain have to be taken into account in order to predict the actual outcome for smallholders' access to food (see e.g. Minot / Dewina 2015). The characteristics of various categories within the agricultural system (such as net food buyers or net food sellers) are highly dynamic and can change even within one season. Further research linking the debates on smallholder value chains more systematically with the impact of food prices on food and nutrition security would yield more insights into the field of smallholder livelihoods.

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