



Department für Agrarökonomie und
Rurale Entwicklung

April
2014

Diskussionspapiere

Discussion Papers

The More the Better?

How Collateral Levels Affect Credit Risk in

Agricultural Microfinance

Kirsten Müller, Oliver Musshoff, Ron Weber¹

Department für Agrarökonomie und Rurale Entwicklung
Universität Göttingen
D 37073 Göttingen
ISSN 1865-2697

Diskussionsbeitrag 1402

¹Corresponding author: Prof. Dr. Oliver Mußhoff, Department für Agrarökonomie und Rurale Entwicklung, Platz der Göttinger Sieben 5, 37073 Göttingen, email: oliver.musshoff@agr.uni-goettingen.de

The More the Better? How Collateral Levels Affect Credit Risk in Agricultural Microfinance

Kirsten Müller; Oliver Musshoff; Ron Weber

Department for Agricultural Economics and Rural Development
Georg-August-Universität Göttingen
Platz der Göttinger Sieben 5
D-37073 Göttingen

Abstract

Financial institutions still neglect to address agricultural clients. The main reasons for that are their perception that farmers bear higher risks than non-farmers and that their loan products are inadequate to accommodate the needs of agricultural entrepreneurs. As a result, many farmers still lack access to external finance. The aim of this paper is to investigate determinants of credit risk for agricultural loans disbursed by a Microfinance Institution (MFI) in Azerbaijan. In this context special attention is paid to repayment flexibility and the role of collaterals. MFIs are among the first financial institutions recently focusing on farmers with new loan products.

We find that farmers are less risky than non-farmers, which is surprising because the opposite is widely believed. We furthermore find that the level of collateral has a negative influence on credit risk. Beyond that, we find that repayment flexibility increases credit risk.

JEL-Classification: Q12, Q14

Keywords: microfinance, collaterals, Tobit Model, credit risk, small-scale farmer

Introduction

The success story of microfinance institution's (MFIs) in fighting for poverty reduction dates to the 1980s and was rewarded with the Nobel Prize for Peace for Muhammad Yunus in 2006. The success of MFIs is based primarily on two factors: High standardization of loan products enables the MFIs to keep costs low by decreasing transaction costs and to benefit from technical economies of scale (Meyer, 2002). The group lending approach and its impact on repayment rates is the second key to success in terms of MFIs. However, there is evidence that the group lending approach is not the best method in every region, especially in rural areas, and thus, agriculture dominant areas (Armendáriz de Aghion and Morduch, 2010).

Considering the absence of social pressure within the individual lending technique, MFIs have to create other incentives to achieve a good repayment performance. On the one hand, progressive lending is a tool to do so because the client is able to lend higher amounts based on the length and quality of his credit history. Therefore, the first loan can be seen as a good way for the bank to assess the client's attitude towards repayment (Armendáriz de Aghion and Morduch, 2010). On the other hand, credit rationing, where the granted loan amount falls below the client's applied amount, is used by MFIs to cope with risk and high transaction costs. With respect to credit rationing, farmers especially can cause high transaction costs for the MFI because monitoring and evaluating their business is even more difficult than it is for non-farmers (Petrick, 2005). In addition to these aspects, there is the higher risk exposure. The production of a farmer, in contrast to other businesses depends on factors which are subject to a high level of risk. Unpredictable weather conditions, diseases and volatile market prices are affecting the success of agricultural production tremendously (Christen and Pearce, 2005). These risk factors make farmers a more risky clientele from the point of view of the MFI. That is why in rural areas, and therefore agriculture dominant areas, there is still a lack

of external financing (Miranda and Gonzalez-Vega, 2011) in comparison to other regions where an oversupply of microloans can be found (Vogelgesang, 2003).

Beyond the mentioned approaches to cope with the absence of social pressure, namely joint liability, within the individual lending technique most MFIs require the pledge of collaterals. Cassano et al. (2013) worked out that collaterals for commercial MFIs are more of a commitment of the borrower than a security. As a result, pledged assets or the word of a guarantee have more of an ideal value. In contrast to that, collaterals for regular banks are a real security and are used as a repayment source if a loan defaults (Armendáriz de Aghion and Morduch, 2010; Churchill, 1999). Even then, there is first evidence about the impact of collaterals on the repayment performance in microfinance (Vigenina and Kritikos, 2004), there is none particularly for farmers.

However, the higher risk exposure is not the only specific characteristic of farmers. Farmers face an unsteady cash flow caused by seasonality. As a result of seasonality, financing with the highly standardized loan (here and after: Standard Loan) of the MFIs is very difficult. The farmer has to repay almost the entire amount to the bank before he generates any revenue (Morduch, 1999; Hamp and Laureti, 2011). To overcome the problems with farmers as clients and to enter the rural market, MFIs have developed special loan products. In particular, loan products with a broader level of flexibility due to repayment schedules (here and after: Flex Loan) are a topic that MFIs have to deal with (Meyer, 2002). This flexibility is given by granting grace periods, which give the possibility to temporarily abandon payments. There are already a few studies concerning the higher credit risk of farmers in general (Vogel, 1981; Raghunathan et al., 2011; Weber and Musshoff, 2013) and the effect of Flex Loans on the repayment performance (Godquin, 2004; Field et al., 2011; Weber and Musshoff, 2013), but there is no final statement because of different results.

This paper explores the different credit risk of farmers in comparison to non-farmers. Beyond that, we try to give first empirical evidence of the role of collaterals in microfinance. The focus here is the impact of collaterals on the repayment performance of farmers because MFIs still neglect addressing farmers as a customer group. Moreover, Flex Loans, as a tool of handling the seasonality of farmers and improving repayment performance, are investigated as well. In order to do so, this paper analyzes a data set from a leading MFI in Azerbaijan. The MFI under consideration is interesting to investigate because the pledge of collaterals is compulsory and the impact of collaterals on the repayment performance has not yet been investigated in Azerbaijan. Furthermore, there is a long history of Flex Loan usage.

The rest of this paper is structured as follows: In the second section an overview about the already existing findings is given and our research hypotheses are derived. In the third section the dataset and the descriptive statistics are shown. After that, the econometric model is explained in the fourth section. This is followed by the estimation results and the discussion in section five. Finally, a conclusion and outlook is given in section six.

Literature Review and Hypotheses

Farmers have two characteristics which differentiates them from the standard clientele of an MFI. First, there are additional risk factors that farmers have to cope with, because farmers are operating in an environment that is influenced by some risk factors which are not so relevant for non-farming businesses. To begin with, there is a particular pronounced "yield risk"; the main effect of this risk factor is connected to weather conditions. Hence, if a bad weather situation occurs it affects all fields of the farm or even all farmers of a region. Binswanger and Rosenzweig (1986) do not only mention the risk directly influenced by the weather, but also the "lifecycle risk". This risk is based on the lifecycles of machinery and animals. A sudden malfunction and drop out of the machinery, a disease affecting the animals or an accident can cause significant changes in the production process. Additionally, there is the market risk. The

volatility of world market prices affects the inputs and the outputs of farmers. At the time when production is planned, the future prices for the output are unknown (Binswanger and Rosenzweig, 1986). Subervie (2008) shows that the vulnerability to world market prices is influenced by factors on a macroeconomic level such as characteristics of infrastructure or of provided financial services. With poor infrastructure or a lack of access to external finance, farmers are not able to cope or smooth the effects of the instability of the world market price (Subervie, 2008), which is often the case in developing countries. All in all from a bank's perspective, farmers face a higher credit risk of their production in comparison to normal businesses (Christen and Pearce, 2005).

The risk factors which are attached to their production are making the cash flow of farmers uncertain and they are not able to smooth the cash flow with revenues of former projects. As a result, there is a mismatch between the installments and the cash flow. There are already some findings concerning the repayment quality of farmers. However, to our knowledge, we are the first to investigate the credit risk of agriculture clients in Azerbaijan. Therefore, our first hypothesis is **H1 "credit risk"**: Farmers have a different credit risk than non-farmers.

An important way to cope with risk for MFIs is to apply cash flow based lending in contrast to asset based lending as regular banks do. The cash flow based lending approach is the method that commercial MFIs use to try to manage their risk. It is a mixture of the group lending approach and the asset or collateral based approach of regular banks (Churchill, 1999). In the case of cash flow based lending, the granted amount of the loan depends on the cash flow or income stream of the household. This cash flow based lending of MFIs distinguishes itself from the asset based lending which is applied by regular banks. In the case of asset based lending, the collateral is required and its value is used as a benchmark for the size of the loan. In the case of a default, the value of the collateral balances out the damage for the bank (Armendáriz de Aghion and Morduch, 2010). The majority of commercial MFIs applying

individual lending typically require collaterals as well. However, they do not rely on them because the cash flow is the part taken under consideration for the granted amount (Pischke, 2002). As a result, the attitude towards the pledged collaterals is much more flexible and therefore non-traditional collaterals are pledged. If MFIs take collaterals, they see it as more of a commitment of the borrower to pay back and not as a real protection in the case of a default of the loan (Cassano et al., 2013; Churchill, 1999). Churchill (1999) points out that collaterals are “[...], an important reminder in the back of the borrower’s mind”. That is why the value of the collateral differs from the point of view. For the borrower, the value is much higher and a potential loss is more serious (Cassano et al., 2013; Pischke, 2002). Vigenia and Kritikos (2004) give evidence that this works out in Georgia; they show that the higher the potential loss for the borrower is, the better is the repayment performance.

However, collaterals are not used in the classical way of reducing risk because the aim of requiring them is not to sell them if a loan defaults (Churchill, 1999). As a result, collaterals cannot be seen as a typical repayment source for MFIs (Cassano et al., 2013). Binswanger and Rosenzweig (1986) point out that collaterals are a way to shift the risk exposure of a loan from the lender to the borrower, if there are constant interest rates which is the case for most microfinance loans. However, there is the possibility that the opposite is the case. Thus, higher collaterals might increase the risk exposure because they could deter clients which would like to finance a safe project and might allure predominantly riskier projects (Stiglitz and Weiss, 1981).

While there is already some empirical evidence regarding the impact of collaterals as incentives for a good repayment performance of non-farmers (Vigenina and Kritikos, 2004), there is none for farmers. However, especially for farmers the role of collaterals as a risk managing tool must be even more important. Therefore, we analyze the role of collateral on the repayment performance of farmers. To our knowledge, we are the first to investigate the impact of

monetary meaningful collaterals for farmers in microfinance and therefore our second hypothesis is **H2 “collaterals”**: There is a significant effect of collaterals on repayment performance for farmers.

Beyond the higher risk exposure there is the seasonality of the cash flows of farmers. As a result, business only generates revenues at a certain time within the year (Jain and Mansuri, 2003). The revenues take place during harvesting time. Correspondingly, the expenditures have to be made before planting time (Binswanger and Rosenzweig, 1986). However, the Standard Loan, which is one of the factors of success in microfinance, is organized like an annuity loan. As a result, the client is facing a rigid installment schedule. The repayment starts right after or very shortly after the disbursement date (Hamp and Laureti, 2011; Armendáriz de Aghion and Morduch, 2000). As a consequence, taking a Standard Loan leads to the situation that the farmer has to repay almost the entire disbursed amount before any revenue has been realized (Morduch, 1999). Non-farming businesses are normally not subject to seasonality, therefore, the generated cash flow of their financed project is simultaneous with the installment payments. Additionally, they are able to cross-finance their loan with revenues of former or other projects. That is why the Standard Loan is better fitted to projects financed by non-farmers (Armendáriz de Aghion and Morduch, 2010; Morduch, 1999). Financing with Standard Loans is difficult for farmers, especially for farmers in developing countries. They are highly dependent on seasonality because they are typically unable to compensate it with modern techniques (Christen and Pearce, 2005).

Beyond credit rationing, dynamic incentives to increase repayment and progressive lending to meet the special needs of farmers as clients, there are already different approaches to challenge these problems. Meyer (2002) established in his study in Bangladesh, that farmers who have a cyclical cash flow, a loan which is organized like a fixed date loan, would be the best alternative. As a result, farmers would have to pay a lump sum in the end of the loan at the

harvesting time. Christen and Pearce (2005) developed an approach which consists of ten features concerning the needs of a loan product which should help to overcome this mismatch between a rigid installment schedule and unsteady cash flows. One of their primary findings is that agricultural borrowers need an external financing with a flexible repayment schedule which can match and fit cyclical cash flows.

However, Hamp and Laureti (2011) point out that Flex Loans are triggering off a lower level of willingness to pay the money back. Thus, it is important for MFIs to figure out the trade-off between flexibility of a loan product and its incentive to pay back. Additionally, MFIs are still skeptical concerning the quality of the repayment performance due to Flex Loans. However, there has been some research done which does not establish a uniform reasoning for this fear. Godquin (2004) found out that loans with grace periods have fewer delinquencies. Furthermore, Weber et al. (2013) reveal that farmers having a Flex Loan with a grace period have lower levels of delinquencies than Flex Loans without grace periods. Thus, granting grace periods influences the repayment performance in a positive way. Field et al. (2011) did a field experiment to determine the impact of the design of loans through MFIs. They proved that for an MFI located in Kolkata, India, that granting a two-month grace period and introducing flexibility leads to a higher level of delinquencies. However, they argue that granting a grace period attracts more risky investments while, those investments are more profitable on average. Moreover, Standard Loans with an immediate start of repayment are like a selection for less risky clients in advance. The borrowers who can meet these schedules are likely to have a big portfolio of income sources which leads accumulated to a steady cash flow; therefore, these farmers would be able to pay back the credit regardless (Armendáriz de Aghion and Morduch, 2010; Morduch, 1999). To our knowledge, we are the first that are observing the effect of Flex Loans on the repayment performance as a way of capturing the seasonality and the higher risk exposure of farmers in Azerbaijan. As a result, our third hypothesis is **H3**

“Farmer Flex Loan”: Farmers with Flex Loan and non-farmers with Standard Loans have a different credit risk.

Data

The dataset has been provided by the AccessBank of Azerbaijan and has been generated from their Management Information System. The AccessBank was founded in 2002 (Access Holding, 2013). The data contains all loans from the initial foundation of the bank in 2002 until February 2013.

The bank provides a broad portfolio of products and is offering loans, saving accounts, credit cards and a money and payment services. The main clientele which is targeted with these products are micro and small enterprises. However, the AccessBank holds a full banking license and can therefore serve larger businesses as well. The three different loans within the business loan portfolio currently offered by the AccessBank are outlined in Table 1.

Table 1: Business Loans of the AccessBank of Azerbaijan

	Micro Loan		Loan for Small and medium sized enterprises (SME)
	Standard Loan	FlexLoan	
Amount in USD	100 – 30,000	100 – 30,000	Up to 3,000,000
Maximum Maturity	48 months	48 months	60 months
Interest Rate per Month	1.58% - 2.75%	1.58% - 2.75%	Depending on the amount, term, provision, financial condition and credit history
Grace Periods	No	Yes	No
Collateral	Real estate, vehicles, home equipment, stock and guarantor		

Source: AccessBank 2013b

The Flex Loan was first launched in 2007. With this product the AccessBank is targeting the needs of its clients, since the majority of their business is agriculture based. As a result of the importance of agriculture in rural areas, the rural population benefits from the Flex Loan (AccessBank, 2013a). As it is shown in Table 1, beyond the conditions of the Standard Loan, the Flex Loan allows for granting grace periods which gives flexibility to the loan

(AccessBank, 2013b).

The dataset under consideration contains 705,739 loans. The analyses are focused on two of the business loans of the AccessBank, namely Standard Loans and Flex Loans. After cleaning the data there are still 595,066 loans left for the analyses. To distinguish between farmer and non-farmer, the purpose of credit is viewed in a narrow sense. This means downstream and upstream businesses of agriculture are seen as non-farmers.

The descriptive statistics are provided in Tables 2 and 3. Farmers with a Flex Loan (N=4,041) and farmers with a Standard Loan (N=133,373), as well as non-farmers with a Flex Loan (N=1,296) have been compared with non-farmer clients with a Standard Loan (N=456,356). For all variables the mean and the standard deviation (SD) are given for the three different groups. To establish a first impression, a t-test is used for comparing the means of the different groups.

The credit risk of these different groups is presented in this analysis by three different levels of the Credit Risk Indicator (here and after: CRI), namely CRI1, CRI2 and CRI3. To investigate the CRI, the Portfolio at Risk (here and after: PAR) is considered. PAR is defined as the number of installments which were paid late by at least 1, 15 or 30 days in relation to the installments which were paid on time. One possible case could be a loan with 12 installments and 3 installments which are paid back ten days late. The CRI1 for this loan would be a result 0.25. Table 2 gives a look at the Credit Risk Indicators and Loan Characteristics.

Table 2: Descriptive Statistics – Credit Risk Indicator and Loan Characteristics

		Farmer		Non-farmer	
		Flex Loan	Standard Loan	Flex Loan	Standard Loan (reference group)
	Unit	N = 4,041 Mean (SD)	N = 133,373 Mean (SD)	N = 1,296 Mean (SD)	N = 456,356 Mean (SD)
CRI1	Share	0.0206*** (0.08134)	0.0152*** (0.0635)	0.0489*** (0.1261)	0.0313 (0.0972)
CRI2	Share	0.0065***	0.0020***	0.0162***	0.0032

		(0.0547)	(0.0316)	(0.0788)	(0.0381)
CRI3	Share	0.0056***	0.0017***	0.0131***	0.0023
		(0.0515)	(0.0295)	(0.0720)	(0.0341)
Disbursed Amount	USD	5,048.19***	2,349.56***	8,213.20***	2,946.66
		(4,410.906)	(1,844.848)	(7,941)	(3,489.628)
Collaterals ^a	USD	15,357.33***	6,380.32***	70,664.01***	11,222.69
		(23,092.8)	(10,140.6)	(23,842.6)	(115,992.5)
Existing deposit	1/0	0.6008***	0.6517***	0.6844***	0.3215
		(0.4898)	(0.4764)	0.4649	(0.4671)

Source: Author's calculations; t-test in comparison to non-farmer with Standard Loans; * p< 0.05, ** p< 0.01, *** p< 0.001; standard deviation in parentheses.

^a The collaterals are only available for the last loan of every client. However, the value for the collaterals is assumed for all loans requested by the client.

Farmers with a Flex Loan have a lower CRI1 but a higher CRI2 and CRI3 in comparison to non-farmers with a Standard Loan. Farmers with a Standard Loan have significantly lower CRIs over all three levels in comparison to non-farmers with a Standard Loan. In contrast to that, non-farmers with a Flex Loan have a significantly higher credit risk than non-farmers receiving a Standard Loan. Beyond that, there can be a difference seen in the disbursed amounts and the pledged collaterals, which are accumulated over time. Obviously, the disbursed amounts for Flex Loans are higher than for Standard Loans. The distribution of the collaterals indicates that there is a difference on how high the loans are covered on average between the different groups. The ratio between the disbursed amount and the pledged collateral is relatively low for farmers in comparison for non-farmers. The average ration of Standard Loans of non-farmer to collaterals is approximately 380%. Flex Loans of farmers have on average a value of pledged collaterals of about 300% of the disbursed amount, which is relatively low in comparison to non-farmers with a Standard Loan. For farmers receiving a Standard Loan, this value is even lower at roughly 270%. In relation to the share of an existing deposit, it can be seen, that non-farmers with a Standard Loan are less likely to have a deposit than the other three groups.

Looking at the clients characteristics from a broader perspective, in Table 3, the differences between the four groups can be seen as well. Farmers are on average significantly older (with Flex Loan: 47 years old; with Standard Loan: 48 years old, on average) compared to non-

farmers with a Standard Loan (45), while even non-farmers with a Flex Loan are significantly older. Additionally, agriculture clients are more likely to be male (93%; 87%). Moreover, only 72% of the non-farmers with a Standard Loan are male. Differences can be recorded in relation to marital status and family size as well. The share of married farmers is considerably higher in comparison to non-farmers irrespective of whether the farmer receives a Standard Loan or a Flex Loan. The share of being a repeated client is approximately 55% for non-farmer clients receiving a Standard Loan; the share for repeated non-farmers having a Flex Loan is significantly higher. On the contrary, farmers having a Flex Loan have a significantly smaller share of being a repeated client.

Table 3: Descriptive Statistics – Client Characteristics

	Unit	Farmer		Non-farmer	
		Flex Loan	Standard Loan	Flex Loan	Standard Loan (reference group)
		N = 4,041 Mean (SD)	N = 133,373 Mean (SD)	N = 1,296 Mean (SD)	N = 456,356 Mean (SD)
Age	Years	46.80*** (10.158)	47.49*** (11.211)	45.34** (9.68)	44.63 (10.66)
Gender	1/0	0.9327*** (0.2506)	0.8742*** (0.3316)	0.8094*** (0.3929)	0.7152 (0.4513)
Marital Status	1/0	0.8500*** (0.3571)	0.8450*** (0.3619)	0.8002*** (0.4000)	0.7433 (0.4368)
Family Member	Number	5.3061*** (1.7824)	5.2431*** (1.7554)	4.5131** (1.6222)	4.3876 (1.5480)
Repeated client	1/0	0.5367 (0.4987)	0.4744*** (0.4993)	0.6844*** (0.4649)	0.5497 (0.4975)
Seasonal Cash Flow	%	32.07	21.52	0	0

Source: Author's calculations; t-test in comparison to non-farmer with Standard Loan; *p< 0.05, **p< 0.01, ***p< 0.001; standard deviation in parentheses.

As it can be seen in the last row of Table 3, the percentage of farmers with a seasonal cash flow is considerably different between farmers having a Flex Loan and farmers having a Standard Loan. 30.8% of the farmers with a Flex Loan announce that their sector of credit is crop, fruit or vegetable production. The rest are animal producers which tend to face a more continuous cash flow in general. However, the purpose of credit of the animal producers in this group is to generate a cash flow which is not continuous. In the group of farmers with a

Standard Loan, the share of animal producers is higher. As a consequence, only 21.52% of the farmers indicate a sector of credit which is affected by seasonality.

The Econometric Model

To investigate the credit risk, the CRI is considered. As mentioned in the descriptive statistics section, the value of the variables CRI1, CRI2 and CRI3 reach positive values for these observations which have been overdue at least once. For the rest of the observations, the value equals zero. Relating to the structure of the dataset under consideration, the Tobit Model is chosen to be applied for testing the hypotheses. The Tobit Model has been developed especially for datasets which are truncated or censored on one or two sides. The case under consideration is censored at zero and has no upper limit (Tobin, 1958; Verbeek, 2012; Wooldridge, 2009).

For every level of CRI, one independent Tobit Model is estimated. The equation for the estimation is as follows:

$$D_{i,t} = \beta_0 + \beta_1 \cdot fsl_{i,t} + \beta_2 \cdot ffl_{i,t} + \beta_3 \cdot nffl_{i,t} + \beta_4 \cdot collateral_i + \beta_5 \cdot collateral \cdot farmer_i + \gamma \cdot character_{i,t} + \delta \cdot branch_i + \rho \cdot year_t + u_{i,t} \quad (1)$$

D is the dependent variable and represents the CRI for a loan of a certain client i and a certain year t . The independent variable β_0 is the intercept of the model. The dummy $fsl_{i,t}$ represents all farmers having a Standard Loan. Besides, $ffl_{i,t}$ are farmers having a Flex Loan. Simultaneously, the dummy $nffl_{i,t}$ stands for non-farmers with a Flex Loan. The group of non-farmers with a Standard Loan is the reference group and therefore is not accounted for in the equation. This group represents the standard client of MFIs and has existed since the foundation of the AccessBank in Azerbaijan, and thus, is a good reference group in this case.

As a result, the reference group consists of all non-farmers irrespective of whether they have a Standard Loan or a Flex Loan. To show the effect of collaterals on the repayment performance, two additional terms have to be introduced. The variable $collateral_i$ shows the effect of pledged collaterals on the CRI of non-farmers because they are the reference group in this case. To investigate whether there is a difference between the effect of the collaterals for non-farmers and farmers, the interaction term $collateral \cdot farmer_i$ is introduced. The term indicates the difference of the effect of the pledged collaterals on the credit risk for farmers in comparison to non-farmers. $Character_{i,t}$ is a vector which contains loan and personal characteristics. The variables of the vector are: disbursed amount, existing deposit, age, gender, marital status, family member and repeated client. Furthermore, $branch_i$ represents the different branch offices of the AccessBank of Azerbaijan and $year_t$ is a variable which stands for the year of the disbursement. Finally, $u_{i,t}$ is the error term.

5 Estimation Results and Discussion

Table 4 shows the estimation results of three Tobit Estimations, one per CRI. Furthermore, the results show the effect of collaterals on the repayment performance. In addition to that, the differences between the two client groups, farmers and non-farmers, and the loan products can be seen along with socio-economic variables.

Table 4: Tobit Estimations concerning the different loan products and the collaterals^a

Variable	Unit	CRI1 ^b	CRI2 ^b	CRI3 ^b
Farmer & Standard Loan (<i>fsl</i>)	1/0	-0.0168*** (0.00229)	-0.0572*** (0.00238)	-0.0437*** (0.00348)
Farmer & Flex Loan (<i>ffl</i>)	1/0	0.0444*** (0.00903)	0.210*** (0.00360)	0.294*** (0.00556)
Non Farmer & Flex Loan (<i>nffl</i>)	1/0	0.156*** (0.0126)	0.550*** (0.00311)	0.686*** (0.00358)
Collaterals	USD	-0.000000793***	-0.00000556***	-0.00000829***

		(7.74e-08)	(5.18e-08)	(8.39e-08)
Collateral · Farmer	-	0.00000655***	0.00000503***	0.00000727***
		(0.000000179)	(0.000000120)	(0.000000136)
Disbursed Amount	USD	0.000000988**	0.0000430***	0.0000605***
		(0.000000352)	(0.000000376)	(0.000000420)
Age	number	-0.00204***	-0.00505***	-0.00633***
		(0.0000633)	(0.0000538)	(0.0000794)
Gender	1/0	-0.0131***	0.0572***	0.0747***
		(0.00150)	(0.00225)	(0.00333)
Marital Status	1/0	-0.0508***	-0.132***	-0.142***
		(0.00154)	(0.00218)	(0.00321)
Family Member	number	-0.00814***	-0.0331***	-0.0423***
		(0.000416)	(0.000498)	(0.000734)
Repeated Client	1/0	-0.0351***	-0.00752***	0.0372***
		(0.00134)	(0.00208)	(0.00303)
N		595,066	595,066	595,066
Uncensored observations		95,547	6,938	4,287
Log-pseudolikelihood		-171,648.17	-31,641.61	-21,850.904
Pseudo R ²		0.0987	0.1018	0.1106

Source: Author's calculations

^a Robust standard errors in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. The reference group is Non-farmer with a Standard Loan. The branch offices and years were included in the estimation, but are not shown here.

^b CRI indicates the ration of the installments which were missed by at least 1, 15 and 30 days in relation to the paid installments.

The first hypothesis “H1 credit risk” stipulates that farmers have a different credit risk in comparison to non-farmers. To analyze this hypothesis, the CRI of farmers with a Standard Loan are compared with non-farmers receiving the same type of loan. As can be seen in Table 4, the first hypothesis can be accepted for all levels of CRI. However, the significant negative coefficients for *Farmer & Standard Loan* indicate that being a farmer has a negative impact on the CRI and therefore a positive impact on the repayment performance. A possible explanation is that the majority of the farmers who receive a Standard Loan are not subject to

seasonality. This can also be seen in the descriptive statistics: only 21.52% of the farmers receiving a Standard Loan have a seasonal cash flow. As a result, the majority of these farmers are animal producers, and are therefore facing a more continuous cash flow. That is why the repayment schedule of the Standard Loan better fits their repayment capacity. These results are consistent with those of Vogel (1981), Raghunathan (2011) and Weber et al. (2013).

The results show the impact of the pledged collaterals on the repayment performance of non-farmers. It can be seen that the coefficients of the variable *collaterals* are significantly negative and therefore collaterals seem to have a positive impact on the repayment quality of non-farmers. Furthermore, the interaction term *collateral-farmer* indicates that collaterals have a significant effect on the repayment performance for farmers on all levels of CRI. Consequently, the second hypothesis "H2 collaterals" can be accepted, i.e., it can be said that the collaterals are not only a commitment of the borrower as it is widely believed. Surprisingly, the coefficient is positive and therefore indicates that pledged collaterals have a negative impact on the repayment quality of farmers. Thus, collaterals cannot be seen as a risk managing tool for MFIs to capture the special risk situation of farmers. The opposite seems to be the case. Pledged collaterals are worsening the repayment performance. Kropp et al. (2009) have similar findings from an experiment which showed that poorer participants of their experiment have higher repayments. They argue that this could be the result of the clients demand for future access to external finance and their fear of being excluded. This effect might be even stronger for farmers since they still have lower access to finance. Beyond that, the effect of decreasing repayment quality with increasing levels of collaterals could be based on the crowding out effect. Crowding out indicates that economic incentives are only a part of affecting human behavior. There are intrinsic incentives as well which are relevant for individuals in order to maximize their utility (Hirschauer and Zwoell, 2008). To transfer this

effect onto the findings of this paper would mean the following: The lower the collaterals are, the higher is the intrinsic motivation to pay back the loan in time. Furthermore, there is a decrease of the willingness to pay back the loan with increasing monetary incentives like the collaterals (Frey and Jegen, 2001). Another explanatory approach could be that with a relatively high amount of pledged collaterals, the possibility that projects are granted increases. Hence, with granting higher collateralized projects, riskier projects are more likely to be granted. Thus, the combination of the already high risk associated production environment of farmers, along with the fact that riskier projects are financed, could establish a mixture of risk factors which leads to the observed results that the higher the collaterals, the worse is the repayment performance of farmers.

The third hypothesis “H3: Farmer Flex Loan” stipulates that granting a Flex Loan to farmers does significantly change the credit risk in comparison to non-farmers with a Standard Loan. The results show that there is a significant difference for all three levels of CRI. As a result, the third hypothesis cannot be rejected. The significant positive coefficients for the variable *Farmer & Flex Loan* indicate that granting grace periods has a negative effect on the repayment performance of farmers with a Flex Loan and it is even increasing over all three levels of CRI. This is in line with the results of Field et al. (2010) who have similar findings from a field experiment. They argued that granting a grace period allures more risky projects. In our data set, the share of the farmers having a seasonal production, and therefore seasonal cash flow, is higher in the *Farmer & Flex Loan* group. Obviously, granting Flex Loans does not help to smooth the effects of seasonality, primarily because there are other risk components that are also influencing the cash flow and thus the repayment performance. A possible explanation for this goes in line with Field et al. (2011); hence, granting grace periods could attract riskier projects. However, there are studies that display contrasting results. Weber et al. (2013) found out that there is no difference in the repayment performance

between farmers with a Flex Loan and non-farmers in Madagascar. Moreover, Godquin (2004) has evidence that grace periods have a positive impact on the repayment performance.

Conclusion

MFIs are still deterred from entering the rural and therefore agriculture market. Basically, farmers are facing several risk factors which are attached to their production and seasonality. As a result their cash flows are unsteady and unpredictable. Within the combination of individual lending, where creating incentives to replace the joint liability is already a topic, as well as the higher risk exposure of farmers, collaterals might be an appropriate tool to manage the higher risk. For MFIs beyond that, there are already established mechanisms, namely Flex Loans which are used to cope with seasonality. Therefore, this paper explores whether the higher risk exposure of farmers really affects the repayment quality in contrast to non-farmers. Beyond that, the aim of the paper is to give empirical evidence, whether pledged collaterals affect the repayment of farmers and can be used as a risk managing tool. Furthermore, we aim to determine whether Flex Loans can balance out seasonality.

Our finding is that pledged collaterals have an effect on the repayment performance of farmers. However, our findings give an indication that the role of collaterals cannot be seen as a risk managing tool for banks. The combination of granting riskier projects and the already riskier business environment for farmers provides a risk combination which affects the repayment performance in a negative way. As a result, collaterals do have an effect on the repayment performance but they are not suitable as a risk managing tool for MFIs to capture the higher risk exposure of farmers. There is a need for other approaches of hedging the higher risk exposure of farmers, which might be hedging either the price risk or the weather related production risk.

However, the higher risk exposure of farmers is not the only reason that MFIs are deterred from entering rural and, therefore, agricultural markets. Seasonality is another important

aspect which can increase the possibility of a bad repayment performance for farmers as seen from the point of view of the MFI. Our results show that farmers do not have higher delinquencies in general, but it depends on whether their cash flow is seasonal or not. Farmers with a steady cash flow and having a Standard Loan have good repayment performances. Besides that the most farmers are facing a seasonal cash flow which makes creates issues with repayment performances. Therefore, Flex Loans were introduced to help mitigate this problem. Unfortunately, the problems that are occurring with a seasonal cash flow are not balanced out with offering Flex Loans in this case. Moreover, Flex Loans with a grace period even have a negative impact on the repayment performance of farmers. The reason for this might be that aside from seasonality, other risk components still have an influence on the cash flow, and thus, the repayment performance.

For further findings it would be interesting to apply this approach in other countries. Especially for the findings with the collaterals it could be beneficial to investigate an MFI where the pledge of collaterals is not compulsory. Beyond that, the application of a sequential Logit Model could be an interesting approach towards obtaining further information. With this model it would be possible to apply only one estimation instead of three. As a result, the effect on the repayment performance would not be divided into the three CRI levels and an overall effect could be shown and interpreted. However, the sequential Logit Model has drawbacks that would need to be considered, for example, the fact that the launched CRI from this paper could not be used. While applying the sequential Logit Model, the information regarding the repayment performance is reduced to different categories and some features of our dataset would not come into the picture.

References

Access Holding, 2013: http://www.accessholding.com/Our_Network/ABA/; Accessed May 24th , 2013.

- AccessBank, 2013a. Available at: <http://www.accessbank.az/en/news/recognized-as-best-new-product/>; Accessed May 24th , 2013.
- AccessBank, 2013b. Available at: http://www.accessbank.az/en/page/business_credit/#contentLeft; Accessed May 24th , 2013.
- Armendáriz de Aghion, B., Morduch, J., 2000. Microfinance beyond group lending. *Economics of Transition*. **8**, 401–420.
- Armendáriz de Aghion, B., Morduch, J., 2010. The economics of microfinance. The MIT Press, Cambridge, London.
- Binswanger, H. P., Rosenzweig, M. R., 1986. Behavioural and material determinants of production relations in agriculture. *Journal of Development Studies*. **22**, 503–539.
- Cassano, F., Jõeveer, K., Svejnar, J., 2013. Cash flow vs. collateral-based credit. *Economics of Transition*. **21**, 269–300.
- Christen, R. P., Pearce, D., 2005. Managing risks and designing products for agricultural microfinance: Features of an emerging model. CGAP Occasional Paper. No. 11.
- Churchill, C. F., 1999. Client-focused lending: the art of individual lending. Calmeadow.
- Field, E., Pande, R., Papp, J., Rigol, N., 2011. Debt structure, entrepreneurship and risk: Evidence from microfinance. Harvard Working Paper.
- Frey, B. S., Jegen, R., 2001. Motivation crowding theory. *Journal of economic surveys*. **15**, 589–611.
- Godquin, M., 2004. Microfinance repayment performance in Bangladesh: How to improve the allocation of loans by MFIs. *World Development*. **32**, 1909–1926.
- Hamp, M., Laureti, C., 2011. Balancing flexibility and discipline in microfinance: Innovative financial products that benefit clients and service providers. Available at SSRN 2155291.
- Hirschauer, N., Zwoell, S., 2008. Understanding and managing behavioural risks: the case of malpractice in poultry production. *European Journal of Law and Economics*. **26**, 27–60.
- Jain, S., Mansuri, G., 2003. A little at a time: the use of regularly scheduled repayments in microfinance programs. *Journal of Development Economics*. **72**, 253–279.
- Meyer, R. L., 2002. The demand for flexible microfinance products: Lessons from Bangladesh. *Journal of International Development*. **14**, 351–368.

- Miranda, M. J., Gonzalez-Vega, C., 2011. Systemic risk, index insurance, and optimal management of agricultural loan portfolios in developing countries. *American Journal of Agricultural Economics*. **93**, 399–406.
- Morduch, J., 1999. The microfinance promise. *Journal of economic Literature*. **37**, 1569–1614.
- Petrick, M., 2005. Empirical measurement of credit rationing in agriculture: A methodological survey. *Agricultural Economics*. **33**, 191–203.
- Pischke, J. D. von, 2002. Innovation in finance and movement to client-centered credit. *J. Int. Dev.* **14**, 369–380.
- Raghunathan, U. K., Escalante, C. L., Dorfman, J. H., Ames, G. C. W., Houston, J. E., 2011. The effect of agriculture on repayment efficiency: a look at MFI borrowing groups. *Agricultural Economics*. **42**, 465–474.
- Stiglitz, J. E., Weiss, A., 1981. Credit rationing in markets with imperfect information. *The American economic review*. **71**, 393–410.
- Subervie, J., 2008. The variable response of agricultural supply to world price instability in developing countries. *Journal of Agricultural Economics*. **59**, 72–92.
- Tobin, J., 1958. Estimation of relationships for limited dependent variables. *Econometrica: Journal of the Econometric Society*. **26**, 24–36.
- Verbeek, M., 2012. A guide to modern econometrics. John Wiley & Sons Ltd., The Atrium, Southern Gate, Chichester, West Sussex, England.
- Vigenina, D., Kritikos, A. S., 2004. The individual micro-lending contract: is it a better design than joint-liability?: Evidence from Georgia. *Economic Systems*. **28**, 155–176.
- Vogel, R. C., 1981. Rural financial market performance: Implications of low delinquency rates. *American Journal of Agricultural Economics*. **63**, 58–65.
- Vogelgesang, U., 2003. Microfinance in times of crisis: The effects of competition, rising indebtedness, and economic crisis on repayment behavior. *World Development*. **31**, 2085–2114.
- Weber, R., Musshoff, O., 2013. Can flexible microfinance loans improve credit access for farmers? *Agricultural finance review*. **73**, 255–271.
- Wooldridge, J. M., 2009. *Introductory econometrics: a modern approach*. South-Western, Cengage Learning.



Diskussionspapiere

2000 bis 31. Mai 2006

Institut für Agrarökonomie

Georg-August-Universität, Göttingen

<u>2000</u>		
0001	Brandes, Wilhelm	Über Selbstorganisation in Planspielen: ein Erfahrungsbericht, 2000
0002	v. Cramon-Taubadel, Stephan u. Jochen Meyer	Asymmetric Price Transmission: Factor Artefact?, 2000
<u>2001</u>		
0101	Leserer, Michael	Zur Stochastik sequentieller Entscheidungen, 2001
0102	Molua, Ernest	The Economic Impacts of Global Climate Change on African Agriculture, 2001
0103	Birner, Regina et al.	„Ich kaufe, also will ich?": eine interdisziplinäre Analyse der Entscheidung für oder gegen den Kauf besonders tier- u. umweltfreundlich erzeugter Lebensmittel, 2001
0104	Wilkens, Ingrid	Wertschöpfung von Großschutzgebieten: Befragung von Besuchern des Nationalparks Unteres Odertal als Baustein einer Kosten-Nutzen-Analyse, 2001
<u>2002</u>		
0201	Grethe, Harald	Optionen für die Verlagerung von Haushaltsmitteln aus der ersten in die zweite Säule der EU-Agrarpolitik, 2002
0202	Spiller, Achim u. Matthias Schramm	Farm Audit als Element des Midterm-Review : zugleich ein Beitrag zur Ökonomie von Qualitätssicherungssystemen, 2002
<u>2003</u>		
0301	Lüth, Maren et al.	Qualitätssignaling in der Gastronomie, 2003
0302	Jahn, Gabriele, Martina Peupert u. Achim Spiller	Einstellungen deutscher Landwirte zum QS-System: Ergebnisse einer ersten Sondierungsstudie, 2003
0303	Theuvsen, Ludwig	Kooperationen in der Landwirtschaft: Formen, Wirkungen und aktuelle Bedeutung, 2003
0304	Jahn, Gabriele	Zur Glaubwürdigkeit von Zertifizierungssystemen: eine ökonomische Analyse der Kontrollvalidität, 2003
<u>2004</u>		
0401	Meyer, Jochen u. Stephan v. Cramon-Taubadel	Asymmetric Price Transmission: a Survey, 2004
0402	Barkmann, Jan u. Rainer Marggraf	The Long-Term Protection of Biological Diversity: Lessons from Market Ethics, 2004

0403	Bahrs, Enno	VAT as an Impediment to Implementing Efficient Agricultural Marketing Structures in Transition Countries, 2004
0404	Spiller, Achim, Torsten Staack u. Anke Zühlsdorf	Absatzwege für landwirtschaftliche Spezialitäten: Potenziale des Mehrkanalvertriebs, 2004
0405	Spiller, Achim u. Torsten Staack	Brand Orientation in der deutschen Ernährungswirtschaft: Ergebnisse einer explorativen Online-Befragung, 2004
0406	Gerlach, Sabine u. Berit Köhler	Supplier Relationship Management im Agribusiness: ein Konzept zur Messung der Geschäftsbeziehungsqualität, 2004
0407	Inderhees, Philipp et al.	Determinanten der Kundenzufriedenheit im Fleischerfachhandel
0408	Lüth, Maren et al.	Köche als Kunden: Direktvermarktung landwirtschaftlicher Spezialitäten an die Gastronomie, 2004
<u>2005</u>		
0501	Spiller, Achim, Julia Engelken u. Sabine Gerlach	Zur Zukunft des Bio-Fachhandels: eine Befragung von Bio-Intensivkäufern, 2005
0502	Groth, Markus	Verpackungsabgaben und Verpackungslizenzen als Alternative für ökologisch nachteilige Einweggetränkeverpackungen? Eine umweltökonomische Diskussion, 2005
0503	Freese, Jan u. Henning Steinmann	Ergebnisse des Projektes 'Randstreifen als Strukturelemente in der intensiv genutzten Agrarlandschaft Wolfenbüttels', Nichtteilnehmerbefragung NAU 2003, 2005
0504	Jahn, Gabriele, Matthias Schramm u. Achim Spiller	Institutional Change in Quality Assurance: the Case of Organic Farming in Germany, 2005
0505	Gerlach, Sabine, Raphael Kennerknecht u. Achim Spiller	Die Zukunft des Großhandels in der Bio-Wertschöpfungskette, 2005
<u>2006</u>		
0601	Heß, Sebastian, Holger Bergmann u. Lüder Sudmann	Die Förderung alternativer Energien: eine kritische Bestandsaufnahme, 2006
0602	Gerlach, Sabine u. Achim Spiller	Anwohnerkonflikte bei landwirtschaftlichen Stallbauten: Hintergründe und Einflussfaktoren; Ergebnisse einer empirischen Analyse, 2006
0603	Glenk, Klaus	Design and Application of Choice Experiment Surveys in So-Called Developing Countries: Issues and Challenges, 2006
0604	Bolten, Jan, Raphael Kennerknecht u. Achim Spiller	Erfolgsfaktoren im Naturkostfachhandel: Ergebnisse einer empirischen Analyse, 2006 (entfällt)

0605	Hasan, Yousra	Einkaufsverhalten und Kundengruppen bei Direktvermarktern in Deutschland: Ergebnisse einer empirischen Analyse, 2006
0606	Lülfs, Frederike u. Achim Spiller	Kunden(un-)zufriedenheit in der Schulverpflegung: Ergebnisse einer vergleichenden Schulbefragung, 2006
0607	Schulze, Holger, Friederike Albersmeier u. Achim Spiller	Risikoorientierte Prüfung in Zertifizierungssystemen der Land- und Ernährungswirtschaft, 2006
<u>2007</u>		
0701	Buchs, Ann Kathrin u. Jörg Jasper	For whose Benefit? Benefit-Sharing within Contractual ABC-Agreements from an Economic Perspective: the Example of Pharmaceutical Bioprospection, 2007
0702	Böhm, Justus et al.	Preis-Qualitäts-Relationen im Lebensmittelmarkt: eine Analyse auf Basis der Testergebnisse Stiftung Warentest, 2007
0703	Hurlin, Jörg u. Holger Schulze	Möglichkeiten und Grenzen der Qualitäts-sicherung in der Wildfleischvermarktung, 2007
Ab Heft 4, 2007:		Diskussionspapiere (Discussion Papers), Department für Agrarökonomie und Rurale Entwicklung Georg-August-Universität, Göttingen (ISSN 1865-2697)
0704	Stockebrand, Nina u. Achim Spiller	Agrarstudium in Göttingen: Fakultätsimage und Studienwahlentscheidungen; Erstsemesterbefragung im WS 2006/2007
0705	Bahrs, Enno, Jobst-Henrik Held u. Jochen Thiering	Auswirkungen der Bioenergieproduktion auf die Agrarpolitik sowie auf Anreizstrukturen in der Landwirtschaft: eine partielle Analyse bedeutender Fragestellungen anhand der Beispielregion Niedersachsen
0706	Yan, Jiong, Jan Barkmann u. Rainer Marggraf	Chinese tourist preferences for nature based destinations – a choice experiment analysis
<u>2008</u>		
0801	Joswig, Anette u. Anke Zühlsdorf	Marketing für Reformhäuser: Senioren als Zielgruppe
0802	Schulze, Holger u. Achim Spiller	Qualitätssicherungssysteme in der europäischen Agri-Food Chain: Ein Rückblick auf das letzte Jahrzehnt
0803	Gille, Claudia u. Achim Spiller	Kundenzufriedenheit in der Pensionspferdehaltung: eine empirische Studie
0804	Voss, Julian u. Achim Spiller	Die Wahl des richtigen Vertriebswegs in den Vorleistungsindustrien der Landwirtschaft – Konzeptionelle Überlegungen und empirische Ergebnisse

0805	Gille, Claudia u. Achim Spiller	Agrarstudium in Göttingen. Erstsemester- und Studienverlaufsbefragung im WS 2007/2008
0806	Schulze, Birgit, Christian Wocken u. Achim Spiller	(Dis)loyalty in the German dairy industry. A supplier relationship management view Empirical evidence and management implications
0807	Brümmer, Bernhard, Ulrich Köster u. Jens- Peter Loy	Tendenzen auf dem Weltgetreidemarkt: Anhaltender Boom oder kurzfristige Spekulationsblase?
0808	Schlecht, Stephanie, Friederike Albersmeier u. Achim Spiller	Konflikte bei landwirtschaftlichen Stallbauprojekten: Eine empirische Untersuchung zum Bedrohungspotential kritischer Stakeholder
0809	Lülfs-Baden, Frederike u. Achim Spiller	Steuerungsmechanismen im deutschen Schulverpflegungsmarkt: eine institutionenökonomische Analyse
0810	Deimel, Mark, Ludwig Theuvsen u. Christof Ebbeskotte	Von der Wertschöpfungskette zum Netzwerk: Methodische Ansätze zur Analyse des Verbundsystems der Veredelungswirtschaft Nordwestdeutschlands
0811	Albersmeier, Friederike u. Achim Spiller	Supply Chain Reputation in der Fleischwirtschaft
<u>2009</u>		
0901	Bahlmann, Jan, Achim Spiller u. Cord-Herwig Plumeyer	Status quo und Akzeptanz von Internet-basierten Informationssystemen: Ergebnisse einer empirischen Analyse in der deutschen Veredelungswirtschaft
0902	Gille, Claudia u. Achim Spiller	Agrarstudium in Göttingen. Eine vergleichende Untersuchung der Erstsemester der Jahre 2006-2009
0903	Gawron, Jana-Christina u. Ludwig Theuvsen	„Zertifizierungssysteme des Agribusiness im interkulturellen Kontext – Forschungsstand und Darstellung der kulturellen Unterschiede“
0904	Raupach, Katharina u. Rainer Marggraf	Verbraucherschutz vor dem Schimmelpilzgift Deoxynivalenol in Getreideprodukten Aktuelle Situation und Verbesserungsmöglichkeiten
0905	Busch, Anika u. Rainer Marggraf	Analyse der deutschen globalen Waldpolitik im Kontext der Klimarahmenkonvention und des Übereinkommens über die Biologische Vielfalt
0906	Zschache, Ulrike, Stephan v. Cramon-Taubadel u. Ludwig Theuvsen	Die öffentliche Auseinandersetzung über Bioenergie in den Massenmedien - Diskursanalytische Grundlagen und erste Ergebnisse
0907	Onumah, Edward E., Gabriele Hoerstgen-Schwark u. Bernhard Brümmer	Productivity of hired and family labour and determinants of technical inefficiency in Ghana's fish farms
0908	Onumah, Edward E., Stephan Wessels, Nina Wildenhayn, Gabriele Hoerstgen-Schwark u. Bernhard Brümmer	Effects of stocking density and photoperiod manipulation in relation to estradiol profile to enhance spawning activity in female Nile tilapia

0909	Steffen, Nina, Stephanie Schlecht u. Achim Spiller	Ausgestaltung von Milchlieferverträgen nach der Quote
0910	Steffen, Nina, Stephanie Schlecht u. Achim Spiller	Das Preisfindungssystem von Genossenschaftsmolkereien
0911	Granoszewski, Karol, Christian Reise, Achim Spiller u. Oliver Mußhoff	Entscheidungsverhalten landwirtschaftlicher Betriebsleiter bei Bioenergie-Investitionen - Erste Ergebnisse einer empirischen Untersuchung -
0912	Albersmeier, Friederike, Daniel Mörlein u. Achim Spiller	Zur Wahrnehmung der Qualität von Schweinefleisch beim Kunden
0913	Ihle, Rico, Bernhard Brümmer u. Stanley R. Thompson	Spatial Market Integration in the EU Beef and Veal Sector: Policy Decoupling and Export Bans
<u>2010</u>		
1001	Heß, Sebastian, Stephan v. Cramon-Taubadel u. Stefan Sperlich	Numbers for Pascal: Explaining differences in the estimated Benefits of the Doha Development Agenda
1002	Deimel, Ingke, Justus Böhm u. Birgit Schulze	Low Meat Consumption als Vorstufe zum Vegetarismus? Eine qualitative Studie zu den Motivstrukturen geringen Fleischkonsums
1003	Franz, Annabell u. Beate Nowak	Functional food consumption in Germany: A lifestyle segmentation study
1004	Deimel, Mark u. Ludwig Theuvsen	Standortvorteil Nordwestdeutschland? Eine Untersuchung zum Einfluss von Netzwerk- und Clusterstrukturen in der Schweinefleischerzeugung
1005	Niens, Christine u. Rainer Marggraf	Ökonomische Bewertung von Kindergesundheit in der Umweltpolitik - Aktuelle Ansätze und ihre Grenzen
1006	Hellberg-Bahr, Anneke, Martin Pfeuffer, Nina Steffen, Achim Spiller u. Bernhard Brümmer	Preisbildungssysteme in der Milchwirtschaft -Ein Überblick über die Supply Chain Milch
1007	Steffen, Nina, Stephanie Schlecht, Hans-Christian Müller u. Achim Spiller	Wie viel Vertrag braucht die deutsche Milchwirtschaft?- Erste Überlegungen zur Ausgestaltung des Contract Designs nach der Quote aus Sicht der Molkereien
1008	Prehn, Sören, Bernhard Brümmer u. Stanley R. Thompson	Payment Decoupling and the Intra – European Calf Trade
1009	Maza, Byron, Jan Barkmann, Frank von Walter u.	Modelling smallholders production and agricultural income in the area of the Biosphere reserve “Podocarpus - El Cónдор”, Ecuador

	Rainer Marggraf	
1010	Busse, Stefan, Bernhard Brümmer u. Rico Ihle	Interdependencies between Fossil Fuel and Renewable Energy Markets: The German Biodiesel Market
<u>2011</u>		
1101	Mylius, Donata, Simon Küest, Christian Klapp u. Ludwig Theuvsen	Der Großvieheinheitenschlüssel im Stallbaurecht - Überblick und vergleichende Analyse der Abstandsregelungen in der TA Luft und in den VDI-Richtlinien
1102	Klapp, Christian, Lukas Obermeyer u. Frank Thoms	Der Vieheinheitenschlüssel im Steuerrecht - Rechtliche Aspekte und betriebswirtschaftliche Konsequenzen der Gewerblichkeit in der Tierhaltung
1103	Göser, Tim, Lilli Schroeder u. Christian Klapp	Agrarumweltprogramme: (Wann) lohnt sich die Teilnahme für landwirtschaftliche Betriebe?
1104	Plumeyer, Cord-Herwig, Friederike Albersmeier, Maximilian Freiherr von Oer, Carsten H. Emmann u. Ludwig Theuvsen	Der niedersächsische Landpachtmarkt: Eine empirische Analyse aus Pächtersicht
1105	Voss, Anja u. Ludwig Theuvsen	Geschäftsmodelle im deutschen Viehhandel: Konzeptionelle Grundlagen und empirische Ergebnisse
1106	Wendler, Cordula, Stephan v. Cramon-Taubadel, Hardwig de Haen, Carlos Antonio Padilla Bravo u. Samir Jrad	Food security in Syria: Preliminary results based on the 2006/07 expenditure survey
1107	Prehn, Sören u. Bernhard Brümmer	Estimation Issues in Disaggregate Gravity Trade Models
1108	Recke, Guido, Ludwig Theuvsen, Nadine Venhaus u. Anja Voss	Der Viehhandel in den Wertschöpfungsketten der Fleischwirtschaft: Entwicklungstendenzen und Perspektiven
1109	Prehn, Sören u. Bernhard Brümmer	“Distorted Gravity: The Intensive and Extensive Margins of International Trade”, revisited: An Application to an Intermediate Melitz Model
<u>2012</u>		
1201	Kayser, Maike, Claudia Gille,	Lack of pupils in German riding schools? – A causal-analytical consideration of customer satisfaction in children

	Katrin Suttorp u. Achim Spiller	and adolescents
1202	Prehn, Sören u. Bernhard Brümmer	Bimodality & the Performance of PPML
1203	Tangermann, Stefan	Preisanstieg am EU-Zuckermarkt: Bestimmungsgründe und Handlungsmöglichkeiten der Marktpolitik
1204	Würriehausen, Nadine, Sebastian Lakner u. Rico Ihle	Market integration of conventional and organic wheat in Germany
1205	Heinrich, Barbara	Calculating the Greening Effect – a case study approach to predict the gross margin losses in different farm types in Germany due to the reform of the CAP
1206	Prehn, Sören u. Bernhard Brümmer	A Critical Judgement of the Applicability of ‘New New Trade Theory’ to Agricultural: Structural Change, Productivity, and Trade
1207	Marggraf, Rainer, Patrick Masius u. Christine Rumpf	Zur Integration von Tieren in wohlfahrtsökonomischen Analysen
1208	Sebastian Lakner, Bernhard Brümmer, Stephan v. Cramon-Taubadel Jürgen Heß, Johannes Isselstein, Ulf Liebe, Rainer Marggraf, Oliver Mußhoff, Ludwig Theuvsen, Teja Tschardtke, Catrin Westphal u. Gerlinde Wiese	Der Kommissionsvorschlag zur GAP-Reform 2013 - aus Sicht von Göttinger und Witzenhäuser Agrarwissenschaftler(inne)n
1209	Prehn, Sören, Bernhard Brümmer und Thomas Glauben	Structural Gravity Estimation & Agriculture
1210	Prehn, Sören, Bernhard Brümmer und Thomas Glauben	An Extended Viner Model: Trade Creation, Diversion & Reduction
1211	Salidas, Rodrigo and Stephan von Cramon-Taubadel	Access to Credit and the Determinants of Technical Inefficiency among Specialized Small Farmers in Chile
1212	Steffen, Nina und Achim Spiller	Effizienzsteigerung in der Wertschöpfungskette Milch ? -Potentiale in der Zusammenarbeit zwischen Milcherzeugern und Molkereien aus Landwirtssicht
1213	Mußhoff, Oliver, André Tegmeier u. Norbert Hirschauer	Attraktivität einer landwirtschaftlichen Tätigkeit - Einflussfaktoren und Gestaltungsmöglichkeiten

1301	Lakner, Sebastian, Carsten Holst u. Barbara Heinrich	Reform der Gemeinsamen Agrarpolitik der EU 2014 - mögliche Folgen des Greenings für die niedersächsische Landwirtschaft
1302	Tangermann, Stefan u. Stephan von Cramon-Taubadel	Agricultural Policy in the European Union : An Overview
1303	Granoszewski, Karol u. Achim Spiller	Langfristige Rohstoffsicherung in der Supply Chain Biogas : Status Quo und Potenziale vertraglicher Zusammenarbeit
1304	Lakner, Sebastian, Carsten Holst, Bernhard Brümmer, Stephan von Cramon-Taubadel, Ludwig Theuvsen, Oliver Mußhoff u. Teja Tschardtke	Zahlungen für Landwirte an gesellschaftliche Leistungen koppeln! - Ein Kommentar zum aktuellen Stand der EU-Agrarreform
1305	Prechtel, Bianca, Maike Kayser u. Ludwig Theuvsen	Organisation von Wertschöpfungsketten in der Gemüseproduktion : das Beispiel Spargel
1306	Anastassiadis, Friederike, Jan-Henning Feil, Oliver Musshoff u. Philipp Schilling	Analysing farmers' use of price hedging instruments : an experimental approach
1307	Holst, Carsten u. Stephan von Cramon-Taubadel	Trade, Market Integration and Spatial Price Transmission on EU Pork Markets following Eastern Enlargement
1308	Granoszewski, K., S. Sander, V. M. Aufmkolk u. A. Spiller	Die Erzeugung regenerativer Energien unter gesellschaftlicher Kritik : Akzeptanz von Anwohnern gegenüber der Errichtung von Biogas- und Windenergieanlagen
1401	Lakner, S., C. Holst, J. Barkmann, J. Isselstein u. A. Spiller	Perspektiven der Niedersächsischen Agrarpolitik nach 2013 : Empfehlungen Göttinger Agrarwissenschaftler für die Landespolitik
1402	Müller, K., Mußhoff, O. u. Weber, R.	The More the Better? How Collateral Levels Affect Credit Risk in Agricultural Microfinance
1403	März, A., N. Klein, T. Kneib u. O. Mußhoff	Analysing farmland rental rates using Bayesian geoadditive quantile regression



Diskussionspapiere

2000 bis 31. Mai 2006:

Institut für Rurale Entwicklung

Georg-August-Universität, Göttingen)

Ed. Winfried Manig (ISSN 1433-2868)

32	Dirks, Jörg J.	Einflüsse auf die Beschäftigung in nahrungsmittelverarbeitenden ländlichen Kleinindustrien in West-Java/Indonesien, 2000
33	Keil, Alwin	Adoption of Leguminous Tree Fallows in Zambia, 2001
34	Schott, Johanna	Women's Savings and Credit Co-operatives in Madagascar, 2001
35	Seeberg-Elberfeldt, Christina	Production Systems and Livelihood Strategies in Southern Bolivia, 2002
36	Molua, Ernest L.	Rural Development and Agricultural Progress: Challenges, Strategies and the Cameroonian Experience, 2002
37	Demeke, Abera Birhanu	Factors Influencing the Adoption of Soil Conservation Practices in Northwestern Ethiopia, 2003
38	Zeller, Manfred u. Julia Johannsen	Entwicklungshemmnisse im afrikanischen Agrarsektor: Erklärungsansätze und empirische Ergebnisse, 2004
39	Yustika, Ahmad Erani	Institutional Arrangements of Sugar Cane Farmers in East Java – Indonesia: Preliminary Results, 2004
40	Manig, Winfried	Lehre und Forschung in der Sozialökonomie der Ruralen Entwicklung, 2004
41	Hebel, Jutta	Transformation des chinesischen Arbeitsmarktes: gesellschaftliche Herausforderungen des Beschäftigungswandels, 2004
42	Khan, Mohammad Asif	Patterns of Rural Non-Farm Activities and Household Access to Informal Economy in Northwest Pakistan, 2005
43	Yustika, Ahmad Erani	Transaction Costs and Corporate Governance of Sugar Mills in East Java, Indonesia, 2005
44	Feulefack, Joseph Florent, Manfred Zeller u. Stefan Schwarze	Accuracy Analysis of Participatory Wealth Ranking (PWR) in Socio-economic Poverty Comparisons, 2006



Die Wurzeln der **Fakultät für Agrarwissenschaften** reichen in das 19. Jahrhundert zurück. Mit Ausgang des Wintersemesters 1951/52 wurde sie als siebente Fakultät an der Georgia-Augusta-Universität durch Ausgliederung bereits existierender landwirtschaftlicher Disziplinen aus der Mathematisch-Naturwissenschaftlichen Fakultät etabliert.

1969/70 wurde durch Zusammenschluss mehrerer bis dahin selbständiger Institute das **Institut für Agrarökonomie** gegründet. Im Jahr 2006 wurden das Institut für Agrarökonomie und das Institut für RURale Entwicklung zum heutigen **Department für Agrarökonomie und RURale Entwicklung** zusammengeführt.

Das Department für Agrarökonomie und RURale Entwicklung besteht aus insgesamt neun Lehrstühlen zu den folgenden Themenschwerpunkten:

- Agrarpolitik
- Betriebswirtschaftslehre des Agribusiness
- Internationale Agrarökonomie
- Landwirtschaftliche Betriebslehre
- Landwirtschaftliche Marktlehre
- Marketing für Lebensmittel und Agrarprodukte
- Soziologie Ländlicher Räume
- Umwelt- und Ressourcenökonomik
- Welternährung und rurale Entwicklung

In der Lehre ist das Department für Agrarökonomie und RURale Entwicklung führend für die Studienrichtung Wirtschafts- und Sozialwissenschaften des Landbaus sowie maßgeblich eingebunden in die Studienrichtungen Agribusiness und Ressourcenmanagement. Das Forschungsspektrum des Departments ist breit gefächert. Schwerpunkte liegen sowohl in der Grundlagenforschung als auch in angewandten Forschungsbereichen. Das Department bildet heute eine schlagkräftige Einheit mit international beachteten Forschungsleistungen.

Georg-August-Universität Göttingen
Department für Agrarökonomie und RURale Entwicklung
Platz der Göttinger Sieben 5
37073 Göttingen
Tel. 0551-39-4819
Fax. 0551-39-12398
Mail: biblio1@gwdg.de
Homepage : <http://www.uni-goettingen.de/de/18500.html>