Diskussionspapiere

Discussion Papers

Dezember
2010

Payment Decoupling and the Intra – European Calf Trade

Sören Prehn, Bernhard Brümmer und Stanley R. Thompson

Diskussionsbeitrag Nr.1008

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

Payment Decoupling and Intra-European Calf Trade

Abstract

The 2003 reforms of the Common Agricultural policy of the European Union introduced decoupled income transfers as the most prominent policy instrument. However, member states were given substantial discretion over the degree and timing of the reform implementation. As a result, different implementation schemes coexist within the EU, keeping certain parts of the income support coupled to current production levels. This coexistence leads to distortions of production incentives, factor misallocations, and artificial trade flows. Here, we examine these effects in the beef sector where full decoupling was not obligatory for all member states. Based on a cost minimization framework, we derive a sector-specific trade model with heterogeneous firms and quality differences. The model is used to examine the effects of different implementation schemes on intra-European calf trade. Empirical results confirm that the expected distortions to trade flows occured, violating the fundamental CAP principle of Market Unity.

Key words: 2003 CAP Reform, Partial Decoupling, Intra-European Calf Trade, Gravity Model, Heterogeneous Firms Trade Model

JEL classification: F13,F14,Q17

Introduction

Under the era of Franz Fischler, the European Commissioner for Agriculture (1996-2004), fundamental reforms of the Common Agricultural Policy (CAP) were introduced (Swinnen 2008, p.1). Two important milestones were of particular importance: the Agenda 2000 Reform (EC 1999) and the 2003 CAP Reform (EC 2003b). The latter, also referred to as ‘Midterm Review’ or ‘Fischler Reform’, is viewed in hindsight as the major turning point from agricultural policy exceptionalism to agricultural policy normalism (Daugbjerg & Swinbank 2009). A stronger degree of reorientation of domestic production incentives toward market prices became the focus of the CAP reforms (Anania 2009). These reforms were also shaped by external reform pressures, most prominently by the expectations of a conclusion to the Doha Development Round.

The EU member states (MS), based on an inital proposal by the EU commission, agreed in 2003 on a reform aiming at severing the link between agricultural production and direct payments to producers (Swinnen 2008). The former direct payments, which had been introduced in 1992 as compensation for price redcutions, were to be replaced, at least partially, by a Single Farm Payment (SFP) scheme. Among other things[1], the implementation of the decoupling policy would enable the EU to more flexibly deal with World Trade Organization (WTO) obligations as well as internal problems associated with further EU enlargement (Daugbjerg & Swinbank 2009).

While the Commission initially had proposed a full decoupling policy for all affected agricultural sectors, the negotiations in the Agricultural Council allowed several member states which were opposed to full decoupling to negotiate options for partial decoupling. In effect, the SFP was agreed upon but each member state had the option to partially retain a coupled direct payment systems. Depending on the particular commodity, only a portion of the direct payments had to be converted to the SFP (EC 2003b). In the end, this concession led to a coexistence of different implementation schemes of decoupling among member states.

This coexistence had important economic implications. Not only were production incentives among member states substantially distorted but the fundamental CAP principle of Market Unity was violated. In member states which retained coupled direct payments, producers consider the payments as included in gross margins whereas in member states where the payments are decoupled they are not. The changes in gross margin imply shifts in factor demand for the correspond inputs. The factor demand shifts downward in a fully decoupled setting because the implicit reduction in the value of the marginal product while this reduction is relatively lower with only partial decoupling. Accordingly, additional trade for factors will occur, from member states with full decoupling toward those which keep part of the directed payments coupled. Because these additional trade flows are a result of the granted discretion in the implementation of the reforms, we regard them as artificial.

Artificial trade flows represent a misallocation of input factors and hence welfare losses occur. Compared to a fully decoupled scenario, a disproportionately greater factor use occurs in the non-decoupled member state than in the decoupled member state. Input use might even be greater in the partially coupled member state than under the 'previous' coupled direct payment system. Moreover, the greater the amount of direct payments that remain coupled the greater the welfare losses tend to be. The economic importance of the coexistence of different implementation schemes is especially high for commodities where the EU Commission made far-reaching concessions to individual member states. This is particularly apparent on the EU beef market.

To our knowledge, no research has addressed the economic implications of how the coexistence of different implementation schemes impacts intra-European trade; in this paper we perform an ex post analysis of this research question.[2] We focus on the European beef market, which is still the second largest agricultural market in the EU behind the dairy market. In some member states such as France its economic relevance is even more pronounced. We strongly suspect that the 2003 CAP Reform will significantly impact intra-European trade, especially for an intermediate product like live calves.

Our research question is addressed within a gravity trade model framework. Our model builds on Anderson (2009)[3] who extends the Anderson & van Wincoop (2003) (AvW) model for heterogeneous firms[4]. The model is a synthesis of the heterogeneous firms trade model of Helpman et al. (2008) who were the first to extend the theory of heterogeneous firms trade models by a model which is applicable to country trade data, and the concept of multilateral resistance (Anderson 1979; Anderson & van Wincoop 2003). Thus, it simultaneously adjusts for two sources of omitted variable bias: non-consideration of self selection to trade and multilateral resistance. We model both differences in firm productivity and differences in product quality. We account for both zero and asymmetric trade flows and different product qualities within the European calf market. For the econometric estimations, a two step nonlinear least squares (2SNLS) along the lines of Helpman et al. (2008) is utilised. For purposes of identifying the most suitable model, we apply the Belenkiy (2010) decomposition approach.

Thus, we extend the existing literature along two major ways. First, we address an overlooked dimension of the 2003 CAP Reform: the economic effects of differential degrees of decoupling by member states on intra-European trade. In so doing, our findings suggest welfare reducing artificial trade flows. Second, we apply an extended version of Anderson (2009)'s heterogenous firms trade model by incorporating quality differences.

The remainder of this article is organized as follows. The next section reviews the ongoing CAP reform process, highlighing those details of the 2003 CAP Reform which have important repercussions on the European calf trade. In this context, the market characteristics of the European beef market are elaborated. The following section presents a sector-specific heterogeneous firms trade model along the lines of Anderson (2009) with some extensions, in order to better account for the specifics of the calf trade. Next, we present our empirical framework, estimation procedures and econometric results. The final section concludes and points to the policy implications of our results.

The 2003 CAP Reform of the European Beef Market

The ongoing reform process of the EU's Common Agriculural Policy has been influenced by both internal (high budgetary outlays, huge deadweight losses) and external (WTO, concerns of other trading partners) pressures. However, the so-called 'European Model of Agriculture'[5] was still viewed as an important objective for the reforms. Between those antagonistic goals, stronger market reorientation versus special treatment of European farmers, a partially dialectic policy has emerged; on the one hand it seeks an internationally competitive agricultural sector; on the other hand, it endeavors to support environmental and rural development policies.

The 2003 reforms, however, had a strong focus on market reorientation by means of decoupling the existing direct payments from production levels. The existing direct payments had been tied to prodution levels either directly (in the beef sector) or indirectly via land use (in the cereals, oilseeds, and protein crops sector). The initial reform proposoal tabled by the EU commission in 2002 proposed to fully decouple these direct payments by converting these into a Single Farm Payment (SFP), based on a historic reference period (2000-2002). Eligibility for the SFP was linked to the fulfilment of Cross Compliance obligations, which essentially corresponded to existing EU regulations concerning the environment, animal welfare, plant protection, and food safety (Deblitz et al. 2007). However, this initial proposal found no strong support with the member states.

The reform decision at that time had to pass the Agricultural council with a so-called qualified majority (roughly equivalent to 70 %of the total number of votes). The reservations were strongly influenced by farm lobbies in some important member states (most notably France) which feared for grave reductions in agricultural output, and hence were strongly opposed to decoupling. A line for compromise in the reform package emerged by introducing options for partial instead of full decoupling. Eventually, in June 2003, there was agreement on the general introduction of the SFP but with the option for the member states to retain, at least in parts, the former direct payment system: Depending on the commodity, only a part of the direct payments had to be converted to the SFP[6].

In consequence, the final reform package led to a coexistence of different implementation schemes with regard to the start of the reforms, the specific payment allocation mechanism (based on area, historical payments, or combinations thereof), and the extent of decoupling among member states. This outcome is not only important from a political viewpoint but also from an economic viewpoint. The coexistence of different implementation schemes not only questions the fundamental CAP principle of Market Unity[7], thus violating the spirit of the common market. It can also lead to artificial trade flows among member states that have opted for different implementation schemes. These artificial trade flows are indicative of distorted production incentives, inefficient input usages, and, ultimately, negative welfare effects.

The 2003 reform package for beef

The intra-EU economic effects crucially depend on the particular extent to which the direct payments continue to be tied to production levels. The distortions are expected to be especially large in those markets where member states were allowed to retain a large portion of the former direct payment system. This situation was characteristic of the European beef market. With regard to decoupling, the final reform package contained, in addition to a full decoupling option, three additional options for partial decoupling. The regulations thereby were specific to the interests of single member states. Option I had a specific suckler cow component, Option II a specific slaughter animal component and Option III a specific fattening bull component. All options also allowed for the full retention of the previous calf premia, see Table 1 for details (Deblitz et al. 2007).

Apart from the magnitude of decoupling, the final regulations of the reform package also stipulated how the decoupled payments of both full decoupling and partial decoupling should be redistributed; they could be redistributed in a threefold manner. First, the SFP could be distributed to the individual farmers based on historical payments (i.e., payments per ha were heterogenous, and obtained by dividing historical payments by eligible historical area), secondly, based on a regional scheme (identical payments within a region), and thirdly based on combinations of both approaches, the so-called hybrid model scheme. In addition, the member states could also decide on the starting date of the reform implementation (either 2005, 2006, or 2007) (Deblitz et al. 2007). The final choices of the member states among these options are summarized in Table 2.

Microeconomics of Decoupling

Table 2 reveals the extent of the divergence of agricultural policies among member states. Its economic impacts and their corresponding welfare effects for all market participants are depicted in Figure 1 where a stylized scenario with one member state which fully decoupled (left panel), and another member state which only partially decoupled (right panel) is shown. S_c indicates then an aggregate supply function for calves by dairy farms and D_c an aggregate demand function for calves by cattle farms. The respective superscripts thereby indicate the respective policy of the member state. To focus only on the pure economic impacts of the coexistence of different implementation schemes, everything except policy is assumed to be equal among the member states.

The introduction of coupled direct payments, as depicted in Figure 1, shifts the original aggregate demand curve D_c upward to D_c^{DiP}. This upward shift is a direct consequence of the headage coupling of direct payments. Cattle farmers view these payments as part of the gross margin, hence, they directly increase the willingnesses to pay for calves. Granting of coupled direct payments has a production effect which can also be seen by the right shift of the corresponding market equilibria in Figure 1.

If a member state opts for decoupling of the direct payments (replacing them by a fully decoupled SFP) then its cattle farmers no longer view these payments as part of the gross margin but as a lump sum subsidy. Accordingly, the corresponding willingness to pay, respectively the demand for calves, have to be adjusted. Graphically this can be depicted by a downward shift of the demand curve from D_c^{DiP} to D_c^{SFP} (left panel).[8]

In the presence of a common market for calves, this demand shift not only impacts the market equilibrium in the decoupling member state but spills over to other member states which retain coupled direct payments. The new market clearing price p^* which (in the absence of trade costs) equalizes the marginal willingnesses to pay in both markets will trigger additional exports from the decoupling member state to the non-decoupling member state. Since these additional trade flows are a direct consequence of the differential decoupling implementation across member states, they can be regarded as artificial side effects of this particular option in the CAP reform.

The artificial trade flows are insofar crucial as they lead to an overall welfare loss[9] in the EU. However, both the single welfare effects for market participants and the member states are quite heterogeneous. Thus, there are re-distribution effects among calf producers and cattle farmers; where the overall effect is positive in both member states, cattle farms in decoupled member states lose whereas in coupled member states calf producers lose. Welfare losses mainly occur since the non-obligation of decoupling for all member states led to a disproportional demand for calves in non-decoupled member states where the demand became even higher as before. For this surplus demand, direct payments also had to be paid. And these additional payments overweight the welfare gains of both agricultural sectors in both member states.

The structure of trade in the EU calf market

Focusing solely on a partial effect, the market diagram as depicted in Figure 1 makes important simplifying assumptions: identical markets and a homogeneous commodity. This however does not accurately describe European beef, veal and dairy markets as these markets are rather heterogeneous than homogeneous. The heterogeneity thereby applies for both market structure as well as animal genetics; the genetics of animals varies by production system.[10] Like other markets, also the European beef and dairy market were shaped by various external and internal factors which led to different regional centers of specialization.

Today centers of specialization differ for fattened bull production, slaughter animal production, veal production, suckler cow production and dairy production. Centers for veal and dairy production are in the middle of Europe. Veal production mainly occurs in The Netherlands, Belgium and France while dairy production is largely concentrated in Germany and France but also in Ireland, the United Kingdom and in Poland. Fattened bull production tends to be concentrated in Southern Europe, largely Italy, Spain and France while the majority of suckler cow production takes place in France and Spain.[11]

Production system heterogeneity has implications for both the availability of calves and the availability of calves of a specific genetics. In dairy cattle regions, typically there is an oversupply of dairy calves (inferior animal genetics) whereas in livestock production regions, there is an overdemand for beef calves (superior animal genetics).

These characteristics can lead to asymmetric trade flows between regions with over- and undersupply or regions with no exports or imports. The existence of different animal genetics can further lead to bi-directional trade flows, i.e. trade of calves of different genetics in opposite directions. Ignoring this heterogeneity would lead to a mis-specified theoretically model and hence to biased estimates. A correctly specified model should not only capture the effects of the coexistence of different implementation schemes alone but also adjust for zero and asymmetric trade flows.

Another fact important to examining the European beef market is the sustained decline in European beef market slaughterings, see Figure 2. This decline has been rather steady but accentuated with begin of the implementation of the 2003 CAP Reform in 2005. The profitability of the European beef sector fundamentally depends on financial support. For much of the industry, profitability occurred only with the granting of direct payments. This negative change in market conditions should also be immanent in the data.

An Intra-European Calf Trade Model

In this section a sectoral intermediate product trade model i.e. an intra-European calf trade model is developed (Anderson 2009; Anderson & Yotov 2009, 2010). The model is similar to the trade model developed by Anderson (2009) who extends the Anderson & van

Wincoop (2003) model for heterogeneous firms.[12] Contrary to Anderson (2009), not only productivity differences in calf production across dairy farms are assumed but also differences in the quality of calves across member states.[13][14] Additionally, model formulas are explicitly adjusted for a monopolistic competitive market structure.

As in Anderson (2010), here a conditional general equilibrium model is developed which distributes bilateral shipments of calves across member states. The shipments thereby are distributed given bilateral trade costs, policies, total shipments and total expenditures. Analogue to Anderson also trade separability is assumed.[15] The only difference to Anderson (2009) is that the gravity model is not derived from an utility maximisation approach but from a cost minimisation approach. This seems more coherent since calves are intermediate products not final products. So the gravity model here is derived instead from a constant elasticity of substitution (CES) sub-expenditure system (Balistreri et al. 2009).

Standard calculus then leads to following nominal import demand function of member state j for calves of variety ω from a dairy farm located in member state i

$$(1) \quad x_{ij}(\omega) = \left(\frac{\psi_i p_i(\omega)\tau_{ij}}{P_j}\right)^{1-\sigma} E_j$$

where $x_{ij}(\omega)$ defines the import value of calves of variety ω from a dairy farm located in member state i to member state j, $p_i(\omega)$ the source price of a calf of variety ω in member state i, and τ_{ij} variable bilateral trade costs[16] between member state i and member state j. E_j defines the total expenditure of member state j for available calf varieties and P_j the corresponding price index. σ is the elasticity of substitution. Additionaly, to account for different calf qualities across member states equation (1) is adjusted by an exogenous quality parameter ψ_i.

To close the final gravity model (8) it is necessary to specify beside the demand side also the production side. Therefore it is assumed that there are n_i dairy farms in every member state i where $i = 1, \ldots, I$. Each of these dairy farms produces a different calf variety ω

whereas the varieties should also be different across member states. So in the end there should be $\sum_{i=1}^{I} n_i$ different varieties theoretically available in Europe.

In practice however there is often a divergence between the theoretical pool of available varieties and the actual pool of available varieties. Depending on the individual dairy farm productivities and fixed bilateral trade costs it is not always profitable for each dairy farm to deliver another member state. Following the concept of firm heterogeneity (Melitz 2003) the profitability to export is only given for a dairy farm if its inverse productivity level a is below the import country specific zero profit productivity threshold a_{ij} (see below equation (3)) i.e. $a < a_{ij}$ (Helpman et al. 2008).

a_{ij} thereby is explicitly representable its derivation however needs first some further assumptions regarding the distribution of the a's and the market structure. So in accordance with the common literature the a's should follow the distribution F(a) with support $[a_L, a_H]$ where it is assumed that $a_H > a_L > 0$. Further given that a is the input requirement set to produce one calf of variety ω and $\tilde{p}_i$ country specific costs for one unit of input then the source price for one calf of variety ω in member state i is defined as $p_i(\omega) = \frac{\tilde{p}_i a}{\alpha}$ where $\alpha \equiv \frac{\sigma-1}{\sigma}$ is a standard markup. The standard markup pricing rule i.e. the assumption of monopolistic competition is here applied for its known advantage to enable latter the modelling of zero and asymmetric trade flows (Helpman et al. 2008). If f_{ij} further denotes fixed bilateral trade costs then following zero profit function can be specified

$$(2) \quad (1-\alpha)\left(\frac{a_{ij}\psi_i\tilde{p}_i\tau_{ij}}{\alpha P_j}\right)^{1-\sigma} E_j = f_{ij}.$$

Rearrangement of this zero profit function then yields following explicit form for the import country specific zero profit productivity threshold a_{ij} (Behar & Nelson 2009)

$$(3) \quad a_{ij} = \left(\frac{(1-\alpha)E_j}{f_{ij}}\right)^{\frac{1}{\sigma-1}} \frac{\alpha P_j}{\psi_i\tilde{p}_i\tau_{ij}}.$$

To have this explicit form of a_{ij} is insofar useful as now the fraction of member state i's exporting dairy farms i.e. dairy farms which can profitable export to member state j can be measured by F(a_{ij}). However, for the derivation of the final gravity model (8) it is more convenient to represent this information by means of following selection variable

$$(4) \quad V_{ij} = \begin{cases} \int_{a_L}^{a_{ij}} a^{1-\sigma} dF(a) & \text{for}\, a_{ij} \geq a_L \\ 0 & \text{otherwise} \end{cases} .$$

Given the demand functions $x_{ij}(\omega)$ (see equation (1)) and the source prices $p_i(\omega)$ for single varieties and finally the selection variable V_{ij} then aggregation leads to following provisional gravity equation

$$(5) \quad M_{ij} = \left(\frac{\psi_i \tilde{p}_i \tau_{ij}}{\alpha P_j} \right)^{1-\sigma} E_j n_i V_{ij}$$

where M_{ij} is the aggregated import value of available calves from member state i to member state j.

So far the gravity model (5) would be identical with Helpman et al. (2008)'s gravity model. This model however suffers under an omitted variable bias. The model does not account for multilateral resistance. Following Anderson (2009) the model can be extend for multilateral resistance.[17] Therefor, first market clearance is assumed i.e. the equivalence between the total value of calf shipments of member state i Y_i and its aggregated bilateral calf shipments across all member states $\sum_j M_{ij}$

$$(6) \quad Y_i = \sum_j M_{ij} = (\psi_i \tilde{p}_i)^{1-\sigma} n_i \sum_j \left(\frac{\tau_{ij}}{\alpha P_j} \right)^{1-\sigma} V_{ij} E_j .$$

Rearrangement of the market clearance condition then gives the quality adjusted efficiency unit costs $\psi_i \tilde{p}_i$

$$(7) \quad (\psi_i \tilde{p}_i)^{1-\sigma} = \frac{\bar{Y}_i / Y}{\Pi_i^{1-\sigma}}$$

where $\bar{Y}_i = \frac{Y_i}{n_i}$ denotes the average shipments of calves of a dairy farm located in member state i and $Y = \sum_i Y_i = \sum_j E_j$. Substitution then leads to the final gravity model

$$(8) \quad M_{ij} = \left(\frac{\tau_{ij}}{\alpha P_j \Pi_i} \right)^{1-\sigma} V_{ij} Y_i E_j / Y$$

$$(9) \quad \Pi_i^{1-\sigma} \equiv \sum_j \left(\frac{\tau_{ij}}{\alpha P_j} \right)^{1-\sigma} V_{ij} E_j / Y$$

$$(10) \quad P_j^{1-\sigma} = \sum_i \left(\frac{\tau_{ij}}{\alpha \Pi_i} \right)^{1-\sigma} V_{ij} Y_i / Y$$

where Π_i is the outward multilateral resistance and P_j the inward multilateral resistance (Anderson 2010; Anderson & van Wincoop 2003, 2004; Anderson & Yotov 2009).

Like the gravity equation also the zero profit function can be adjusted for multilateral resistance. Therefor equation (7) has to be substituted in the provisional zero profit function (2) which then gives

$$(11) \quad (1-\alpha) \left(\frac{a_{ij} \tau_{ij}}{\alpha P_j \Pi_i} \right)^{1-\sigma} E_j \bar{Y}_i / Y = f_{ij}.$$

Empirical Framework

In order to empirically identify the impacts of the different implementation schemes of the CAP reform on the calf market, we develop an econometric framework and estimation strategy based on Helpman et al. (2008) and Johnson (2009).

First, a functional form of $F(a)$ (see equation (20)) has to be specified which allows a manageable treatment of V_{ij}. Following Helpman et al. (2008), a Pareto distribution $F(a) = (a^{\kappa} - a_L^{\kappa})/(a_H^{\kappa} - a_L^{\kappa})$ with support $[a_L, a_H]$ and $\kappa > (\sigma - 1)$ is assumed for the productivity levels of dairy farms $1/a$. Given the Pareto distribution the selection variable V_{ij} (see equation (4)) can be explicitly expressed as

$$(12) \quad V_{ij} = \frac{\kappa a_L^{\kappa-\sigma+1}}{(\kappa-\sigma+1)(a_H - a_L)} W_{ij}$$

where

$$(13) \quad W_{ij} = \max\left[\left(a_{ij}/a_L\right)^{\kappa-\sigma+1} - 1, 0\right].$$

The explicit form of V_{ij} allows the expression of the final theoretical gravity model (8) in log-linear form

$$(14) \quad m_{ij} = -y + y_i + e_j + (1-\sigma)\ln\tau_{ij} + (\sigma-1)\pi_i + (\sigma-1)p_j + (\sigma-1)\alpha + v_{ij}$$

where variables denoted in lowercase letters indicate natural logarithms of their uppercase counterparts, and $\alpha \equiv \ln(\alpha)$.

Bilateral trade costs τ_{ij} are assumed to be stochastic, i.e. the trade costs τ_{ij} are composed of a deterministic part D_{ij} and a disturbance term $u_{ij} \overset{\text{i.i.d.}}{\sim} \mathrm{N}\left(0, \sigma_u^2\right) \left(\tau_{ij} \equiv D_{ij}^{\gamma} e^{-u_{ij}}\right)$. Then equation (14) can be rewritten as

$$(15) \quad m_{ij} = \beta_0 + \lambda_i + \chi_j - \gamma d_{ij} + w_{ij} + u_{ij}.$$

where $\lambda_i = y_i + (\sigma-1)\pi_i$ is an exporter fixed effect associated with member state i and $\chi_j = e_j + (\sigma-1)p_j$ an importer fixed effect associated with member state j. Additionally, for technical reasons, the selection variable v_{ij} is replaced by w_{ij}.[18] This replacement has the advantage that W_{ij} respectively w_{ij} is defined by a_{ij} (see equation (13)) which in turn is implicitly defined by the zero profit condition (11). Hence, we can construct the latent variable Z_{ij} from the zero profit condition (11):

$$(16) \quad Z_{ij} = \frac{(1-\alpha)\, a_L^{1-\sigma} \left(\frac{\tau_{ij}}{\alpha P_j \Pi_i}\right)^{1-\sigma} E_j \bar{Y}_i / Y}{f_{ij}}$$

Utilizing the direct relation[19], we note that Z_{ij} can serve as a proxy for the unobserved selection variable W_{ij}. A Probit approach applied to Z_{ij} then yields consistent estimates of W_{ij} which justifies the replacement of v_{ij} by w_{ij} (Helpman et al. 2008).

To obtain the probit model first a randomization of the latent variable model (16) has to be conducted. To these ends, the bilateral fixed trade costs f_{ij} are assumed to be stochastic, too, i.e., they are composed of a deterministic part and a disturbance term $\nu_{ij} \overset{\text{i.i.d.}}{\sim} \mathrm{N}\left(0, \sigma_\nu^2\right)$. The ν_{ij}'s should be allowed to be correlated with the u_{ij}'s. Following Helpman et al. the deterministic part should consist of an exporter ϕ_i and an importer fixed effect ϕ_j, respectively, and a bilateral variable ϕ_{ij}, capturing country-pair specific fixed trade costs:. $f_{ij} \equiv \exp\left(\phi_i + \phi_j + \varphi\phi_{ij} - \nu_{ij}\right)$. Taking the logarithm of equation (16) then leads to following expression

$$(17) \quad z_{ij} = \gamma_0 + \xi_i + \zeta_j - \gamma d_{ij} - \varphi\phi_{ij} + \eta_{ij}$$

where $z_{ij} \equiv \ln Z_{ij}$ and $\eta_{ij} \equiv u_{ij} + \nu_{ij} \overset{\text{i.i.d.}}{\sim} \mathrm{N}\left(0, \sigma_u^2 + \sigma_\nu^2\right)$. In addition, $\xi_i = \bar{y}_i + (\sigma-1)\,\pi_i - \phi_i$ defines an exporter fixed effect and $\zeta_j = e_j + (\sigma-1)\,p_j - \phi_j$ an importer fixed effect.

The latent variables z_{ij} are not directly observable so the presence of trade is used as an indicator for z_{ij}. Defining T_{ij} as an indicator variable which equals 1 if member state i exports to member state j, and 0 otherwise, and ρ_{ij} as the probability that member state i

exports to member state j (conditional on a set of observable variables then the standardized probit model[20]) gives the specification of the probit model

$$(18) \quad \begin{aligned} \rho_{ij} &= \Pr\left(T_{ij}=1 \,|\, \text{observed variables}\right) \\ &= \Phi\left(\gamma_0^* + \xi_i^* + \zeta_j^* - \gamma^* d_{ij} - \varphi^* \phi_{ij}\right) \end{aligned}$$

where Φ is the cdf of the standard normal distribution.

The estimates of the probit model are used to construct estimates for z_{ij} and for W_{ij}. Conditional on the estimated $\hat{z}^*_{ij} = \Phi^{-1}\left(\hat{\rho}_{ij}\right)$ consistent estimates for W_{ij} can be obtained as follows

$$(19) \quad W_{ij} = \max\left\{\left(Z^*_{ij}\right)^{\delta} - 1, 0\right\}$$

where $\delta \equiv \sigma_\eta \left(\kappa - \sigma + 1\right) / \left(\sigma - 1\right)$. However, since the construction of the model generates a correlation between u_{ij} and the independent variables the estimates for z^*_{ij} and w_{ij} have to be adjusted. Consistent estimates are proposed by Helpman et al. (2008) by using the corrections $\hat{\hat{z}}^*_{ij} \equiv \hat{z}^*_{ij} + \hat{\hat{\eta}}^*_{ij}$ and $\hat{w}^*_{ij} \equiv \ln\left\{\exp\left[\delta\left(\hat{z}^*_{ij} + \hat{\hat{\eta}}^*_{ij}\right)\right] - 1\right\}$. The correction term $\hat{\hat{\eta}}^*_{ij}$ is the inverse Mills ratio of the probit model (18) $\hat{\hat{\eta}}^*_{ij} = \phi\left(\hat{z}^*_{ij}\right) / \Phi\left(\hat{z}^*_{ij}\right)$.[21] Using these corrections, the intermediate model (15) can be rewritten as

$$(20) \quad m_{ij} = \beta_0 + \lambda_i + \chi_j - \gamma d_{ij} + \ln\left\{\exp\left[\delta\left(\hat{z}^*_{ij} + \hat{\hat{\eta}}^*_{ij}\right)\right] - 1\right\} + \beta_{u\eta}\hat{\hat{\eta}}^*_{ij} + e_{ij}$$

where $\beta_{u\eta} \equiv corr(u_{ij}, \eta_{ij})(\sigma_u/\sigma_\eta)$ and e_{ij} is an i.i.d. error term satisfying $E\left[e_{ij}|., T_{ij}=1\right] = 0$ (Helpman et al. 2008).

The specification in equation (20) can be seen as the final econometric counterpart to the theoretical model (8). The specification corrects for three potential misspecifications which would otherwise lead to biased estimates of the distance coefficient γ. First, according to Helpman et al. (2008) mention that ignoring firm heterogeneity (captured by w_{ij})

would cause an upward bias of the distance coefficient γ. Second, failing to account for the presence of sample selection (captured by $\hat{\bar{\eta}}^*_{ij}$) would cause an downward bias. Third, an additional bias could be caused by ignoring the multilateral resistance terms (Anderson & van Wincoop 2003).[22]

Gravity Estimation Results

The econometric model (20) is estimated with intra-European calf trade data to test the hypothesis that the different implementation schemes lead to additional artificial trade flows. We expect the following signs for the estimated coefficients: The decoupling variable of the exporter i SFP_i should have a positive sign because a greater degree of decoupling should reduce willingness to pay for calves in the exporting country and thus increase imports originating from this particular exporter. Correspondingly, the sign of the decoupling variable of the importer j SFP_j should be negative because decoupling reduces willingness to pay in the importing country. The standard gravity variables are expected to have the usual signs. The physical distance variable d_{ij} should have a negative coefficient since trade costs increase with distance while the border variable border_{ij}, should have a positive coefficient because trade flows between neighboring countries tend to be higher. respectively. Data were extracted from different data sources: bilateral trade data from the Statistical Office of the European Union (EUROSTAT)[23], distance data from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), governance indicators from The Worldwide Governance Indicators (WGI) project of the Worldbank, and data on blue tongue outbreaks $\mathrm{BT\_out}_i$, blue tongue suspectible cases $\mathrm{BT\_sus}_i$ and blue tongue cases $\mathrm{BT\_cases}_i$ from the World Animal Health Information Database (WAHID) interface. The data frequency is annual, starting from 2003 until 2007. A detailed description of the data is given in Appendix A1.

For comparison, we present a traditional gravity model (Anderson & van Wincoop 2003)[24], a homogeneous firms trade model (Felbermayr & Kohler 2009)[25] and a heterogeneous firms trade model. The homogeneous as well as the heterogeneous firms trade model explicitly allow for zero and asymmetric trade flows while the heterogeneous firms trade model additionally allows for firm heterogeneity. The traditional gravity trade model is estimated by an Ordinary Least Squares (OLS) approach and then by a Heckman (Heckit) approach (Heckman 1979).[26] The OLS approach does not correct for sample selection but the Heckit approach does. Following Felbermayr & Kohler (2006, 2009), the homogeneous firms trade model is estimated by a Tobit (Tobit) approach and the heterogeneous firms trade model by a Two Stage Nonlinear Least Squares (2SNLS) approach (Helpman et al. 2008). The latter approach not only corrects for sample selection but also for firm heterogeneity. The heterogeneous firms trade model is also estimated by a Polynomial Regression (Polynomial) approach which is a semi-parametric alternative to 2SNLS (Helpman et al. 2008). Given the evidence of firm heterogeneity, the estimation results only for the traditional gravity trade model and the heterogeneous firms trade model are presented, see Table 3.[27][28]

To deal with the critique of Belenkiy (2010) that firm heterogeneity can only be significant if the elasticity of substitution is low, the sample selection and firm heterogeneity effects are decomposed to evaluate their statistical and economical importance.[29] This decomposition seems to be justified even for agricultural commodities with high elasticities of substitution. Belenkiy's proposition, however, does not provide an explicitly definition of what 'low' actually means. A correct judgment of the right model choice seems only possible by an analysis of the different effects. The corresponding results are summarized in Table 5. We first however discuss the economic results.

The estimation results shown in Table 3 confirm our theoretical expectations.[30] The usual proxy variables of gravitational distance physical distance d_{ij} and common border border_{ij} have the expected signs and are statistically significant. As expected calf imports decrease with trading partners' distance and a common border favors their trade. Likewise the signs and sizes of the year fixed effects are economically plausible. In the middle of

2003 the prices for young bulls started to recover with a strong increase, especially in 2004. This trend continued until the middle of 2006 when the animal disease blue tongue broke out. Consequently bull fattening became relatively more attractive even in less competitive member states which increased production and reduced exports. This market development is reflected in the negative signs for 2003-2005 and the even lower size for 2004. The following market reversal is also reflected in the signs of the year fixed effects. In 2006 the prices for young bulls not only stagnated but also the blue tongue disease broke out. In 2007 the economic situation worsened due to the peak of blue tongue outbreaks and the price bubble on world markets. This strongly influenced the competitiveness and so the attractiveness of bull fattening. As a consequence the positive signs for 2006 and the even greater for 2007[31] suggested higher calf exports. The year fixed effects seem to well reflect important market developments.

Blue tongue disease however not only multilaterally but also bilaterally affected trade. Though the effects of the latter are not significant they still have reasonable signs at least for blue tongue and suspicious blue tongue outbreaks. An outbreak or even a suspected outbreak negatively influences exports, in particular the exports of member states where the disease is confirmed. More striking however are the results for confirmed blue tongue cases. Here different effects seemed to counteract on each other. The blue tongue disease indisputable disfavored exports but the market stagnation and the beginning downturn in 2006 and 2007 counteracted, in part, this development. The confirmation of blue tongue does not immediately implied severe trade restrictions. Trade restrictions are imposed only if the importer was not also located in a blue tongue restriction zone. Otherwise the exports to these member states even became relatively easier than exports to non blue tongue member states. This might have happened for Germany which started after the high price phase again to increase its exports and especially its exports to The Netherlands where blue tongue disease was also confirmed. Another explanation for the positive sign is the emergence of different blue tongue serotypes[32]. This in part led to shifts in trade flows e.g. Italy substituted its imports mainly by Spanish imports. Nonetheless, the effects of blue tongue disease on bilateral trade relations seem to have been marginal.

Another trade restriction is indicated by the new member state indicator nms_i. The significantly negative sign of this indicator clearly indicates that the EU accession additionally favored the exports of the new member states. While the new member states already enjoyed far-reaching trade privileges they still were faced with some restrictions.

A primary interest of the paper is the critical judgment of the coexistence of different implementation schemes and its impact on intra-European calf trade. Here we provide a clear confirmation of our theoretical expectations. Both decoupling indicies of the exporter i SFP_i and importer j SFP_j have the expected signs across all model specifications. And, the decoupling index of the importer j is always significant (see Table 3). The non-significance of the decoupling index of the exporter is not so unexpected as the effects of decoupling should be stronger for the importer than the exporter: cattle farms specialized in bull fattening react faster and stronger to policy changes than do calf producing dairy farms. For dairy farms bull calves are a necessary byproduct of milk production. Thus, even the non-significance of the exporter i's decoupling index is meaningful.

Individual country-pair specific decoupling effects are also shown in Table 4.[33] These results also confirm our theoretical expectations. The effects of decoupling at the importer side are the stronger as the degree of decoupling of the importer increases. For example, the imports of The Netherlands which opted for Option II decreased by far less than the imports of Germany which opted for a SFP. It is also apparent from Table 4 that non-decoupled member states reduced their exports more than decoupled member states. This observation as well as the overall negative signs of the country-pair specific effects are seen as a direct consequence of the overall market decline described in Section and shown in Figure 2. So we do not observe positive and negative signs; rather,the negative signs in non-decoupled member states do not decline as fast as in a decoupled member state.

Given the rich structure of our econometric models with their fixed effects and partly countervailing market developments, the results give strong evidence in favor of our theoretical model; the options for differential implementation seem to have undermined the principles of the EU's common market through the creation of artificial trade flows.

So far all variables had all the expected signs and acceptable significance levels. The theoretical expectations are empirically verified. The only remaining issue is the question of the appropriate model specification. A first glance at Table 3 seems to favor the Heckman specification over the Helpman et al. (2008) specification as the firm heterogeneity term is not significant under the 2SNLS approach. This finding seems to be in the concordance with Belenkiy (2010) who analytically showed that the significance of the firm heterogeneity depends on the size of the elasticity of substitution. Since agricultural commodities are typically characterized by higher elasticities of substitution it seems realistic to observe a non-significant firm heterogeneity term. A second glance at Table 3 however does not seem to support this statement. In the Polynomial regression the (quadratic) approximations of firm heterogeneity are significant which contradicts the former statement. Additionally the adjusted R-squared statistic supports the Helpman et al. specification. To come up with a more appropriate judgment, we follow Belenkiy's decomposition suggestion[34] and decompose the sample selection effect and the firm heterogeneity effect (see Table 5).

The results in Table 5 provide stronger evidence to support the Helpman et al. specification and less support for the Heckman specification. The estimation results for the pure firm heterogeneity model (F-H) indicate firm heterogeneity is highly significant. The significant increase in the adjusted R-squared may explained herewith. What becomes clear when comparing the models of Table 5 is that the results of the Helpman et al. specification are clearly dominated by the downward correction of the Heckman approach and not so much by the upward correction of firm heterogeneity approach.

The findings of this decomposition approach clearly hint into the direction that a heterogeneous firms trade model could also be an appropriate alternative for the modeling of agricultural commodity trade.

Concluding Remarks

In this article we develop a modified version of Anderson (2009)'s heterogeneous firms trade model and utilize it to analyze the impacts of different policy implementation schemes for intra-European calf trade. The intra-European calf trade was chosen to illustrate the economic importance of differential policy implementations within a common agricultural market. In this sector, each member state could decide whether to fully sever the link between production and subsidies or to retain parts of the – previously coupled – direct payments tied to current production levels. These political concessions which emerged in the negotiations over the 2003 CAP Reforms resulted in different implementation schemes among the member states.

Our empirical findings are consistent with the theoretical model. The parameter estimates for the decoupling variables clearly show the trade distorting impacts of the coexistence of different implementation schemes. Society at large in the EU member states would have gained if the member states had followed the original proposal of the EU Commission and had implemented a uniform full decoupling policy over all States. However, without uniform decoupling artificial trade flows occurred which lead to additional welfare losses. Reforming the CAP with the 2008 Health Check was helpful although the obligation for full decoupling can again be delayed until 2012. However, at that time all member states should have fully decoupled and the additional welfare losses caused by the coexistence of different implementation schemes should have disappeared. The results of this paper clearly indicate that full decoupling is the most preferred policy however if partial decoupling options are desired then the partial decoupling policies should not deviate among member states.

Another finding of the econometric analysis is that the newly developed heterogeneous firms trade model of Anderson (2009) is a suitable framework for modelling agricultural commodity trade flows. As our econometric analysis reveals, firm heterogeneity is at least weakly significant for intra-European calf trade. This result is important, too, as it is in opposition to Belenkiy (2010)'s findings. It should however be mentioned that Belenkiy focused in his research on aggregated international agricultural trade flows not single agricultural commodity trade flows. Furthermore, the results of the paper emphasize the importance of Belenkiy (2010)'s decomposition approach as a valuable model selection tool.

The economic results of the paper should not only be of interest for the EU but also for other countries like Canada where the provinces are allowed to co-finance income support programs.

Notes

[1]In addition to decoupling also Cross-Compliance, Modulation, Market Support and Finance were part of the 2003 CAP Reform.

[2]The closest related paper is by Kogler & Saunders (2006) who use a partial equilibrium model to simulate the consequences of decoupling for New Zealand dairy and beef trade.

[3]For a similar approach see Behar & Nelson (2009).

[4]The theoretical framework of firm heterogeneity developed by Melitz (2003) allows the modelling of zero and asymmetric trade flows.

[5]This is a somewhat vague concept which emphasizes the multifunctional nature of agricultural production for overall development of rural areas. A more detailed delineation of the main ideas underlying this concept is found e.g. in Cardwell (2004, p. 93).

[6]For details concerning the final regulations for particular Common Market Organizations (CMOs) see EC (2003b).

[7]The CAP is based on three main principles: Financial Solidarity, Market Unity and Community Preference. Financial Solidarity refers here to the commitment to jointly finance the CAP, Market Unity to the commitment to have a common system of marketing and pricing and free movement of products, and Community Preference to the commitment of favouring own producers over foreign producers.

[8]The demand curve D_c^{SFP} does not coincide with the original demand curve D_c since SFP still have production effects even if lower ones (Rude 2008).

[9]We do not undertake a comprehensive evaluation of the net welfare impact on the beef and veal market in the EU. Because of the common financing mechanism and the presence

of export subsidies, the welfare impacts will crucially depend on the net trade position of each member state (Koester 1977).

[10]Depending on the production system different animal genetics are preferred for the production. In dairy production Holstein Frisian breeds are preferred possible Simmental Cattle whereas for beef production the focus is on Continental breeds.

[11]For further details on the european beef market see Nielsen & Jeppesen (2001); Chattelier et al. (2003); DG AGRI (2009).

[12]For a more detailed approach see Behar & Nelson (2009).

[13]This approach just mimics Anderson (2010)'s approach however not for the Anderson & van Wincoop model but for the heterogeneous firms trade model.

[14]For an extention of the Helpman et al. (2008) model by quality see Johnson (2009). Johnson extends the model both for within and between country quality differences.

[15]Trade separability implies the independence of resource and expenditure allocation at sector level from the pattern of bilateral calf shipments. For further details see Anderson (2010).

[16]As common, both variable and fixed bilateral trade costs should be iceberg trade costs.

[17]The model derivations here deviate from Anderson (2009) insofar as the derivations explicitly account for quality differences in calf varieties, measured by ψ_i, and the markup parameter α.

[18]Following Helpman et al. (2008) this replacement is justified since both variables v_{ij} and w_{ij} are monotonic functions of the proportion of exporting firms. So there is a direct relation between them.

[19]For details see Helpman et al. (2008) $W_{ij} = Z_{ij}^{(\kappa-\sigma+1)/(\sigma-1)} - 1$.

[20]As it is common in the literature to avoid the imposition of $\sigma_\eta^2 \equiv \sigma_u^2 + \sigma_v^2 = 1$ equation (17) is divided by σ_η. The starred coefficients of the probit model (18) indicate this transformation.

[21]For further details see Helpman et al. (2008, p. 456).

[22]Multilateral resistance is accounted for implicitly by the importer and exporter fixed effects. This approach is coherent and gives consistent estimates but prevents further comparative static analyses (Baier & Bergstrand 2009). For an explicit approach, see Behar & Nelson (2009).

[23]For the analysis only import data from Austria, Belgium, Czech Republic, Germany, Spain, France, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, The Netherlands, Poland and Slovakia were taken as exporters only Austria, Belgium, Czech Republic, Germany, Denmark, Estonia, Spain, France, United Kingdom, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, the Netherlands, Poland and Slovakia. All other Member States were skipped since they had no or only few import or export trade relationsships with other Member States.

[24]The standard gravity trade model here is defined as $m_{ij} = \beta_0 + \lambda_i + \chi_j - \gamma d_{ij} + e_{ij}$ where an additive extention of the model by a Mills Ratio $\hat{\bar{\eta}}_{ij}^*$ would yield the corresponding Heckman model.

[25]By specification the homogeneous firms trade model of Felbermayr & Kohler (2009) is defined as a Corner Solutions Model. The main difference to a Heckman specification is that zero trade flows are not modelled as missing values but as true values. Corner Solutions Models do not imply first hurdle dominance.

[26]Although the theoretical model underlying the traditional gravity trade model does not assume zero and asymmetric trade flows for its estimation here a Heckman approach is applied. This was done to have a counter sample selection model to the heterogeneous firms trade models for purposes of comparison.

[27]For details on Tobit estimation results see Appendix Table A.1.

[28]Following the recent literature, the gravity model was also estimated by a Poisson Pseudo Maximum Likelihood (PPML) approach (Santos Silva & Tenreyro 2006). Since the PPML results suffer under the problem of overdispersion they are not present here. Estimation and overdispersion test results are available on request.

[29]Helpman et al. (2008) already recommoded this decomposition they gave however no explicit analytical explanation for this property. It was just Belenkiy (2010) who gave an analytical explanation for this property. He could show that the extensive margin is inversely proportional to the elasticity of substitution see Belenkiy (2010, p. 8).

[30]For a comparison of all estimation results see also Appendix Table Table A.2.

[31]The year fixed effect of 2007 is just a combination of the other year fixed effects.

[32]In animal health science one differentiates between 24 different blue tongue serotypes. In the EU serotype 8 and serotype 1 are predominant whereas serotype 8 mainly occurs in Northern Europe and serotype 1 in Southern Europe.

[33]For all country-pair specific decoupling effects see Appendix Table Table A.3.

[34]This approach is also recommended by Helpman et al. (2008) but their paper misses an analytical explanation.

References

Anania, Giovanni (2009). “Multilateral Trade Negotiations and CAP.” AgFoodTrade Working Paper 2009-03.

Anderson, James E. (1979). “A Theoretical Foundation of the Gravity Equation.” The American Economic Review, 69, 1, 106-116.

Anderson, James E. (2009). “Gravity, Productivity and the Pattern of Production and Trade.” Working Paper.

Anderson, James E. (2010). “The Incidence of Gravity.” The Gravity Model of International Trade: Advances and Applications, Brakman, Stefen and Bergeijk, eds., Cambridge University Press.

Anderson, James E. and Yotov, Yoto V. (2009). “The Changing Incidence of Geography.” Working Paper.

Anderson, James E. and Yotov, Yoto V. (2010). “Spezialization: Pro- and Anti-Globalizing, 1990-2002.” Working Paper.

Anderson, James E. and Wincoop, Eric van (2003). “Gravity with Gravitas: A Solution to the Border Puzzle.” The American Economic Review, 93, 1, 170-192.

Anderson, James E. and Wincoop, Eric van (2004). “Trade Costs.” Journal of Economic Literature, 42, 691-751.

Baier, Scott L. and Bergstrand, Jeffrey H. (2009). “Bonus vetus OLS: A simple method for approximating international trade-cost effects using the gravity equation.” Journal of International Economics, 77, 1, 77-85.

Balistreri, Edward J., Al-Qahtani, Ayed and Dahl, Carol A. (2009). “Oil and Petroleum Product Armington Elasticities: A new-geography-of-trade approach to estimation.” Working Paper.

Beard, Nick and Swinbank, Alan (2001). “Decoupled payments to facilitate CAP reform.” Food Policy, 26, 121-145.

Behar, Alberto, Manners, Phil and Nelson, Benjamin D. (2009). "Exports and Logistics." University of Oxford, Department of Economics Discussion Paper Series, nr. 439.

Behar, Alberto and Nelson, Benjamin D. (2009). "Trade Flows, Multilateral Resistance and Firm Heterogeneity." University of Oxford, Department of Economics Discussion Paper Series, nr. 440.

Belenkiy, Maxim (2010). "The Extensive Margin in the Industry Trade: Estimation, Significance and Implications." Working Paper.

Cardwell, Michael (2004)."The European Model of Agriculture." Oxford University Press.

Chattelier, Vincent, Guyomard, Hervé and Le Bris, Katell (2003). "La production et le échanges de viande bovine dans le monde et dans l'Union européenne." INRA Prod. Anim., 16, 5, 365-380.

Daugbjerg, Carsten and Swinbank, Alan (2007). "The Politics of CAP Reform: Trade Negotiations, Institutional Settings and Blame Avoidance." Journal of Common Market Studies, 45, 1, 1-22.

Daugbjerg, Carsten and Swinbank, Alan (2009). "Ideas, Institutions, and Trade: The Wto and the Curious Role of Eu Farm Policy in Trade Liberalization." Oxford University Press.

Deblitz, Claus, Keller, Michael and Brüggemann, Daniel (2007). "The EU CAP-reform of 2003 and its consequences for German beef farmers." Landbauforschung Völkenrode, 57, 2, 179-192.

European Commission, Directorate General for Agriculture and Rural Development (2009). "EU Bovine Farms Economics - FADN Report 2008." DG AGRI L.3 SH D(2009).

European Commission (1991). "The development and future of the common agricultural policy." COM(91)258 final.

European Commission (1993). "Memorandum of understanding on oil seeds." Official Journal of the European Communities, OJ L 147/26.

European Commission (1999), Bulletin of the European Union, 3-1999, at I-Special Berlin European Council.

European Commission (2003a), COM(2003)23.

European Commission (2003b), EU Fundamentally Reforms its Farm Policy to Accomplish Sustainable Farming in Europe, IP/03/898, Luxembourg, 26 June 2003.

Felbermayr, Gabriel J. and Kohler, Wilhelm (2006). "Exploring the Intensive and Extensive Margins of World Trade." Review of World Economics, 142, 4, 642-674.

Felbermayr, Gabriel J. and Kohler, Wilhelm (2009). "WTO Membership and the Extensive Margin of World Trade: New Evidence." Hohenheimer Diskussionsbeiträge Nr. 304/2009.

Heckman, James J. (1979). "Sample Selection Bias as a Specification Error." Econometrica, 47, 153-161.

Helpman, Elhanan, Melitz, Marc and Rubinstein, Yona (2008). "Estimating Trade Flows: Trading Partners and Trading Volumes." Quarterly Journal Of Economics, 123, 2, 441-487.

Johnson, Robert C. (2009). "Trade and Prices with Heterogeneous Firms." Working Paper.

Koester, Ulrich (1977). "The redistributional effects of the common agricultural financial system." European Review of Agricultural Economics, 4, 4, 321-345.

Kogler, Klaus and Saunders, Caroline (2007). "Single Farm Payment in the European Union and its Implications on the New Zealand Dairy and Beef Trade." Working Paper.

Melitz, Marc J. (2003). "The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity." Econometrica, 71, 1695-1725.

Nielsen, Niels Asger and Jeppesen, Lisbeth Fruensgaard (2001). "The Beef Market in the European Union." Working Paper no 75.

Organisation for Economic Co-Operation and Development (2001). Decoupling: A Conceptual Overview. OECD, Paris, 2001.

Organisation for Economomic Co-Operation (2005). Special issue on decoupling agricultural support. OECD Papers 5(11), papers 416 to 426 Paris: OECD. www.sourceOECD.org.

Rude, James (2008). “Production Effects of the European Union’s Single Farm Payment.” Canadian Journal of Agricultural Economics, 56, 457-471.

Santos Silva, João M. C. and Tenreyro, Silvana (2006). “The Log of Gravity.” The Review of Economics and Statistics, 88, 4, 641-658.

Swinnen, Johan F. M. (2008). “The Perfect Storm - The Political Economy of the Fischler Reforms of the Common Agricultural Policy.” Centre For European Policy Studies (CEPS).

Appendix A1: Data

Main variables

Calf trade volumes. From Statistical Office of the European Union (EUROSTAT), ComExt Database, yearly from 2003-2007. Import volumes for CN8 Code Products 01029005 and 01029029.

Physical distance. From Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), yearly from 2003-2007. Great circle formula applied.

Common border. Bivariate variable $\{0,1\}$, yearly from 2003-2007. 1 incidates a common border 0 not.

Policy variable importer. Interval variable $[0,1]$ from Directorate-General for Agriculture and Rural Development (DG Agri), yearly from 2003-2007. 0 indicates 0 % direct payments decoupled 1 100 % decoupled.

Policy variable exporter. Interval variable $[0,1]$ from Directorate-General for Agriculture and Rural Development (DG Agri), yearly from 2003-2007. 0 indicates 0 % direct payments decoupled 1 100 % decoupled.

New member state. Bivariate variable $\{0,1\}$, yearly from 2003-2007. 0 indicates EU membership 1 not.

Blue tongue outbreaks. From World Animal Health Information Database (WAHID), yearly from 2003-2007.

Blue tongue suspectible cases. From World Animal Health Information Database (WAHID), yearly from 2003-2007.

Blue tongue cases. From World Animal Health Information Database (WAHID), yearly from 2003-2007.

Auxiliary variables

Regulatory quality. From The Worldwide Governance Indicators (WGI) project, yearly from 2003-2007.

Government effectiveness. From The Worldwide Governance Indicators (WGI) project, yearly from 2003-2007.

Rule of law. From The Worldwide Governance Indicators (WGI) project, yearly from 2003-2007.

Country coverage

Importer coverage. The 15 importing member states in the sample are: Austria, Belgium, Czech Republic, Germany, Spain, France, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, The Netherlands, Poland and Slovakia.

Exporter coverage. The 18 exporting member states in the sample are: Austria, Belgium, Czech Republic, Germany, Denmark, Estonia, Spain, France, United Kingdom, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, The Netherlands, Poland, and Slovakia.

Figures

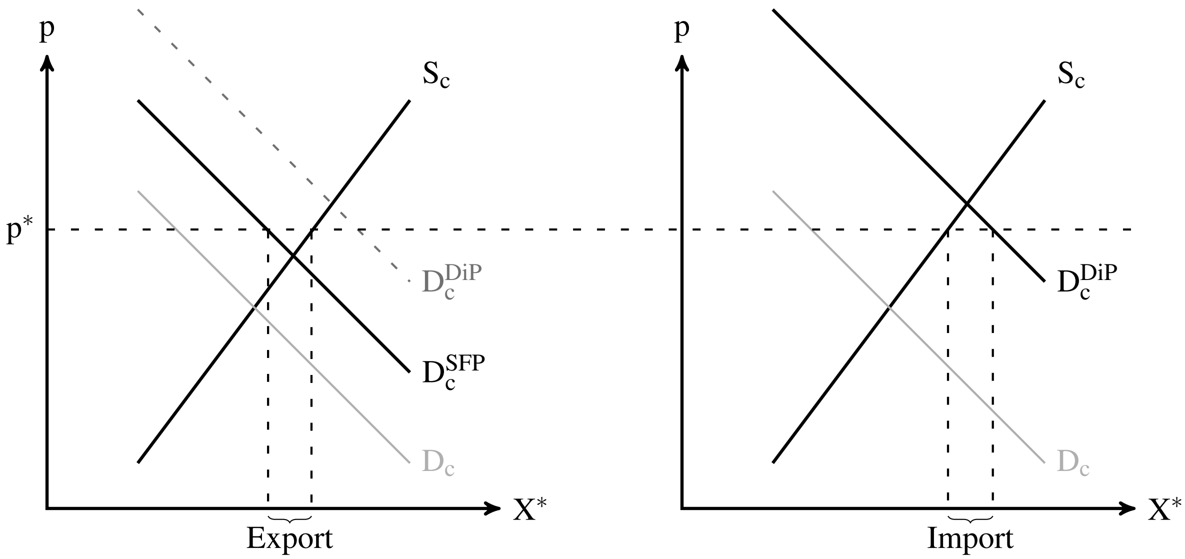

Figure 1. Effects of differential decoupling implementation

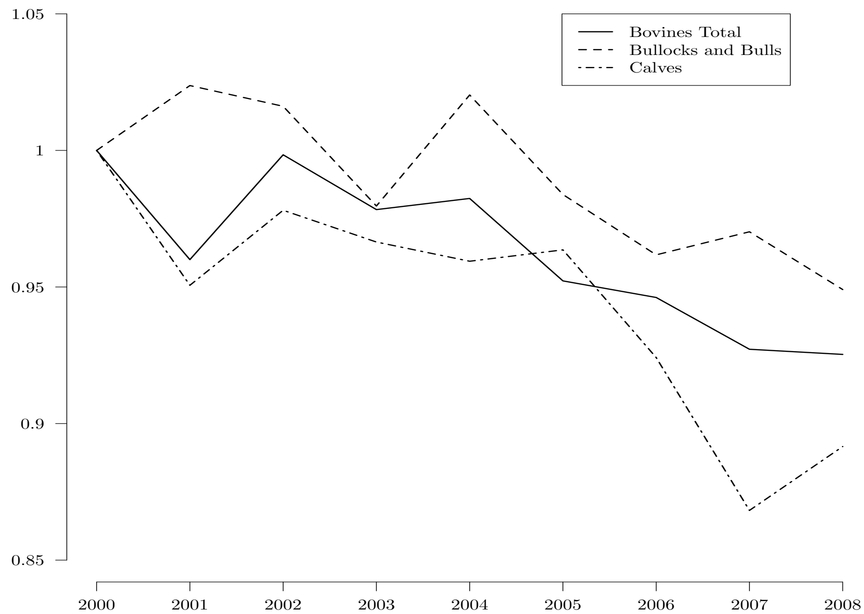

Figure 2. Development of Slaughterings in the EU15 (Base Year 2000)

Tables

Table 1. Overview Final Regulations CMO Beef

	Agenda 2000	Mid Term Review			
		Option I	Option II	Option III	Fully De-coupling
Direct payments [per head]					
Slaughter premium calves	50 €	50 € [100%]	50 € [100%]	50 € [100%]	-
Suckler-Cow premium	200 €	200 € [100%]	-	-	-
Slaughter-premium adult cattle	80 €	32 € [40%]	80 € [100%]	-	-
Special premium for male cattle	210 € (2 x 150 €)	-	-	157.50 € (2 x 112.50 €) [75%]	-
Market support					
Basic price[a]	2224 €/t	2224 €/t	2224 €/t	2224 €/t	2224 €/t
'Safety net' intervention price[b]	1560 €/t	1560 €/t	1560 €/t	1560 €/t	1560 €/t

Source:
http://europa.eu/legislation_summaries/agriculture/agricultural_products_markets/l60009_en.htm

[a]: For market prices below the basic price, aids for private storage can be granted.

[b]: For market prices below this price, public intervention can start.

Table 2. Implementation of direct payments in the beef sector by different member states under the 2003 CAP Reform

EU 25	Start	Implementation scheme	Slaughter-premium calves	Suckler-cow premium	Slaughter-premium adult cattle	Special premium for male cattle	Dairy premia decoupled
Austria	2005	historic	100%	100%	40%	-	2007
Belgium	2005	historic	100%[a]	100%	-	-	2006
Cyprus	-	mandatory regional	-	-	-	-	-
Czech Republic	-	mandatory regional	-	-	-	-	-
Denmark	2005	static hybrid	-	-	-	75%	2005
Estonia	-	mandatory regional	-	-	-	-	-
Finland	2006	dynamic hybrid	-	-	-	75%	2006
France	2006	historic	100%	100%	40%	-	2006
Germany	2005	dynamic hybrid	-	-	-	-	2005
Greece	2006	historic	-	-	-	-	2007
Hungary	-	mandatory regional	-	-	-	-	-
Ireland	2005	historic	-	-	-	-	2005
Italy	2005	historic	-	-	-	-	2006
Latvia	-	mandatory regional	-	-	-	-	-
Lithuania	-	mandatory regional	-	-	-	-	-
Luxembourg	2005	static hybrid	-	-	-	-	2005
Malta	-	mandatory regional	-	-	-	-	-
Netherlands	2006	historic	100%	-	100%	-	2007
Poland	-	mandatory regional	-	-	-	-	-
Portugal	2005	historic	100%	100%	40%	-	2007
Slovakia	-	mandatory regional	-	-	-	-	-
Slovenia	-	mandatory regional	-	-	-	-	-
Spain	2006	historic	100%	100%	40%	-	2006
Sweden	2005	static hybrid	-	-	-	74,55%	2005
United Kingdom	2005	dynamic hybrid[b]	-	-	-	-	2005

Source:http://www.ec.europa.eu/agriculture/markets/sfp/2008_01_dp_capFVrev.pdf

[a]:Slaughter premia for calves are only coupled for the region of Flandern/Brussels not for Wallonia.

[b]:The dynamic hybrid scheme is chosen only for England for Scotland/Wales a historic and for Northern Ireland a static hybrid is chosen.

Table 3. Gravity Estimation Results

Variable	(1) Probit	(2) OLS	(3) Heckit	(4) 2SNLS	(5) Polynomial
intercept	−2.0735∗	18.6310∗∗∗	10.6822∗∗∗	12.4249∗∗∗	9.2990∗∗∗
	(1.1829)	(2.5639)	(2.7306)	(2.9167)	(3.4575)
$\log(d_{ij})$	−0.0033	−1.5965∗∗∗	−1.7326∗∗∗	−1.7264∗∗∗	−1.7298∗∗∗
	(0.0728)	(0.3588)	(0.3332)	(0.3368)	(0.3423)
$border_{ij}$	0.9611∗∗∗	0.6086	2.2675∗∗∗	1.5180	1.4098
	(0.2237)	(0.5331)	(0.5990)	(0.9948)	(0.9870)
SFP_i	0.0171	0.2343	0.1441	0.1615	0.1656
	(0.2324)	(0.4070)	(0.3769)	(0.3775)	(0.3789)
SFP_j	−0.2926	−0.6883∗	−1.2957∗∗	−1.0289∗	−0.9800
	(0.2043)	(0.3859)	(0.4087)	(0.6058)	(0.5994)
nms_i	−0.6644∗∗∗	−0.9010	−2.4876∗∗∗	−1.9680∗∗	−1.8557∗∗
	(0.2272)	(0.5693)	(0.5964)	(0.8320)	(0.8260)
$\log(BT\_out_i)$	−0.0385	−0.1470	−0.1686	−0.1356	−0.1071
	(0.1063)	(0.2083)	(0.1959)	(0.1973)	(0.1986)
$\log(BT\_cases_i)$	0.0246	0.1707	0.1882	0.1646	0.1392
	(0.1051)	(0.2036)	(0.1994)	(0.1989)	(0.2002)
$\log(BT\_sus_i)$	0.0147	−0.0279	−0.0132	−0.0219	−0.0209
	(0.0378)	(0.0707)	(0.0672)	(0.0682)	(0.0679)
T_2003	−0.6153∗∗	0.1432	−0.7203	−0.3471	−0.2863
	(0.2430)	(0.5414)	(0.5908)	(0.8022)	(0.8010)
T_2004	−0.5311∗∗	−0.0485	−0.9415∗	−0.5918	−0.5420
	(0.2083)	(0.5191)	(0.5644)	(0.7825)	(0.7791)
T_2005	−0.4393∗∗	0.0045	−0.5899	−0.3716	−0.3465
	(0.1755)	(0.3254)	(0.3584)	(0.4698)	(0.4678)
T_2006	−0.1425	0.5547∗∗	0.4796∗∗	0.4920∗∗	0.4817∗∗
	(0.1294)	(0.2253)	(0.2263)	(0.2294)	0.2298
$Reg.Qual._j$	0.4406				
	(0.8444)				
$Gov.Eff._j$	0.9377				
	(0.5923)				
RoL_j	−1.8667∗				
	(0.9710)				
δ (from $\hat{\hat{w}}^*_{ij}$)				0.6208	
				(1.3692)	
$\hat{\hat{\eta}}^*_{ij}$			4.3249∗∗∗	4.0308∗∗∗	4.3175∗∗∗
			(0.7088)	(1.0763)	(1.2155)
$\hat{\hat{z}}^*_{ij}$					3.3677∗∗
					(1.6720)
$\hat{\hat{z}}^{*2}_{ij}$					−0.6114∗
					(0.3654)
No. of Obs.	1285	412	412	412	412
Adj. R-squared	0.47	0.49	0.53	0.58	0.54

Notes. Importer, exporter, and year fixed effects. Marginal effects at sample means and pseudo R^2 reported for Probit. Robust standard errors (clustering by country pair).
Signif. levels: 0 '***' 0.01 '**' 0.05 '*' 0.1 ' ' 1

Table 4. Summary of country-pair specific decoupling effects

Exporter		Importer		
		SFP (1.00)	Option I (0.80)	Option II (0.23)
SFP	(1.00)	$-0.87*$	-0.64	-0.08
Option I	(0.80)	$-0.90*$	$-0.67*$	-0.11
Option II	(0.23)	$-0.99**$	$-0.76*$	-
Option III	(0.63)	$-0.93*$	$-0.70*$	-0.14

Notes: Degree of Decoupling in brackets. Table values in percent based on 2007.
Signif. levels: 0 '***' 0.01 '**' 0.05 '*' 0.1 ' ' 1

Table 5. Sample Selection vs. Firm Heterogeneity

Variable	(1) OLS	(2) 2SNLS	(3) Heckit	(4) F-H
intercept	18.6310∗∗∗	12.4249∗∗∗	10.6822∗∗∗	17.4761∗∗∗
	(2.5639)	(2.9167)	(2.7306)	(2.3975)
$\log(d_{ij})$	−1.5965∗∗∗	−1.7264∗∗∗	−1.7326∗∗∗	−1.6536∗∗∗
	(0.3588)	(0.3368)	(0.3332)	(0.3417)
$border_{ij}$	0.6086	1.5180	2.2675∗∗∗	−1.4695∗∗
	(0.5331)	(0.9948)	(0.5990)	(0.5735)
SFP_i	0.2343	0.1615	0.1441	0.2456
	(0.4070)	(0.3775)	(0.3769)	(0.4040)
SFP_j	−0.6883∗	−1.0289∗	−1.2957∗∗∗	0.0269
	(0.3859)	(0.6058)	(0.4087)	(0.4343)
nms_i	−0.9010	−1.9680∗∗	−2.4876∗∗∗	0.2115
	(0.5693)	(0.8320)	(0.5964)	(0.5995)
$\log(BT\_out_i)$	−0.1470	−0.1356	−0.1686	−0.0365
	(0.2083)	(0.1973)	(0.1959)	(0.2103)
$\log(BT\_cases_i)$	0.1707	0.1646	0.1882	0.0964
	(0.2036)	(0.1989)	(0.1994)	(0.2032)
$\log(BT\_sus_i)$	−0.0279	−0.0219	−0.0132	−0.0566
	(0.0707)	(0.0682)	(0.0672)	(0.695)
T_2003	0.1432	−0.3471	−0.7203	1.1426∗
	(0.5414)	(0.8022)	(0.5908)	(0.5834)
T_2004	−0.0485	−0.5918	−0.9415∗	0.8369
	(0.5191)	(0.7825)	(0.5644)	(0.5575)
T_2005	0.0045	−0.3716	−0.5899	0.5347
	(0.3254)	(0.4698)	(0.3584)	(0.3441)
T_2006	0.5547∗∗	0.4920∗∗	0.4796∗	0.5647∗∗
	(0.2253)	(0.2294)	(0.2263)	(0.2237)
δ (from $\hat{\hat{w}}^*_{ij}$)		0.6208		
		(1.3692)		
$\hat{\hat{\eta}}^*_{ij}$		4.0308∗∗∗	4.3249∗∗∗	
		(1.0763)	(0.7088)	
$\hat{\hat{z}}^*_{ij}$				3.6547∗∗∗
				(0.6262)
No. of Obs.	412	412	412	412
Adj. R-squared	0.49	0.58	0.53	0.52

Notes. Importer, exporter, and year fixed effects. Robust standard errors (clustering by country pair).
Signif. levels: 0 '***' 0.01 '**' 0.05 '*' 0.1 ' ' 1

Table A.1. Estimation Results Homogeneous Firms Trade Model

Variable	(1) OLS	(2) Latent variable	(3) Expectation cond. on interior solution	(4) Expectation uncond. on interior solution
log(d_{ij})	−1.5965∗∗∗	−0.1158	−0.0294	−0.0320
	(0.3588)	(0.7155)	(0.1816)	(0.1980)
$border_{ij}$	0.6086	6.6462∗∗∗	1.9706∗∗∗	2.4321∗∗∗
	(0.5331)	(1.6202)	(0.5397)	(0.7235)
SFP_i	0.2343	0.0318	0.0081	0.0088
	(0.4070)	(1.5030)	(0.3814)	(0.4156)
SFP_j	−0.6883∗	−3.6248∗∗∗	−0.9199∗∗∗	−1.0024∗∗∗
	(0.3859)	(1.2915)	(0.3215)	(0.3519)
nms_i	−0.9010	−5.2997∗∗∗	−1.1602∗∗∗	−1.0670∗∗∗
	(0.5693)	(1.5536)	(0.2888)	(0.2295)
log(BT_out_i)	−0.1470	−0.2568	−0.0652	−0.0710
	(0.2083)	(0.7124)	(0.1806)	(0.1967)
log(BT_cases_i)	0.1707	0.2809	0.0713	0.0777
	(0.2036)	(0.6777)	(0.1715)	(0.1865)
log(BT_sus_i)	−0.0279	0.0028	0.0007	0.0008
	(0.0707)	(0.2186)	(0.0555)	(0.0605)
T_2003	0.1432	−4.2029∗∗	−0.9813∗∗∗	−0.9768∗∗∗
	(0.5414)	(1.6480)	(0.3476)	(0.3147)
T_2004	−0.0485	−4.1035∗∗∗	−0.9599∗∗∗	−0.9575∗∗∗
	(0.5191)	(1.4197)	(0.2977)	(0.2700)
T_2005	0.0045	−2.4071∗∗	−0.5818∗∗∗	−0.6021∗∗∗
	(0.3254)	(1.0155)	(0.2241)	(0.2129)
T_2006	0.5547∗∗	0.1601	0.0408	0.0446
	(0.2253)	(0.6940)	(0.1779)	(0.1958)
No. of Obs.	412		1285	
(Pseudo) Adj. R-squared	0.49		0.20	

Notes. Importer, exporter, and year fixed effects. Marginal effects at sample means and pseudo R^2 reported for Probit. Robust standard errors (clustering by country pair).
Signif. levels: 0 '***' 0.01 '**' 0.05 '*' 0.1 ' ' 1

Table A.2. Gravity Estimation Results

Variable	(1) OLS	(2) Heckit	(3) 2SNLS	(4) Tobit
intercept	18.6310∗∗∗	10.6822∗∗∗	12.4249∗∗∗	−11.0062∗
	(2.5639)	(2.7306)	(2.9167)	(6.5642)
$\log(d_{ij})$	−1.5965∗∗∗	−1.7326∗∗∗	−1.7264∗∗∗	−0.1158
	(0.3588)	(0.3332)	(0.3368)	(0.7155)
border_{ij}	0.6086	2.2675∗∗∗	1.5180	6.6462∗∗∗
	(0.5331)	(0.5990)	(0.9948)	(1.6102)
SFP_i	0.2343	0.1441	0.1615	0.0318
	(0.4070)	(0.3769)	(0.3775)	(1.5030)
SFP_j	−0.6883∗	−1.2957∗∗∗	−1.0289∗	−3.6248∗∗∗
	(0.3859)	(0.4087)	(0.6058)	(1.2915)
nms_i	−0.9010	−2.4876∗∗∗	−1.9680∗∗	−5.2997∗∗∗
	(0.5693)	(0.5964)	(0.8320)	(1.5536)
$\log(\text{BT\_out}_i)$	−0.1470	−0.1686	−0.1356	−0.2568
	(0.2083)	(0.1959)	(0.1973)	(0.7124)
$\log(\text{BT\_cases}_i)$	0.1707	0.1882	0.1646	0.2809
	(0.2036)	(0.1994)	(0.1989)	(0.6777)
$\log(\text{BT\_sus}_i)$	−0.0279	−0.0132	−0.0219	0.0028
	(0.0707)	(0.0672)	(0.0682)	(0.2186)
T_2003	0.1432	−0.7203	−0.3471	−4.2029∗∗
	(0.5414)	(0.5908)	(0.8022)	(1.6480)
T_2004	−0.0485	−0.9415∗	−0.5918	−4.1035∗∗∗
	(0.5191)	(0.5644)	(0.7825)	(1.4197)
T_2005	0.0045	−0.5899	−0.3716	−2.4071∗
	(0.3254)	(0.3584)	(0.4698)	(1.0155)
T_2006	0.5547∗∗	0.4796∗∗	0.4920∗∗	0.1601
	(0.2253)	(0.2263)	(0.2294)	(0.6940)
δ (from $\hat{\hat{w}}^*_{ij}$)			0.6208	
			(1.3692)	
$\hat{\hat{\eta}}^*_{ij}$		4.3249∗∗∗	4.0308∗∗∗	
		(0.7088)	(1.0763)	
No. of Obs.	412	412	412	1285
Adj. R-squared	0.49	0.53	0.58	0.20

Notes. Importer, exporter, and year fixed effects. Marginal effects at sample means and pseudo R^2 reported for Probit. Robust standard errors (clustering by country pair).
Signif. levels: 0 '***' 0.01 '**' 0.05 '*' 0.1 ' ' 1

Table A.3. Country-Pair Specific Decoupling Effects

Exporter		AUT	BEL	CZE	DEU	ESP	FRA	GRC	HUN	IRL	ITA	LTU	LUX	NLD	POL	SVK
		Option I	Option I	SFP	SFP	Option I	Option I	SFP	SFP	SFP	SFP	SFP	SFP	Option II	SFP	SFP
AUT	Option I	-	−0.82*	−0.89*	−0.89*	−0.69*	−0.67	−0.89*	−0.89*	−0.89*	−0.89*	−0.89*	−0.89*	−0.11	−0.89*	−0.89*
BEL	Option I	−0.71	-	−0.88*	−0.88*	−0.68	−0.65	−0.88*	−0.88*	−0.88*	−0.88*	−0.88*	−0.88*	−0.09	−0.88*	−0.88*
CZE	SFP	−0.70	−0.79	-	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.08	−0.87*	−0.87*
DEU	SFP	−0.70	−0.79	−0.87*	-	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.08	−0.87*	−0.87*
DNK	Option III	−0.75*	−0.85*	−0.93*	−0.93*	−0.73*	−0.70*	−0.93*	−0.93*	−0.93*	−0.93*	−0.93*	−0.93*	−0.14	−0.93*	−0.93*
EST	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.08	−0.87*	−0.87*
ESP	Option II	−0.73*	−0.83*	−0.90*	−0.90*	-	−0.67*	−0.90*	−0.90*	−0.90*	−0.90*	−0.90*	−0.90*	−0.11	−0.90*	−0.90*
FRA	Option II	−0.73*	−0.83*	−0.90*	−0.90*	−0.70*	-	−0.90*	−0.90*	−0.90*	−0.90*	−0.90*	−0.90*	−0.12	−0.90*	−0.90*
GBR	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.08	−0.87*	−0.87*
HUN	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	-	−0.87*	−0.87*	−0.87*	−0.87*	−0.08	−0.87*	−0.87*
IRL	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	-	−0.87*	−0.87*	−0.87*	−0.08	−0.87*	−0.87*
ITA	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	-	−0.87*	−0.87*	−0.08	−0.87*	−0.87*
LTU	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	-	−0.87*	−0.08	−0.87*	−0.87*
LUX	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	-	−0.08	−0.87*	−0.87*
LTA	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.08	−0.87*	−0.87*
NLD	Option II	−0.82**	−0.92**	−0.99**	−0.99**	−0.79*	−0.76*	−0.99**	−0.99**	−0.99**	−0.99**	−0.99**	−0.99**	-	−0.99**	−0.99**
POL	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.08	-	−0.87*
SVK	SFP	−0.70	−0.79	−0.87*	−0.87*	−0.67	−0.64	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.87*	−0.08	−0.87*	-

Notes: Table values in percent based on 2007.
Signif. levels: 0 '***' 0.01 '**' 0.05 '*' 0.1 ' ' 1

Diskussionspapiere (2000 bis 31. Mai 2006: Institut für Agrarökonomie der Georg-August-Universität, Göttingen)

0001	Brandes, Wilhelm	Über Selbstorganisation in Planspielen: ein Erfahrungsbericht, 2000
0002	Von Cramon-Taubadel, Stephan u. Jochen Meyer	Asymmetric Price Transmission: Factor Artefact?, 2000
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
		2002
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 Qualitätsicherungssytemen, 2002
		2003
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
		2004
0401	Meyer, Jochen u. S. von 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
		2005
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
		2006
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
		2007
0701	Buchs, Ann Kathrin u. Jörg Jasper	For whose Benefit? Benefit-Sharing within Contractural ABC-Agreements from an Economic Prespective: the Example of Pharmaceutical Bioprospection, 2007
0702	Böhm, Justus et al.	Preis-Qualitäts-Relationen im Lebens- Mittelmarkt: 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 der 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
		2008
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 2007/08
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, Stehanie, 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 und Ludwig Theuvsen	Die öffentliche Auseinandersetzung über Bioenergie in den Massenmedien Diskursanalytische Grundlagen und erste Ergebnisse
0907	Onumah, Edward E., Gabriele Hoerstgen-Schwark and 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 and 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 und Oliver Mußhoff	Entscheidungsverhalten landwirtschaftlicher Betriebsleiter bei Bioenergie-Investitionen - Erste Ergebnisse einer empirischen Untersuchung -
0912	Albersmeier, Friederike, Daniel Mörlein und Achim Spiller	Zur Wahrnehmung der Qualität von Schweinefleisch beim Kunden
0913	Ihle, Rico, Bernhard Brümmer Und Stanley R. Thompson	Spatial Market Integration in the EU Beef and Veal Sector: Policy Decoupling and Export Bans

		2010
1001	Heß, Sebastian Stephan v. Cramon-Taubadel und Stefan Sperlich	Numbers for Pascal: Explaining differences in the estimated Benefits of the Doha Development Agenda
1002	Deimel, Ingke, Justus Böhm und Birgit Schulze	Low Meat Consumption als Vorstufe zum Vegetarismus? Eine qualitative Studie zu den Motivstrukturen geringen Fleischkonsums
1003	Franz, Annabell und Beate Nowak	Functional food consumption in Germany: A lifestyle segmentation study
1004	Deimel, Mark und Ludwig Theuvsen	Standortvorteil Nordwestdeutschland? Eine Untersuchung zum Einfluss von Netzwerk- und Clusterstrukturen in der Schweinefleischerzeugung
1005	Niens, Christine und Rainer Marggraf	Ökonomische Bewertung von Kindergesundheit in der Umweltpolitik Aktuelle Ansätze und ihre Grenzen
1006	Hellberg-Bahr, Anneke , Martin Pfeuffer, Nina Steffen, Achim Spiller und Bernhard Brümmer	Preisbildungssysteme in der Milchwirtschaft Ein Überblick über die Supply Chain Milch
1007	Steffen, Nina, Stephanie Schlecht, Hans-Christian Müller und 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 und Stanley R. Thompson	Payment Decoupling and the Intra – European Calf Trade

Diskussionspapiere (2000 bis 31. Mai 2006: Institut für Rurale Entwicklung der Georg-August-Universität, Göttingen)

Ed. Winfried Manig (ISSN 1433-2868)

32	Dirks, Jörg J.	Einflüsse auf die Beschäftigung in nahrungsmittelverabeitenden 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 Acdess to Informal Economy in Northwest Pakistan, 2005
43	Yustika, Ahmad Erani	Transaction Costs and Corporate Governance of Sugar Mills in East Java, Indovesia, 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 Professuren mit 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