PROPOSAL FOR A RESEARCH GRANT FROM THE DEUTSCHE FORSCHUNGSGEMEINSCHAFT (DFG)

1 General information

Proposal for a research grant, Renewal proposal

Subproject 9 within the DFG Research Unit: "Structural Change in Agriculture (SIAG)"

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1.2 Title

Econometric evaluation of CAP impacts in Germany

Keywords: Policy evaluation, CAP, treatment effects, econometrics.

1.3 Research area and field of work

Agricultural Policy, Rural Development Policy

1.4 Anticipated total duration

3 years, within the second phase of the Research Unit (first phase started at: 01.08.2007)

1.5   Application period

Date of the previous grant: 06.07.2007

Current funding for personnel will probably last until: 31.07.2010

Current funding for direct project costs is anticipated to last until: 31.07.2010

Application period: 01.08.2010 - 31.07.2013

1.6   Summary

Currently, the EU spends around 5 billion euro annually on decoupled direct payments to German farmers. In addition, agricultural policymakers have been relying increasingly on differentiated measures for 'rural development' which, besides supporting agricultural enterprises, should also assist environmental aims and strengthen rural areas in general. The aim of this subproject is to develop and apply regression models that analyse the effects of agricultural and rural development policies on the agricultural sector in German regions. Basing the analysis on territorial observation units allows to include instruments which are not directly aimed at farms, e.g. measures for village regeneration which are of particular importance in eastern Germany. The subproject draws on recent literature dealing with multiple, continuous policy effects in a panel data setting. Building on ongoing work from the first phase of this subproject, the primary focus will be on three extensions to existing models: (1) strengthening the microeconomic underpinnings related to CAP effects on farmers' behaviour, (2) explicitly considering dynamics of farm structures in the econometric models, (3) relaxing the linearity assumptions that are typically central to these models.

2   Starting point of the project

The previous two decades have witnessed a fundamental re-organisation of the Common Agricultural Policy (CAP) of the European Union (EU), triggered by the MacSharry reform of 1992. Agricultural markets throughout the (enlarging) Union have been liberalised, and policymakers have begun to replace the traditional market and price policy by decoupled payments to farmers. At the same time, the public became more and more aware that 'food and fibre' production is but one function of rural areas, and that a growing policy focus should be laid on conceptually more diversified and more structurally, environmentally, and territorially oriented instruments for 'rural development' (Ackrill 2008, Petrick 2008a). Currently, the EU spends around 5 billion euro annually on decoupled direct payments to German farmers (BMELV 2008). Within 'rural development', the most important instruments in Germany – by relative budget allocation – for the recently expired aid period 2000 to 2006 included agri-environmental measures, measures for village regeneration, investment support for private agricultural enterprises, and payments for farmers in less favoured regions. In this period about 8.7 billion euro of European Union funds were distributed in Germany for rural development. For the current aid period 2007–2013, 8.1 billion euro are budgeted (European Commission 2006).

Table 1: EU funding of rural development measures (Reg. 1257/99) in Germany in 2000-2006

	Germany	of which: Agro-environmental measures (art. 22-24)	Village renewal (art. 33(6))	Investments in farms (art. 4-7)	Less fa-voured areas (art. 13a)
Mln. €	8.690,92	2.667,54	1.757,77	887,2	671,18
%	100	31	20	10	8

Source: Schubert (2002, 27).

Not a small number of observers are regarding the 'rural development'-types of policy measures as the future backbone of rural policy, even though not in their current form (e.g., Sotte 2005; Swinbank and Zahrnt 2009). At the same time, demands by the public to reveal the purposes and effects of national and European spending on agriculture have remained strong. Addressing the question of how measures within the reformed CAP impact on agricultural structures and economic outcomes in the farming sector is central for assessing the public desirability of public spending. However, the evidence on these effects is still very limited and controversial. Although the EU mandates an ongoing evaluation of its policy measures, controversies in academia and administration persist concerning the appropriate methodology for carrying out such an impact analysis. Specifically, there is an unsettled scientific debate concerning the econometric methods for doing quantitative policy impact analysis.

The subproject described in the following aims to examine the methods that are appropriate for conducting a consistent quantitative analysis of policy impacts at a regionally aggregated level. It aims to adjust them to the specific policy context and applies them to selected rural regions of Germany. It is thus a direct extension of the related subproject in the previous funding period of the DFG research unit.

2.1 State of the art

a) Evaluation mandated by policy makers

Evaluation has become an established component of agricultural and rural development policy making at the EU level. Both the 2000 to 2006 as well as the ongoing 2007 to 2013 programming periods have been accompanied by specific regulations concerning ex-ante, mid-term and ex-post evaluations. In particular, the European Commission has developed specific sets of evaluation questions for obligatory use in all evaluation studies carried out under the Commission mandate. A comprehensive documentation of the evaluation approach as well as a synthesis of mid-term evaluation results of all EU member countries for the 2000-2006 period is available in Agra CEAS Consulting (2005a and 2005b). Results of the ex-post evaluation for this period are so far only available at the State level, for example Grajewski (2008) for Lower Saxony in Germany. In general, this type of evaluation is based on sets of quantitative and qualitative indicators which themselves draw on interviews and case studies of stakeholders. Whereas some quantitative indicators are hence used, the guidelines set out

by the Commission focus on whether or not an improvement in outcomes can be noted. A quantification of impacts is generally not required (Agra CEAS Consulting 2005a, 252).

Overall, the European synthesis report of the mid-term evaluations mandated by the European Commission contains a modestly positive assessment of the policy measures on targeted outcomes (Agra CEAS Consulting 2005a and 2005b). Even so, Forstner et al. (2003) note a number of principal problems of this type of evaluation directly mandated by policy makers in the EU context. These problems include the twin role of State governments which are the major beneficiaries of EU funds and responsible for an "objective" assessment of these funds at the same time. Forstner et al. (2003) also highlight the abundant deficits in data availability, the absence of observable counterfactual scenarios (cf. Sinabell and Streicher 2005 for related points), and the problems of measuring short-term impacts of measures that are assumed to have mostly long-term effects. Many of these problems are also pointed out in the abovementioned documents summarizing the evaluation outcomes. In particular, evaluators are typically careful to note that conclusive statements on impact are often impossible due to data constraints and that the available indicators usually do not allow conclusions concerning potential deadweight, that is cases where the observed outcomes would have also been achieved in the absence of policies. As they do not aim at a quantification of impact, these studies are partly complementary to the approach considered in this proposal. However, the methodologies employed here also offer specific solutions to the previously outlined problems, which thus figure prominently in the following discussion.

b) Evaluation in the quantitative social sciences and agricultural economics literature

There is now an emerging body of literature originating in various policy fields that focuses on the core problems of quantitative impact evaluation (see Heckman et al. 1999 on labour market policies, Smith 2004 on regional policies, Ravallion 2008 on anti-poverty programs). The two core problems as summarized by Heckman and Vytlacil (2007, 4814) are as follows:

1. The *evaluation problem* arises because outcomes of programs or policies can only be observed in one particular state of the world. It is not known what would have happened had there been another policy in place, as counterfactuals are generally unobserved in real-world settings.

2. The *selection problem* arises if individuals choose program participation or policy uptake voluntarily. If participation is caused by certain characteristics of individuals, outcomes may differ systematically due to these characteristics and may not be due to program participation. Some of the characteristics may be unobserved, thus making it difficult to control for them.

Hence, two central methodological questions in the impact evaluation literature are how to construct plausible counterfactuals and how to control for unobserved selection bias. While the menu of available approaches has increased rapidly over recent years (see the overviews by Blundell and Costa Dias 2009 as well as Imbens and Wooldridge 2009), we focus our discussion on two basic methodological paradigms which have also been used within the field of agricultural policy analysis. These paradigms are the "structural econometric approach" and the "treatment effect approach" (using the terminology of Heckman and Vytlacil 2005; for a similar distinction see Imbens and Wooldridge 2009).

The *structural econometric approach* is the established approach in the economics literature which derives estimating equations and their endogenous and exogenous variables from economic theory. Next to estimating structural parameters of fundamental behavioral relationships, it is aiming at the ex-post evaluation of policies as well as forecasting effects of policies in new environments. The two core problems of impact analysis are addressed by explicitly modeling individual selection into programs and by using control variables in the framework of parametric regression models. This approach typically involves relatively strong assumptions about functional forms and exogeneity of variables and the identification of parameters is a key issue in this literature (Heckman and Vytlacil 2005, 716).

Structural modeling and econometric estimation of agricultural policy impacts has a long tradition in agricultural economics research. Recently, there has been a strong interest in studying the effects of decoupling, with a particular focus on production (Adams et al. 2001; Goodwin and Mishra 2006; Serra et al. 2006), land markets (Roberts et al. 2003; Lence and Mishra 2003; Shaik et al. 2005), and labor allocation (Ahearn et al. 2006; Key and Roberts 2009). All of these references are related to the US context and typically work with individual farm-level data. Structural modeling of decoupling in the CAP framework has been pursued by a number of scholars as well (Guyomard et al. 2004; Sckokai and Moro 2006; 2009) and land markets have also been of specific interest here (Ciaian and Swinnen 2006; Kilian et al. 2008; Patton et al. 2008). However, the CAP-related literature concerning second pillar measures is limited. Furthermore, in the framework of structural modeling, effects other than those on farm output or land markets have been studied less frequently. Among the few examples are Brümmer and Loy (2000) and Petrick (2004a; 2004b) who examined the effects of investment support programs in Germany and Poland, respectively. Salhofer and Streicher (2005) and Sinabell and Streicher (2005) analysed agro-environmental measures. Esposti (2007) investigated CAP effects on regional growth in Europe. The extent to which the methodological challenges of impact analysis outlined in this proposal are considered varies among the aforementioned studies. Moreover, it is common that a theoretical motivation of the analysis is merely sketched and kept at a rather general level. Microeconomic models of farm behavior that accommodate the entire range of policy measures now in the CAP portfolio are not (yet) available in the literature.

The *treatment effect approach* emerged from the statistical literature and more narrowly focuses on the ex-post evaluation of a particular policy in a particular circumstance, namely where there is an observed treatment group and a comparison group. The focus is on studying so-called potential outcomes, that is pairs of outcomes that emerge from different levels of treatment for the same unit of observation (Imbens and Wooldridge 2009, 7). A popular non-parametric method to implement this approach is that of matching, where the outcomes of individuals are compared who are observationally identical except for the treatment.[1] Such analysis requires fewer assumptions on functional form and exogeneity, however, it is argued that the link to economic theory is often weak and results from one particular policy or program are hard to generalize (Heckman and Vytlacil 2005, 716). Furthermore, a controversial

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[1] The (established) terminology of "treatment effect approach" for this method is confusing in the sense that parametric regression models can and are also be used to estimate treatment effects. See section c) of this chapter.

but standard assumption of this type of analysis is conditional independence, that is, conditioned on a set of covariates, there is no selection bias (Blundell and Costa Dias 2009, 594). This method is not yet routinely applied in the agricultural policy literature. Henning and Michalek (2008) and Pufahl and Weiss (2009) are among the first applications to SAPARD and agro-environmental policy, respectively.

As the ongoing debate shows, both of these approaches have their scientific merits. However, the following discussion of a regionally aggregated, simultaneous analysis of the complete set of CAP policy measures as pursued in this subproject focuses on the structural econometric approach. This is for two main reasons: First, data on policy expenses at the regional level is of a metric nature, whereas matching is suitable for binary policy variables. Second, matching methods, by forming two subsamples based on participation or non-participation in a policy treatment, is used to analyse one binary policy measure at a time. However, the aim here is to examine the effects of several measures simultaneously.

c) Panel data models for policy evaluation

A standard workhorse in the structural modelling literature is the static fixed effects panel data model to estimate average treatment effects (see Smith 2004, 304-5, for a discussion in the framework of regional policy analysis; further discussion is in Heckman et al. 1999, 1882-6; Blundell and Costa Dias 2009, 575). The model can be written as follows:

$$y_{it} = d_{it}'\delta + x_{it}'\beta + \alpha_i + \mu_t + \varepsilon_{it} ,$$ (1)

where y_{it} is the outcome variable observed for a sample of $i = 1...n$ regions at time t. x_{it} is a vector of control variables, β a vector of coefficients to be estimated, d_{it} a vector of metric variables indicating policy treatment in region i, α_i a potentially latent, regional fixed effect that may be correlated with elements of x, μ_t an unobservable macro or time effect that affects all regions at time t in the same way, and ε_{it} is an identically and independently distributed error term (i.i.d.). δ estimates the "treatment effect", i.e. the marginal impact of the policy measure on the outcome. As the model is additively linear, the marginal policy effect is constant and equal to the population average treatment effect. Treatment effects are homogenous for all subpopulations of the sample, which is also called the "common effects" assumption (Smith 2004, 304).

With regard to the generic problems of evaluation and selection, this model has two attractive characteristics: It allows the construction of a counterfactual by the linearity assumption and it eliminates additively separable and time invariant selection bias by sweeping out unobserved individual heterogeneity. These features represent a clear methodological advantage over more standard ordinary least-squares approaches using pooled data, or mean comparisons. Variants of (1) have recently been used to study agricultural policy effects by Adams et al. (2001), Roberts et al. (2003), Ciaian and Kancs (2009) and Petrick and Zier (2009b).

At the same time, the assumptions of this model have not been unquestioned, and much of the methodological discussion in the recent treatment effect literature has focused on relaxing them. In addition to the common effects assumption, the following two characteristics have been addressed:

1. Treatment is *static* and neglects the time dimension of causal effects. There are no effects of lagged dependent variables.

2. Treatment effects are *linear* and can be extrapolated outside the support of the given sample. External validity is implied by the constant coefficient setting.

The first may be a restrictive assumption in settings with substantial path dependencies, such as the evolution of farm structures. For example, Forstner et al. (2003, 331) argue that many of the effects of rural development or structural policy measures should have a medium- to long-term rather than a short-term impact. More generally, there has been a long-standing discontent with static models of agricultural change and explicitly dynamic models have been called for by various researchers (See Margarian 2008 and the discussion in the proposals of Subprojects 2, 3 and 5).

Analysing the time-dimension of structural change and policy effects requires dynamic theoretical models of factor demand, such as surveyed in Bond and van Reenen (2007) and Gardebroek and Oude Lansink (2008). With regard to empirical analysis of policy impacts in such a setting, a dynamic fixed-effect model is the following (Cameron and Trivedi 2005, 763):

$$y_{it} = \gamma \, y_{i,t-1} + d_{it}' \delta + x_{it}' \beta + \alpha_i + \mu_t + \varepsilon_{it} \tag{2}$$

The fundamental difference to equation (1) is the presence of the lagged dependent variable. A consistent estimate of γ allows to sort out long- and short-term effects of the other covariates, in particular the policy variables, in the framework of a partial adjustment model (Greene 2008, 679). However, estimation of (2) is complicated by the endogeneity of $y_{i,t-1}$. A standard approach to address this problem would be the use of instrumental variables, which have explanatory power for $y_{i,t-1}$, but not for $y_{i,t}$. A recent strand of literature has emphasised that in panel-data settings, lagged values of all the right-hand variables in (2) may be used as instruments. This is particularly plausible in models with rational expectations or intertemporal decision-making with uncertainty, where current decisions are made on the existing information set of past (and thus exogenous) realisations of the right-hand variables. The availability of several past periods may result in more instruments and thus more moment conditions than strictly required for identification. These additional moment conditions lead to an over-identification of the regression model and are now commonly used to improve the efficiency of estimates by using a panel-version of the Generalised Method of Moments (GMM) (Cameron and Trivedi 2005, 744-753).[2] The GMM estimator that is now typically used for estimating dynamic panel models like (2) was proposed by Arellano and Bond (1991). In this model, fixed effects are removed by forming first differences.

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[2] Moments are the characteristic parameters of a distribution. The basic idea of a "method of moments" is to estimate population parameters by their sample analogs. Various frameworks in economics and econometrics provide moment equations as orthogonality conditions, e.g. Euler equations, or least squares and instrumental variables estimators. All these cases can be represented as special applications of GMM (Hansen 1982; Cameron and Trivedi 2005, 166-222; Greene 2008, 428-481).

While there is thus econometric methodology available for estimating dynamic models of factor adjustment, there have been only a few applications of such models to structural change in agriculture (see e.g. Benjamin and Phimister 2002 and the overview on investment models in Petrick 2005, 198).[3] Gardebroek and Oude Lansink (2008) argue that there is very limited current work studying policy effects in the framework of these models, although dynamic analysis of policy issues is regarded as highly desirable.

The second characteristic is a strong assumption about functional relationships between policy and outcome variables which makes estimation convenient but can rarely be justified on theoretical grounds. While it lies at the heart of the established literature on structural modelling, recent advances in non- and semi-parametric methods have provided tools to relax the linearity assumption. In particular, there is now an emerging literature that uses non-parametric structural models to identify and estimate the effects of continuous treatment variables that are endogenous (Newey et al. 1999; Florens et al. 2008). In its most generalised form, such a model can be written as follows:

$$y_{it} = h\big(d_{it}, x_{it}, \varepsilon_{it}\big), \tag{3}$$

where h is a non-linear function.

Established methods for estimating non-parametric models such as (3) include kernel smoother or local regression approaches (Härdle et al. 2004). However, a disadvantage of fully non-parametric methods is that estimation is rarely possible if the number of dimensions, i.e. covariates in the regression function, is higher than two or three. This is also called the "curse of dimensionality" (Ichimura and Todd 2007). Given the sample sizes of several hundred (but not thousand) observations available for the analysis of half a dozen separate agricultural policy instruments, non-parametric methods cannot be applied. For such applications, semi-parametric methods have been developed which attempt to find a middle-way between functional flexibility and precision of estimates. The basic idea is to impose additional structure on the model in order to proceed with a modular analysis that combines both parametric and non-parametric techniques (Yatchew 2003). A typical approach is to assume a partial linear structure in which only one or two variables enter non-parametrically, such as $y_{it} = h\big(\tilde{d}_{it}\big) + \tilde{\tilde{d}}_{it}{}'\delta + x_{it}{}'\beta + \varepsilon_{it}$. d_{it} is separated here in a component that enters the model non-parametrically ($\tilde{d}_{it}$) and one that enters it parametrically ($\tilde{\tilde{d}}_{it}$). In the applied literature, differencing methods are used to eliminate the non-parametric effect in a partial linear model which is then estimated by conventional least squares methods. This estimate of the parametric part in turn allows the application of smoothing methods to analyse the non-parametric part net of the parametric effect. As a result, the analysis consists of a conventional regression table and a graphical smoothing estimate (Yatchew 2003, 9, 77). Alternatively, models may be non-parametric in an index of covariates (hence a function of only one variable, the index), such as in $y_{it} = h\big(d_{it}{}'\delta\big) + x_{it}{}'\beta + \varepsilon_{it}$.

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[3] Dynamic considerations have recently also been taken up in the literature on farm efficiency analysis, see Silva and Stefanou (2007) and the discussion in the proposal of Subproject 2.

Recently, semi-parametric approaches have been combined with instrumental variable methods to deal with the potential endogeneity of policy variables and thus the selection problem in policy evaluation (Blundell and Duncan 1998; Yatchew 2003). In these models, because the linearity assumption is dropped, the panel nature of the data can no longer be used to eliminate unobserved fixed effects. However, it can be used as a source for instruments, similar to the dynamic panel data approach above.

Applications of semi-parametric methods to agricultural policy analysis are currently in their infancy, although the merits of these methods and the recent methodological progress are acknowledged also in the agricultural economics profession (Genius 2008). Oude Lansink and Pietola (2005) examine incentives to invest in energy-saving glasshouses in the Netherlands, by combining differencing methods with parametric regression. Roberts and Key (2008) apply a partial linear model to analyse the effects of government payments on land concentration among US farms. These are the only studies known to the applicant that fall into the thematic focus of this proposal.

d) Current gaps in the literature

In summary, we conclude that structural econometric analysis of agricultural and rural policies has been a very active field of research recently. This interest of the agricultural economics profession coincides with significant progress in the methodological literature on impact evaluation. Even so, there still exist various research gaps as follows:

−   Much of the literature focuses on policy effects in a US context. Econometric evaluation studies of CAP measures are scant, in particular with regard to rural development policies.

−   The microeconomic foundations of the existing studies are often weak or very general. There is little theoretical guidance available concerning expected policy effects on structural change in agriculture. Again, this is particularly true for rural development measures.

−   In agricultural and rural policy analysis, a standard workhorse is the static fixed effects panel data model. This model does not allow the examination of dynamic policy effects that may be important in a context of structural change in agriculture.

−   The linearity of the fixed effects panel data model is a restrictive assumption. Semi-parametric methods have recently been proposed to tackle this problem, but they have hardly been applied to agricultural policy analysis so far.

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Petrick, M. (2008a): The Co-evolution of Semantics and Policy Paradigms: 50 Years of Europe's Common Agricultural Policy. Intereconomics - Review of European Economic Policy 43:246–252.

Petrick, M., Zier, P. (2009b): Political Determinants of Agricultural Employment: The Case of East Germany after 1989. Paper presented at IAMO Forum 2009.

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Ravallion, M. (2008): Evaluating Anti-Poverty Programs. In: Schultz, T. P., Strauss, J. (eds.): Handbook of development economics. Volume 4. North-Holland, Amsterdam, 3787–3846.

Roberts, M., Kirwan, B., Hopkins, J. (2003): The Incidence of Government Program Payments on Agricultural Land Rents: The Challenges of Identification. American Journal of Agricultural Economics 85:762–769.

Roberts, M., Key, N. (2008): Agricultural Payments and Land Concentration: A Semiparametric Spatial Regression Analysis. American Journal of Agricultural Economics 90:627–643.

Salhofer, K., Streicher, G. (2005): Self-selection as a problem in evaluating agrienvironmental programs. In: Ortner, K. M. (ed.): Assessing Rural Development Policies of the Common Agricultural Policy. Vauk Wissenschaftsverlag, Kiel, 201–211.

Schubert, D. (2002): Europe's Rural Futures - The Nature of Rural Development II. The German National Report.

Sckokai, P., Moro, D. (2006): Modeling the Reforms of the Common Agricultural Policy for Arable Crops under Uncertainty. American Journal of Agricultural Economics 88:43–56.

Sckokai, P., Moro, D. (2009): Modelling the impact of the CAP Single Farm Payment on farm investment and output. European Review of Agricultural Economics 36:395-423.

Serra, T., Zilberman, D., Goodwin, B., Featherstone, A. (2006): Effects of decoupling on the mean and variability of output. European Review of Agricultural Economics 33:269–288.

Shaik, S., Helmers, G., Atwood, J. (2005): The Evolution of Farm Programs and Their Contribution to Agricultural Land Values. American Journal of Agricultural Economics 87:1190–1197.

Silva, E., Stefanou, S. (2007): Dynamic Efficiency Measurement. Theory and Applications. American Journal of Agricultural Economics 89: 398-419.

Sinabell, F., Streicher, G. (2005): Programme evaluation with micro-data: the use of FADN data to evaluate effects on the market situation of programme participants. In: Ortner, K. M. (ed.): Assessing Rural Development Policies of the Common Agricultural Policy. Vauk Wissenschaftsverlag, Kiel, 265–278.

Smith, J. (2004): Evaluating Local Economic Development Policies: Theory and Practice. In: OECD (ed.): Evaluating Local Economic and Employment Development. OECD, Paris, 287–332.

Sotte, F. (2005): From CAP to CARPE: the state of the question. In: Ortner, K. M. (ed.): Assessing Rural Development Policies of the Common Agricultural Policy. Vauk Wissenschaftsverlag, Kiel, 3–24.

Swinbank, A., Zahrnt, V. (2009): A CAP that better serves the public and the environment. EuropeanVoice November 12, 2009.

Yatchew, A. (2003): Semiparametric regression for the applied econometrician. Cambridge Univ. Press, Cambridge.

2.2 Preliminary work by this research group (including project development report)

Quantitative analysis of structural policies and structural change in agriculture has been a main focus of the applicant's research in previous years. Petrick and Carter (2009) examine structural change in a post-socialist setting, by using regional data from Moldova. Glauben et al. (2009) analyze farm exits by farmers in Northern Germany. Petrick and Latruffe (2006) estimate contractual relations on agricultural credit markets by using Polish microdata. Petrick (2005a) is a comparative assessment of methods for measuring credit rationing, which includes a discussion of various econometric approaches. Petrick (2003; 2004a, b, c, d, e) contain various impact analyses of the Polish agricultural investment program in its form prior to EU accession. Petrick (2004f) addresses more fundamental methodological questions of quantitative policy analysis.

In addition, the applicant's research group has produced a number of studies related to theoretical or country-specific aspects of rural development. Gramzow and Petrick (2006), Petrick and Gramzow (2008), and Petrick (2007b) comparatively analyze institutional arrangements for the provision of public goods in rural areas. Petrick (2005b) and Petrick (2008c) focus on the theoretical foundations of rural development policy in Europe. Petrick and Weingarten (2004a) present problems and recent research results on agricultural change and rural development in Central and Eastern Europe. Petrick and Weingarten (2004b) and Petrick and

Buchenrieder (2007) are edited volumes on rural development problems in Europe. Petrick et al. (2002) as well as Petrick and Tyran (2002; 2003) explore development perspectives of farms in various German and Polish regions. Petrick (2009) summarizes structural development problems and perspectives in Moldova. Castro Campos and Petrick (2009) and Jia and Petrick (2009) analyze land- and labor-related constraints to agricultural development in China.

Work in the first funding period of this subproject has focused on the estimation of static treatment effects of the entire portfolio of CAP measures in East German agriculture. In particular, effects of direct payments, investment support, village renewal, less favored area payments, agri-environmental measures as well as support to processing and marketing on labour use and value added in agriculture were analyzed. The principal technique was a fixed-effects linear panel data model based on regional data at the Landkreis level of the East German States of Brandenburg, Saxony-Anhalt and Saxony which, given the inherent assumptions of such a model, delivered satisfactory results. These were presented as contributed papers at two international conferences, the IAMO Forum 2009 in Halle, Germany (Petrick and Zier 2009a), and the Triennial Conference of the International Association of Agricultural Economists (IAAE) in Beijing, China (Petrick and Zier 2009b) and will now be submitted to academic journals. A major task of the first funding period was the acquisition of the data on policy variables and the set up of a consistent database. This is now available for a range of analyses and shall also be used in the second funding period. Furthermore, the PhD student funded in the first period familiarized himself with the methodologies used in the project, by participating in relevant training courses at Martin-Luther-University in Halle as well as in the Barcelona Microeconometrics Summer School 2008 organized by the Barcelona Graduate School of Economics. Additional output of the first funding period so far was an article on the evolution of policy semantics in the 50 years of the CAP (Petrick 2008a) and a working paper on fundamental analogies between natural sciences and the social sciences that study structural change processes (Petrick 2008b). Furthermore, Petrick (2007a) looked at options for German and Polish farmers to react to income pressure. In cooperation with subproject 11 of the previous funding period, a quantitative analysis of GMO maize adoption in German States was conducted (Consmüller et al 2009). This paper was also presented at the Triennial Conference of the IAAE in Beijing, and at the 2009 annual meeting of the Gewisola in Kiel, Germany.

During the first funding phase, the subproject has developed linkages to the Institute of Agricultural Policy and Market Research at the University of Giessen (Professor Roland Herrmann). This cooperation resulted in a workshop paper by Elsholz (2009), which built upon the methodology developed in the first funding period of this subproject (see also section 5.2 of this proposal).

List of relevant publications[4]

a) in scientific journals (peer-reviewed)

Glauben, T., Petrick, M., Tietje, H., Weiss, C. (2009): Probability and timing of succession or

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[4] Publications resulting from the previous funding period of the research group are indicated by *

closure in family firms: a switching regression analysis of farm households in Germany. Applied Economics 41:45–54.

Petrick, M. (2004a): A microeconometric analysis of credit rationing in the Polish farm sector. European Review of Agricultural Economics 31:77–101.

Petrick, M. (2004b): Farm investment, credit rationing, and governmentally promoted credit access in Poland: a cross-sectional analysis. Food Policy 29:275–294.

Petrick, M. (2004c): An Analysis of Credit Rationing in Polish Agriculture. Wies i Rolnictwo 125:123–130.

Petrick, M. (2005a): Empirical measurement of credit rationing in agriculture: a methodological survey. Agricultural Economics 33:191–203.

* Petrick, M. (2007a): Abwanderung und Widerspruch: Reaktionen auf wirtschaftlichen Anpassungsdruck in den Agrarsektoren Deutschlands und Polens und ihre Interdependenzen seit 1989. Osteuropa - Wirtschaft 52:301–329.

* Petrick, M. (2008a): The Co-evolution of Semantics and Policy Paradigms: 50 Years of Europe's Common Agricultural Policy. Intereconomics - Review of European Economic Policy 43:246–252.

* Petrick, M., Carter, M. (2009): Critical Masses in the Decollectivisation of Post-Soviet Agriculture. European Review of Agricultural Economics 36:231–252.

Petrick, M., Latruffe, L. (2006): Contractual relations in agricultural credit markets: a hedonic pricing approach with application to Poland. Journal of Agricultural Economics 57:49–63.

Petrick, M., Spychalski, G., Switlyk, M., Tyran, E. (2002): Economic Situation and Development Perspectives of Farms in Poland. An analysis based on survey data from selected Polish voivodships and a comparison with German farms. Agrarwirtschaft 51:203–214.

b) at major scientific conferences

Castro Campos, B., Petrick, M. (2009): Ethnic Minorities and Occupational Outcome in Rural Southern China. Contributed paper at the 2009 EAAE PhD workshop, Giessen.

* Consmüller, N., Beckmann, V., Petrick, M. (2009): The adoption of Bt-maize in Germany: an econometric analysis. Contributed paper at the 27. IAAE Triennial Conference Beijing, China, and the Gewisola 2009 meeting in Kiel.

Gramzow, A., Petrick, M. (2006): Public goods and rural development in Poland. In: Floriańczyk, Z., Czapiewski, K. (eds.): Endogenous factors stimulating rural development. European Rural Development Network, Warsaw, 7–31.

Jia, L., Petrick, M. (2009): How land fragmentation affects agricultural labour productivity: evidence from China. Contributed paper at the 2009 EAAE PhD workshop, Giessen.

Petrick, M. (2003): Sind Polens Landwirte Kreditrationiert. Eine Mikroökonomische Analyse von Marktversagen im Transformationsprozess. Schriften der Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues e.V.:171–183.

Petrick, M. (2004d): Policy Intervention on a Market with Pervasive Agency Relations: Lessons from the Polish Agricultural Credit Programme. In: van Huylenbroeck, G., Verbeke, W., Lauwers, L. (eds.): Role of Institutions in Rural Policies and Agricultural Markets. Elsevier, Amsterdam, 275–289.

Petrick, M. (2005b): Governing structural change and externalities in agriculture: toward a normative institutional economics of rural development. In: Ortner, K. M. (ed.): Assessing Rural Development Policies of the Common Agricultural Policy. Vauk Wissenschaftsverlag, Kiel, 85–104.

Petrick, M. (2007b): Why and how should the government finance public goods in rural areas? A review of arguments. In: Kuhlmann, F., Schmitz, P. M. (eds.): Good Governance in der Agrar- und Ernährungswirtschaft. Landwirtschaftsverlag, Münster-Hiltrup, 271–281.

Petrick, M., Gramzow, A. (2008): Decentralised rural governance in a post-socialist economy: a case of community-based agricultural marketing in Poland. In: Kochendörfer-Lucius, G., Pleskovic, B. (eds.): Agriculture and Development. World Bank, Washington D.C., 175–183.

Petrick, M., Tyran, E. (2002): Common ground and divergences of farming structures in Poland and Germany right and left the river Odra/Oder. In: Hinners-Tobrägel, L., Heinrich, J. (eds.): Agricultural Enterprises in Transition. Parallels and Divergences in Eastern Germany, Poland and Hungary. Wissenschaftsverlag Vauk, Kiel, 193–211.

Petrick, M., Tyran, E. (2003): Development perspectives of subsistence farms in Southeastern Poland: Social buffer stock or commercial agriculture? In: Abele, S., Frohberg, K. (eds.): Subsistence Agriculture in Central and Eastern Europe: How to Break the Vicious Circle? IAMO, Halle (Saale), 106–123.

Petrick, M., Weingarten, P. (2004): The role of agriculture in Central and Eastern European rural development: an overview. In: Petrick, M., Weingarten, P. (eds.): The Role of Agriculture in Central and Eastern European Rural Development: Engine of Change or Social Buffer? IAMO, Halle (Saale), 1–20.

* Petrick, M., Zier, P. (2009a): Employment impacts of the Common Agricultural Policy in Eastern Germany – A regional panel data approach. Contributed paper at the 27. IAAE Triennial Conference Beijing, China. Currently under review at Agricultural Economics, see section e).

* Petrick, M., Zier, P. (2009b): Political Determinants of Agricultural Employment: The Case of East Germany after 1989. Paper presented at IAMO Forum 2009.

c) Monographs

Petrick, M. (2004e): Credit rationing of Polish farm households - a theoretical and empirical analysis. IAMO, Halle (Saale).

Petrick, M. (2008c): Theoretical and methodological topics in the institutional economics of European agriculture. With applications to farm organisation and rural credit arrangements. IAMO, Halle (Saale).

Petrick, M., Buchenrieder, G. (eds.) (2007): Sustainable rural development. IAMO, Halle (Saale).

Petrick, M., Weingarten, P. (eds.) (2004): The Role of Agriculture in Central and Eastern European Rural Development: Engine of Change or Social Buffer? IAMO, Halle (Saale).

d) other publications

Petrick, M. (2004f): Can econometric analysis make (agricultural) economics a hard science? IAMO Discussion Paper No. 62, Halle (Saale).

* Petrick, M. (2008b): The disciplinary influence of physics, biology, and chemistry on economic modelling. Overview and implications for understanding agricultural change, SiAg-Working Paper 01, Berlin.

Petrick, M. (2009): Landwirtschaft. In: Bochmann, K., Dumbrava, V., Müller, D. (eds.): Moldova-Handbuch, forthcoming.

e) submitted manuscripts

* Petrick, M., Zier, P. (2009a): Employment impacts of the Common Agricultural Policy in Eastern Germany – A regional panel data approach. Submitted to Agricultural Economics.

3　Project Description (objectives, methods, work schedule)

3.1　Objectives

The aim of this subproject is to develop appropriate econometric methods for an impact analysis of agricultural and rural policies and their application at the administrative district level (Landkreise) in selected German Länder. The approach followed here aims to quantify policy effects at the regionally aggregated level. The subproject draws on recent literature dealing with multiple, continuous treatment in a panel data setting. Building on ongoing work from the first phase of this subproject, the primary focus will be on three extensions to existing models:

(1) Strengthening the microeconomic underpinnings related to CAP effects on farmers' behaviour. Linkages between hypotheses derived from microeconomic theory and the specification of regression models are often found to be weak in the literature. There is a particular need to develop such hypotheses due to the relatively new and complex set of policy instruments now part of the CAP (in particular with regard to the second pillar), and because such theoretical foundation provides important justification for the choice of instrumental variables in dynamic panel data analysis.

(2) Explicitly considering dynamics of farm structures in the econometric models. Based on appropriately specified dynamic theories of factor demand, panel data approaches using recent methodological advances in the modelling of lagged dependent variables will be implemented.

(3) Relaxing the linearity assumptions that are typically central to existing models. In addition to the previously mentioned parametric dynamic models, also semi-parametric models of policy effects will be estimated. Building on the emerging methodological literature on semi-parametric modelling with endogenous variables, appropriate modular regression models will be developed and tested with the existing dataset on East German regions.

In this way, the subproject aims to contribute to the overall goals of the research unit, notably the refinement and extension of theories and methodologies that facilitate the analysis of economic adjustment processes in the agricultural sector.

3.2　Methods

The core method used in this subproject is the econometric analysis of policy effects based on panel data regression models. Developing, testing and applying these models are at the center of the research activity. As stated in the objectives section, the focus is on three inter-related extensions of existing models: their microeconomic foundation, accounting for potentially lagged adjustments and policy effects in time, and semi-parametric modeling of non-linear policy effects. All these extensions directly link to ongoing work in the first phase of the subproject as outlined in section 2.2.

Starting point in this phase of the subproject is the previously outlined state of the art together with the econometric models developed and the database acquired in the first funding

period. This database contains disaggregated policy expenses for the 16 Landkreise in Brandenburg, 24 in Saxony-Anhalt, and 29 in Saxony for the period 2000 to 2005. Data on CAP payments was collected from paying agencies of the State agricultural ministries and contains detailed figures for every funding title for every year in the observed period. Furthermore, the database contains various economic and structural indicators at the regional level taken from official statistics. For the previous analysis, seven aggregate policy instruments were distinguished, following established EU nomenclature. An overview of the policy variables by State is given in Figure 1. Basing the analysis on territorial observation units also allows to investigate those instruments which are not directly aimed at agricultural enterprises, e.g. the measures for village regeneration which are of particular importance in Eastern Germany.

There is hence a unique research dataset available which is not easily replicated and not easily available from public sources. In our view, it definitely merits further analysis which shall be conducted within the second phase of the project.

However, during the second funding period, also possibilities for extending the regional coverage of policy variables shall be sought. In particular, there is an ongoing informal cooperation with the Institute of Agricultural Policy and Market Research at the University of Giessen (Professor Roland Herrmann) to exchange data and gain access to disaggregated policy variables from the State of Hesse (see section 5.2 of this proposal). The availability of data for further States will be checked.

Figure 1:   Aggregate annual CAP expenses in Brandenburg, Saxony, and Saxony-Anhalt according to main policy instruments (mln EUR)
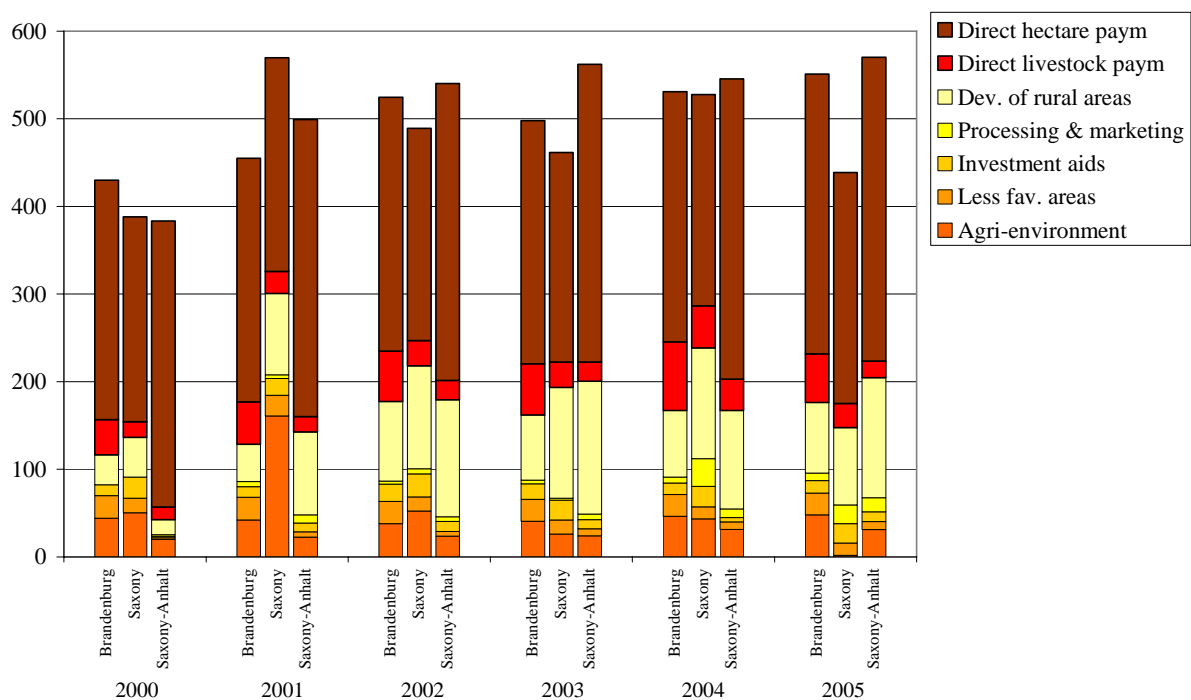
Source: Petrick and Zier (2009b) based on unpublished data of state paying agencies.

The theoretical analysis of the second period starts with the microeconomic farm model developed in the first funding period (Petrick and Zier 2009b). This is a neoclassical model of the agricultural firm which allows to derive comparative statics of stylized policy measures currently found in the CAP portfolio. There are basically two directions in which this model shall be refined in the proposed funding period. First, the model shall be augmented by an intertemporal optimization problem which allows the derivation of dynamic factor demand equations. These can be used to motivate dynamic regression models in a later step. Second, linkages to other theoretical approaches developed in the Research Unit shall be established, notably to the dynamic decision models under uncertainty pursued in subprojects 2 and 3 (see also section 5.2 of this proposal).

The dynamic factor demands derived as described before will then be taken to specify dynamic panel data models of policy effects. Drawing on the existing database of East German Landkreise, these panel models will focus on labor, output and profitability measures of the agricultural sector. Formulating appropriate exogeneity assumptions to motivate the choice of lags in the construction of the instrumental variable matrix will deserve particular attention. Furthermore, dynamic models seem also well suited for analyzing regional farm exits and changes in farm sizes, which will be performed in an additional step.

The semi-parametric analysis of policy effects will first require a thorough familiarization with estimation methods and software. Currently it is planned to use the routines for semi-parametric data analysis implemented in the software packages Stata and Limdep. Specialised software for non- and semi-parametric analysis is also available in the public domain, such as XploRe at Humboldt University of Berlin. Furthermore, based on a refined theoretical model of farm decision making, the policy variables for which non-linear analysis seems most desirable need to be identified. In particular, methods from the semi-parametric literature will be used to test to what extent parametric constraints on functional form may be acceptable (Yatchew 2003, 111-137). The analysis will proceed with an appropriate modularization of the regression model and implementation with the given database.

3.3   Work Schedule

The work schedule of the subproject is determined by the three objectives explained in previous sections and comprises 36 months in total. The thematic set up of the subproject appears well tailored to motivate a cumulative doctoral dissertation based on three article publications, which shall be pursued in consecutive project phases.

Phase 1: Familiarization with methods of econometric impact analysis and data (months 1-6).

Depending on existing expertise and qualification, the scientific assistant working in the project will use the present project application document as a starting point for acquiring the skills necessary for performing the envisaged analysis. This will include relevant literature study, participating in training courses offered at Martin-Luther-University in Halle-Wittenberg, in the framework of Promotionskolleg Agrarökonomik, and external training schools, as well as informal exchange with other researchers from the research unit (notably from subprojects 2 and 11). In this phase, the scientific assistant will also acquire an understanding of the existing database and opportunities for extending its regional coverage will be explored.

Phase 2: Theoretical foundations of policy impacts in agriculture (months 7-17).

The second phase comprises substantive work on the development of a theoretical model for analyzing policy effects. A specific focus will be on the linkages between theoretical formulation and empirical impact analysis. Interaction with researchers from subprojects 2 and 3 will be sought. The theoretical model will be described in a working paper to facilitate exchange within and outside the research unit.

Phase 3: Dynamic regression models of policy impact (months 15-27).

Linking theory and data will allow to specify, test and estimate dynamic regression models for impact analysis in this phase. In close collaboration with the head of the subproject, these empirical models will be developed and interpreted. Results will be published as working papers and submitted to conferences.

Phase 4: Semi-parametric regression models (months 24-36).

To ease the implementation of the semi-parametric models, a review of the availability and suitability of estimation software will be conducted. Building on the insights from the previous phases, decisions will be made which variables are particularly suited to be treated non-parametrically. Paralleling the work in phase 3, appropriate specifications will then be tested and estimated and the results made public.

3.4   Experiments involving humans or human materials

- not applicable -

3.5   Experiments with animals

- not applicable -

3.6   Experiments with recombinant DNA

- not applicable -

3.7.   Research subject to the Convention on Biological Diversity

- not applicable -

4   Funds requested

4.1   Staff costs

01.08.2010 – 31.07.2013   1 scientific assistant TVL E13 (50%)
                              1 student assistant (40 hours per month)

The principal investigator(s) of the subproject, PD Dr. Martin Petrick, is responsible for the conceptual design of the project. The scientific assistant will focus on the specific tasks outlined in section 3. The student assistant will support the scientific assistants through literature analysis, additional data collection, and the preparation of the database for the specific estimation procedures foreseen in the project.

4.2 Scientific instrumentation

- not applicable -

4.3 Consumables

Consumables will provided by IAMO.

4.4 Travel

2010	vTI Braunschweig and Humboldt University (Periodic research seminar meetings)	100 €
	University of Giessen, data acquisition, work on joint publications	250 €
2011	Contributions to national and international conferences: - German Association of Agricultural Economists (GeWiSoLa) Annual meeting - American Agricultural Economics Association (AAEA) Annual meeting - European Association of Agricultural Economists (EAAE) XIIth Congress (Zurich, Switzerland)	3000 €
	Humboldt University, University of Hohenheim, vTI Braunschweig (Periodic research seminar meetings)	300 €
	University of Giessen, data acquisition, work on joint publications	250 €
2012	Contributions to national and international conferences: - GeWiSoLa Annual meeting - AAEA Annual Meeting - International Association of Agricultural Economists (IAAE) 2012 Triennial Conference (Brazil)	3000 €
	Humboldt University, University of Hohenheim, vTI Braunschweig (Periodic research seminar meetings)	300 €
2013	Contributions to national and international conferences: - GeWiSoLa Annual meeting - AAEA Annual Meeting - Midwestern International Economic Development Conference, Minnesota, USA	3000 €
	Humboldt University, University of Hohenheim, vTI Braunschweig (Periodic research seminar meetings)	300 €
	Total 4.4	**10.500 €**

4.5 Publication expenses

	500 € per year	1.500 €
	Total 4.5	**1.500 €**

4.6 Other costs

2010	Service contracts (editing of publications)	1000 €

2011	Service contracts (editing of publications)	1000 €
2012	Service contracts (editing of publications)	1000 €
	Total 4.6	**3.000 €**

5   Prerequisites for carrying out the project

5.1   Composition of the group

The research group working in this subproject includes the following persons

a)   financed by means of the applicant's institution:

- PD Dr. Martin Petrick, Head of the subproject
- N.N., Director of the Department External Environment for Agriculture and Policy Analysis of IAMO.
- Dipl.-ing. agr. Sonja Engelhardt, Technical Assistant

b)   financed by third parties – non DFG:

- Kinga Boenning, PhD Student, funded by Pakt für Innovation und Forschung der Leibniz Gemeinschaft

5.2   Cooperation with other scientists

Cooperation within the Research Unit

The subproject addresses a central methodological aim of the research group, namely the development of a methodological framework for analysis structural change in the agricultural sector. The specific focus in this subproject is on the theoretically motivated, empirical analysis of policy impacts. The following interfaces to other subprojects will be particularly relevant:

− In collaboration with SP 2 (Odening/Hüttel) it is planned to derive microeconomic foundations of policy impacts on structural change and to interact about the use of panel data econometrics. One of the aims of subproject 2 is to quantify the impact of the milk quota scheme on farms' closure decisions. We will jointly address the question how this policy reform can be modelled theoretically. Even though different empirical methods will be used and compared, the aim is thus to jointly develop a theoretical microeconomic framework that allows to quantify the impact of policy instruments. Furthermore, joint discussions on methodological issues of panel data analysis will be continued from the first funding period.

− Linkages are also established to SP 3 (Mußhoff), which seeks an innovative theoretical approach to structural adjustment in agriculture. In SP 3, investment and disinvestment processes are studied by analysing them in a dynamic, competitive setting. The latter approach provides a bridge to the dynamic analysis in the present subproject, which shall be utilised for joint theoretical work on structural change.

− SP 8 (Blesl/Grethe) will receive parameter estimates concerning the production effects of direct payments and rural development policies. They shall be used as reference data for

the specification of simulation models studying linkages between energy and agricultural markets in the EU.

- SP 10 (Kirschke/Weingarten) investigates how an interactive programming model can be used to support rural development policies. Parameter estimates delivered by SP 9 will provide an important input to the specification of this programming model. Furthermore, SP 10 aims to set up a strategy working group that formulates strategy options for specific regions. The head of SP 9 will join this group, which will thus be a forum for the common assessment of rural development policy impacts.

- Building on joint activities in the first funding period, SP 9 and SP 11 (Hagedorn/Beckmann) will cooperate on quantitative policy analysis at the regional level. The cooperation focuses on the analysis of suitable panel data sets concerning the dynamics of institutional and structural change related to genetically modified crops in Europe.

Part of the second round of the research group will be a smaller theory workshop on structural change in agriculture and a workshop on the interfaces between political decision makers, public administration, and (potential) beneficiaries of agricultural and rural policies on the one hand and academic researchers on the other. This SP will participate in both workshops and will specifically be involved in the organisation of the second of these workshops.

Cooperation outside the DFG Research Unit

During the first funding phase, this subproject has developed linkages to the Institute of Agricultural Policy and Market Research at the University of Giessen (Professor Roland Herrmann), in order to broaden the regional spectrum of the analysis. First discussions about data exchange and access to disaggregated policy variables from the State of Hesse already took place. It resulted in a workshop paper by Elsholz (2009), which benefitted from and built upon the methodology developed in the first funding period of this subproject. This cooperation shall be extended in the second phase and joint publications are already envisaged.

During the first phase also regular informal discussions with evaluators working at the von Thünen Institute (vTI) in Braunschweig took place, notably with Anne Margarian and Andrea Pufahl. They particularly focused on methodological aspects of evaluation, but also established a link to evaluation mandated by policy makers. This sort of exchange will be continued in the second phase.

5.3 Scientific equipment

The implementation of the subproject requires a workplace endowed with a PC for the research assistant in charge and an appropriate working environment for the student assistant. The provision of these basic facilities is ensured by IAMO.

5.4 Running costs for materials

The estimated expenses for the project (phone/fax, postage, fees, material consumption) amount to approximately 1 100 €/year. These expenses will be covered by IAMO.

5.5 Conflicts of interest with commercial activities

- not applicable -

5.6 Other requirements

Library, computers, internet access and other infrastructure of IAMO may be used by the members of the subproject without any restriction

6 Declarations

6.1 We have not requested funding for this project from any other sources. In the event that we submit such a request, we will inform the Deutsche Forschungsgemeinschaft immediately.

6.2 The trustee of the Deutsche Forschungsgemeinschaft at IAMO, Prof. Dr. Heinrich Hockmann, has been informed about this application.

7 Signatures

Halle, 01.03.2010

(PD. Dr. Martin Petrick)

8 List of attachments

CV of applicant Martin Petrick
List of publications of applicant Martin Petrick

9 Attachments to subproject 9

9.1 Curriculum Vitae of the applicant

Personal Information

Name	Petrick, Martin, Priv.-Doz. Dr. sc. agr.
Date of birth:	07. August 1971
Place of birth	Lüdenscheid, Germany
Affiliation	Leibniz-Institut für Agrarentwicklung in Mittel- und Osteuropa (IAMO)
Language proficiency	English: fluent, French: basic, Polish: basic, German: native

Education

2008	Post Doctoral thesis (Habilitation) in Agricultural Economics, Martin-Luther-University of Halle-Wittenberg, Germany, Theoretical and methodological topics in the institutional economics of European agriculture
2003	Doctorate (Dr.sc.agr.), in Agricultural Economics , Martin-Luther-University of Halle-Wittenberg, Germany, Credit rationing of Polish farm households - a theoretical and empirical analysis
1998	Diploma in Agricultural Economics, University of Göttingen, Germany

Academic and employment history

2007	- to date	Deputy head of the department "External Environment for Agriculture and Policy Analysis" at Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO)
2005	- 2006	Visiting Scholar at the Department of Agricultural and Applied Economics, University of Wisconsin - Madison, USA
2003	- 2007	Research group leader at IAMO (tenured since March 2006)
1998	- 2003	Postgraduate Researcher at IAMO

Research Interests

Agricultural policy reform in the European Union

Economic development of rural areas in transition: household behaviour, institutional change, and policy impact

Memberships, Functions, and Awards

Membership: International Association of Agricultural Economists (IAAE), European Association of Agricultural Economists (EAAE), Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaus e.V. (Gewisola).

Referee for: Agrarwirtschaft, Agricultural Economics, American Journal of Agricultural Economics, Cahiers d'Economie et Sociologie Rurales, Economic Development and Cultural Change, European Review of Agricultural Economics, Food Policy, Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaus e.V., International Journal of Agricultural Resources Governance and Ecology, Journal of Agricultural Economics, ORDO – Jahrbuch für die Ordnung von Wirtschaft und Gesellschaft, Quarterly Journal of International Agriculture, World Development.

Awards: (Co)author of best IAMO paper in a refereed journal in 2007, 2004, 2003. Author of best poster of the 39. annual conference of the Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaus (Gewisola) (German association of agricultural economists) in Stuttgart-Hohenheim.

Member of Steering Committee of Leipzig Agricultural Policy Forum.

9.2   List of publications of applicant (since 2005)

Reviewed publications in scientific journals

Petrick, M., Carter, M.R. (2009): Critical Masses in the Decollectivisation of Post-Soviet Agriculture, European Review of Agricultural Economics, Vol. 36, pp. 231-252.

Glauben, T., Petrick, M., Tietje, H., Weiss, C. (2009): Probability and Timing of Succession or Closure in Family Firms: A Switching Regression Analysis of Farm Households in Germany, Applied Economics, Vol. 41, pp. 45-54.

Petrick, M. (2008): The Co-evolution of Semantics and Policy Paradigms: 50 Years of Europe's Common Agricultural Policy, Intereconomics, Vol. 43, pp. 246-252.

Erber, G., Petrick, M., von Schlippenbach, V. (2008): Ursachen und Konsequenzen der steigenden Nahrungsmittelpreise, Wochenbericht des DIW Berlin Nr. 26/2008, pp. 357-63.

Petrick, M. (2007): Abwanderung und Widerspruch: Reaktionen deutscher und polnischer Landwirte auf wirtschaftlichen Anpassungsdruck und ihre länderübergreifenden Verflechtungen. Osteuropa-Wirtschaft, Vol. 52, pp. 301-329.

Petrick, M., Pies, I. (2007): In Search for Rules that Secure Gains from Cooperation: The Heuristic Value of Social Dilemmas for Normative Institutional Economics, European Journal of Law and Economics, Vol. 23, pp. 251-271.

Petrick, M., Latruffe, L. (2006): Contractual relations in agricultural credit markets: a hedonic pricing approach with application to Poland, Journal of Agricultural Economics, Vol. 57, pp. 49-63.

Petrick, M. (2005): Empirical measurement of credit rationing in agriculture: a methodological survey, Agricultural Economics, Vol. 33, pp. 191-202.

Publications at scientific conferences

Petrick, M., Zier, P. (2009): Employment impacts of the Common Agricultural Policy in Eastern Germany – A regional panel data approach, contributed paper at 27. IAAE Triennial Conference Beijing, China.

Castro Campos, B., Petrick, M. (2009): Ethnic Minorities and Occupational Outcome in Rural Southern China, Contributed paper at the 2009 EAAE PhD workshop, Giessen, Germany.

Consmüller, N., Beckmann, V., Petrick, M. (2009): The adoption of Bt-maize in Germany: an econometric analysis, contributed paper at 27. IAAE Triennial Conference Beijing, China.

Jia, L, Petrick, M. (2009): How land fragmentation affects agricultural labour productivity: evidence from China, Contributed paper at the 2009 EAAE PhD workshop, Giessen, Germany.

Petrick, M. (2009): Informale Regeln und die kulturelle Wende in Douglass North's Theorie des institutionellen Wandels, in: Pies, I., Leschke, M., (ed.): Douglass Norths ökonomische Geschichtstheorie, Konzepte der Gesellschaftstheorie, Bd. 15, Mohr Siebeck, Tübingen, in print.

Petrick, M. (2008): Wie rational war Odysseus wirklich?, in: Pies, I., Leschke, M., (ed.): Jon Elsters Theorie rationaler Bindungen, Konzepte der Gesellschaftstheorie, Vol. 14, Mohr Siebeck, Tübingen, pp. 174-179.

Petrick, M., Gramzow, A. (2008): Decentralised rural governance in a post-socialist economy: a case of community-based agricultural marketing in Southeastern Poland, in: Kochendörfer-Lucius, G., Pleskovic, B. (ed.): Agriculture and Development, Berlin Workshop Series, The World Bank, Washington D.C., pp. 175-183.

Petrick, M. (2008): Abwanderung und Widerspruch: Wie Landwirte in Deutschland und Polen auf wirtschaftlichen Anpassungsdruck reagieren, in: Bingen, D., Loew, P. O., Wolf, N. (ed.): Interesse und Konflikt. Zur politischen Ökonomie der deutsch-polnischen Beziehungen 1900-2007. Veröffentlichungen des Deutschen Polen Instituts, Harrassowitz Verlag, Wiesbaden, pp. 259-277.

Petrick, M. (2007): Why and how should the government finance public goods in rural areas? A review of arguments, in: Kuhlmann, F., Schmitz, P.M. (ed.): Good Governance in der Agrar- und Ernährungswirtschaft, Schriften der Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues e.V., Vol. 42, pp. 271-281.

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Petrick, M. (2007): Perspektiven kleinbetrieblicher Agrarstrukturen in den neuen Mitgliedstaaten der Europäischen Union, in Leibniz-Institut für Agrarentwicklung in Mittel- und Osteuropa (ed.): IAMO 2007, IAMO, Halle (Saale), pp. 13-18. http://www.iamo.de/dok/3_1644.pdf

Gramzow, A., Petrick, M. (2006): Public goods and rural development in Poland, in: Floriańczyk, Z., Czapiewski, K. (ed.): Endogenous factors stimulating rural development, Warsaw, European Rural Development Network, pp. 7-31.

Petrick, M. (2006): How to make institutional economics policy-relevant: Theoretical considerations and an application to rural credit markets in developing countries, Contributed Paper to the XXVI International Conference of Agricultural Economists, Queensland/Australia, 12.8.-18.8.2006.

Petrick, M. (2006): Measuring Contractual Relations on Agricultural Credit Markets: A Hedonic Pricing Approach with Application to Poland, 3rd Minnesota International Economic Development Conference, Center for International Food and Agricultural Policy (CIFAP), University of Minnesota, USA, in Minneapolis, USA, 28.-29.04.2006.

Petrick, M., Latruffe, L. (2005): The determinants of Polish farmers' credit interest rates: Hedonic price analysis and implications for government policy, Contributed Paper to the XI. EAAE Congress "The Future of Rural Europe in the Global Agri-Food System", Copenhagen/Denmark, 24.-27.08.05.

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Monographs and editorships

Petrick, M. (2008): Theoretical and methodological topics in the institutional economics of European agriculture. With applications to farm organisation and rural credit arrangements. Habilitation thesis. Studies on the Agricultural and Food Sector in Central and Eastern Europe Bd. 45, Halle (Saale), IAMO, 89 S. http://www.iamo.de/dok/_2087.pdf

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Other publications

Labar, K., Wegener, S., Petrick, M., Marquardt, D., Theesfeld, I., Buchenrieder, G. (2009): Review of Public Service Delivery in Agriculture for Romania and Bulgaria. Final project report to the World Bank. IAMO, Halle (Saale).

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