KVL | A UNIVERSITY OF LIFE SCIENCES

Reaping the Gains from Trade: Constraints and Opportunities of Agricultural Credit Markets.

Jarka Chloupkova and
Christian Bjørnskov

Reaping the gains from trade:
Constraints and opportunities of agricultural credit markets

by
Jarka Chloupkova
Royal Veterinary and Agricultural University
and
Christian Bjørnskov[*]
Danish Institute of Agricultural and Fisheries Economics

Abstract

International trade liberalisation often implies increased potentials for export production. For investing in increasing capacity in agriculture, farmers need to have credit access. However, farmers in many countries are credit constrained, e.g. due to collateral reasons, which is the case in Central Europe and East Africa, among others. A model illustrates the additional producer gains from having access to credit; the gains are composed of a price effect, an investment effect, and a social capital externality.

Improvement of agricultural credit can be achieved by relying on existing social structures, such as farmers' social capital. This approach tackles the collateral issue and can furthermore entail benefits external to the investment decision. The paper concludes that these externalities need to be addressed when designing optimal agricultural credit institutions.

1.   Introduction

Historically, agriculture has been the backbone of all economies and still holds a special place, both economically as well as culturally, relative to other sectors of the economy. It has a distinct biological character, making production unpredictable and to some extent uncontrollable. In comparison to other markets demand for agricultural produce tends to be very inelastic, and as income increases the expenditure proportion spent on food decreases. Thus, especially in the most developed countries, with time the importance of agriculture has decreased in comparison to other sectors.

However, in relation to international trade liberalisation, agriculture still represents an important issue. Some of the largest economic gains could arise from reducing agricultural trade barriers. To be able to extract these gains countries will have to overcome a number of constraints, including an insufficient administrative, infrastructural, and supply capacity, as well as a lack of political will.

Regarding the issue of enhancing agricultural supply capacity, researchers often point to a lacking access to credit as an important constraint (see for example Mathijs and Swinnen, 1999). In an African context, Mosley (1999) points out that the problem of credit is crucial and that distinction must be made between individual credit markets; i.e. industrial versus agricultural credit markets. This is also the case of the Central and Eastern European countries (CEEC), as documented by Chloupkova (1996).

All around the world, there are numerous cases of discrimination against rural credit, based on the lack of suitable collateral, high transaction costs for the credit institution and sometimes also due to various government interventions in the market.[1] One of these effects might lead to a reduction of farming incentives leading to entrepreneurial-minded farmers wanting to seek opportunities elsewhere, thereby reducing the total efficiency in agriculture. Nevertheless, rural structures can make it difficult to liquidate farm properties and find an alternative employment, which could be an additional constraint that is biased against the average farmer.

---

[1] *In the 1970s, the 'first wave of micro-credit' proved that good intentions of interventions had adverse effects. Subsidised interest rates had costly macroeconomic consequences, local power elites captured the credit, and debt forgiveness undermined the financial viability of the institutions (Yaron and McDonald, 1997). Similarly, highly subsidised agricultural credit schemes in Poland and Romania have not solved the issue of access to credit (Swinnen et al; 2001).*

The objective of this paper is to conceptualise the importance of agricultural credit markets in seizing the full potential of increased market access by improving the investment efficiency in the agricultural sector, and thus furthering regional and social development by making it more attractive to stay in these areas. A simple model illustrates the theoretical effects of credit constraints. As a consequence of the endemic lack of relevant data for econometric analysis, two regional cases explain and document in details the effects of the model. The selected cases are focused on Central Europe (the Czech Republic, Poland and Hungary) and East Africa (Uganda, Tanzania and Kenya).

With the EU Association Agreements and the future accession, on the agenda, Central Europe will gain improved access to EU markets in the very near future. The possibilities arising from the EU enlargement can only be captured in full if the shortcomings of the Central European agricultural credit markets are solved.

In contrast to for example the Czech Republic, which is historically a very industrialised country, East Africa is heavily dependent on its agricultural sector; a feature shared with most Least Developed Countries (LDC). However, a formal East African agricultural credit market hardly exists, making agricultural investments exceedingly difficult. With the 'Everything But Arms' (EBA) initiative Uganda and Tanzania has gained full access to the EU markets, but similarly to Central Europe, the full export potential will not be utilised unless the access to agricultural credit is improved.

The paper is structured as follows. Before analysing the cases, section 2 presents the model framework used for analysing the importance of having access to credit. The following section 3 describes the credit markets in the two selected regions. Section 4 addresses the potentials of the EU trade agreements. Section 5 describes how to avoid credit constraints and thereby how to benefit from the trade agreements. The last two sections 6 and 7 summarise the paper with suggestions and conclusions.

2.   Model framework

2.a.   Overall framework

The model used for illustrating the importance of credit is based on the relations between production, profitability and credit, influenced by numerous factors. These relations are depicted in Figure 1.

Figure 1: **The effective farm level production**
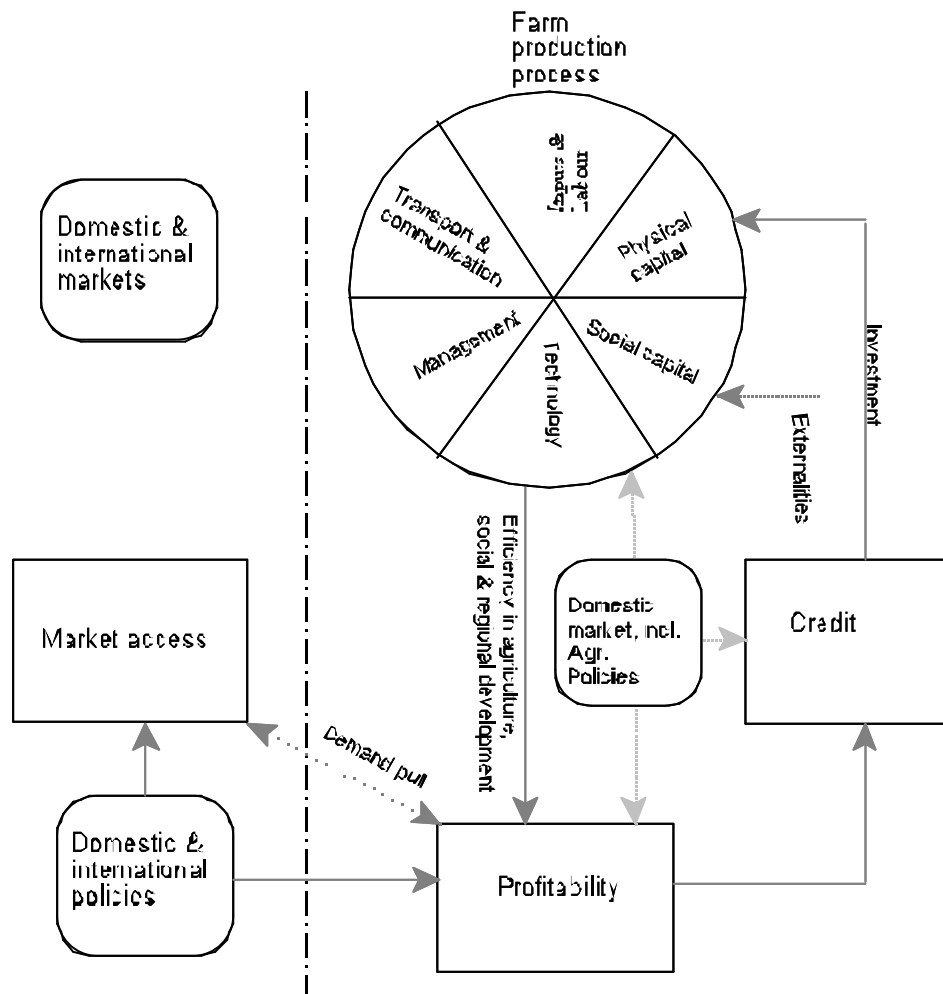
The figure illustrates that improved productivity can increase profitability through increased efficiency. Increased efficiency could be achieved via investing in any of the six components depicted above (investment effect), namely: availability of basic inputs, productivity of labour, physical capital, technology, management and transport and communication means. Moreover, the synergy of all these components could dynamically increase this effect.

The prerequisite for investment is the availability of financial capital, either from retained farm-earnings or from having access to various sources of credit. Nevertheless, with obtaining credit through formal or semiformal institutions, some additional positive effects external to the investment decision may take place, in particular effects related to social capital accumulation (see box no. 1). The size of the effects depends on the set-up and institutional design of the credit disbursement. For example, such effects can work through increasing farmers' social capital, which augments human capital, and thus induce learning spill-overs, as discussed in section 5.

Box No.1: Social Capital

Social capital is usually defined as "features of social organisations, such as trust, norms and networks, that can improve the efficiency of society by facilitating co-ordinated actions" (Putnam, 1993, p. 167).

The central production-credit cycle depicted in figure 2, which is the essence of figure 1, closes with profits generating financial means that can be reinvested in the production and/or facilitate increased credit access, via signalling the accountability and credibility of the farmer to the credit institutions.

Figure 2: **The central production-credit cycle**
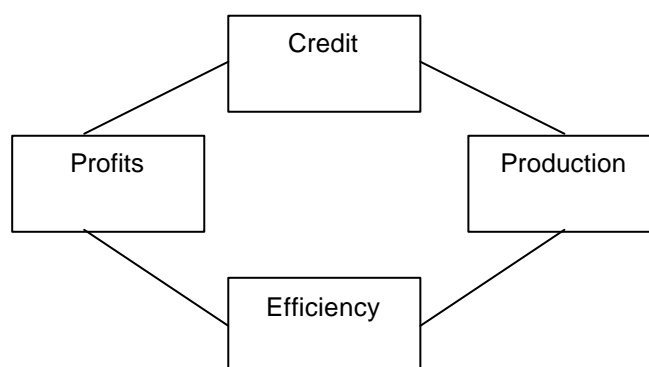
As figure 1 illustrates, the profitability of the optimal production is affected, either positively or negatively, by domestic or international policies, and by policies reducing trade barriers in particular. For example, certain policies could enable farmers to achieve economies of scale. In order to benefit from these policies, the central production-credit cycle, in figure 2 must be

functioning, thus enabling farmers to react optimally to changing factors in the economic environment.

2.b.   The model

For reasons of simplicity, the analysis following from figure 3 below is only partial as it ignores the effect of the domestic market. Thus the analysis assumes that the productions for international and domestic market are separate matters; cross effects are not incorporated.

Figure 3: **Producer gains from trade liberalisation and access to credit**
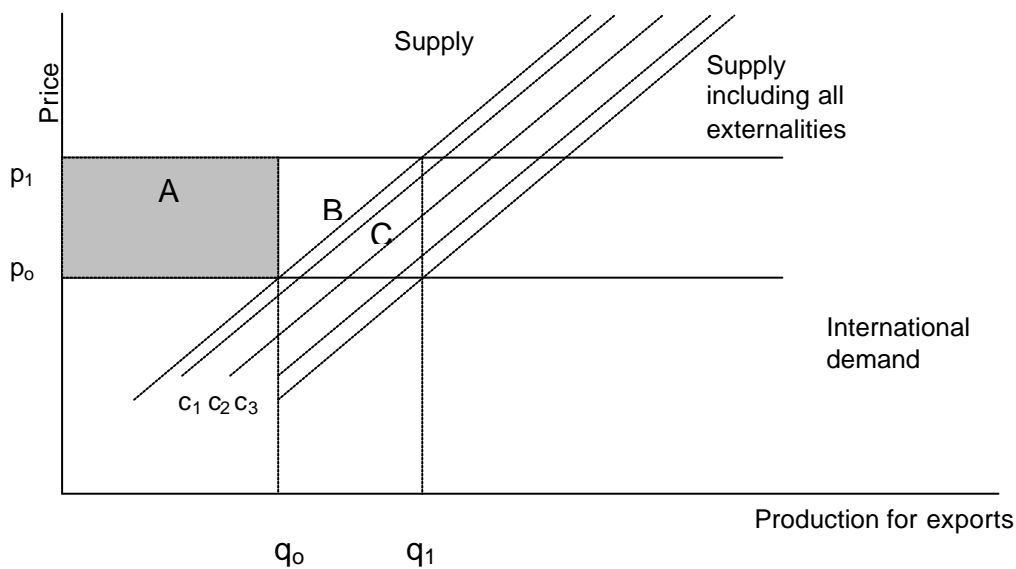
Figure 3 illustrates a situation where the agricultural sector initially produces the quantity q_o at the producer price $p_o = p_{EU} / (1+\tau)$; where p_{EU} is the price in the internal EU market, and τ is the applied tariff level.[2] After a trade liberalisation, i.e. a removal (or reduction) of trade custom duties, the producer price on internationally traded agricultural commodities increases to $p_1 = p_{EU}$.

The shaded area depicted by symbol A represents direct producer gains from trade liberalisation implying a producer price increase. Area B represents the gain from a production expansion leading to a trade expansion. It is important to note that this gain can be achieved only through investing in production

---

[2] *In relation to the world market price p_{int}, the EU's internal price p_{EU} might be distorted by the CAP's support mechanisms.*

capacity. These potential investment gains imply an imperative need of credit. The area depicted by symbol C, represents the additional potential externalities, i.e. the positive spill-overs that can be achieved by certain institutional set-up, discussed in more details below, in section 5b.

The total gain (A + B + C) is divided among producers, consumers and trade agents.[3] In the following, only producers' gains are considered.

In mathematical terms, the model consists of a standard Cobb-Douglas production function Y, being part of profit function, which is:

$$\Pi = pY - rK - wL = p\boldsymbol{J}K^{a}L^{1-a}H^{b} - rK - wL$$

where: p = producer price

   ϑ = technology coefficient
   K = composite capital
   L = labour
   H = human capital
   r = interest rate
   w = wages

Trade liberalisation normally implies the removal of trade barriers and thus increased market access, i.e. the price increases from p_0 to p_1. Over two periods where the loan is repaid, the gains achieved through this price increase are:

$$\Delta A = \boldsymbol{dp}\left(\frac{2+r}{1+r}\right)p_0\boldsymbol{J}K^{a}L^{1-a}H^{b}$$

where: $\boldsymbol{dp} = \dfrac{p_1 - p_0}{p_0}$

In other words, ΔA represents the gains of receiving higher producer prices. With access to credit the farmer will be able to invest in increased capacity and thus extract the full gain of liberalisation. The gains from having access to credit are therefore:

---

[3] *The relative share of the gains for trade agents depends on their relative bargaining strength. The remaining gain is divided between producers and consumers, with the consumer share increasing and producer share decreasing with market competition.*

$$\Delta B = p_1 \boldsymbol{J} K^a L^{1-a} H^b \left(\frac{2+r}{1+r}\right) \left[\left(1+\frac{M}{K}\right)^a - 1\right] - (1+r)M$$

As figure 3 illustrates, these gains are unambiguously positive.

On the other hand, the benefits arising from externalities connected to social capital may not always be positive, as can be seen from augmenting the production function slightly. If, for example, there are learning spill-overs associated with the credit disbursement process, the production function Y becomes:

$$Y = \boldsymbol{J} K^a (L-t)^{1-a} (H\boldsymbol{w})^b$$

where: ω = social capital augmenting human capital (learning spill-over)

t = transaction cost associated with acquiring social capital (networking)

These learning spill-overs could for example arise when clients attend meetings at the credit institution and talk while waiting (the time t), thereby making new acquaintances[4]. The acquaintances might bring new knowledge or methods, thereby creating a productivity externality, which becomes:

$$\Delta C = p_1 \boldsymbol{J} (K+M)^a L^{1-a} H^b \left[\left(1-\frac{t}{L}\right)^{1-a} \boldsymbol{w}^b - 1\right]$$

The equation above shows the important condition that gains from the externality are positive only if the transaction costs are relatively small in comparison to labour productivity.

In summary the model illustrates three effects of increased market access: ΔA, the immediate gain from producers receiving higher prices; ΔB, the additional gain of being able to invest in an increased supply capacity; and ΔC, a potential effect external to the investment decision. The two latter effects are discussed in section 5.

---

[4] Such learning spill-overs are similar to the effects of social capital as documented by Coleman (1988) in the article that started the modern social capital research.

8

In real life situations, it must not be forgotten that as farmers gain access to new markets, their comparative advantages could change, implying that the optimal production structure will shift as well.[5] It should be stressed that this one-sector model captures only one aspect of the problem, irrespective of other influences coming from within and/or outside of the sector.

3.   Description of credit markets

The model described above illustrates the importance of well-functioning agricultural credit market. However, in the real world, for example in the transition countries, credit markets do not function well, and there are examples of developing countries where formal agricultural credit markets are entirely missing. The credit markets in Central Europe are selected in order to represent the transitional economies, which are front-runners for the EU enlargement. East Africa, which is currently economically prospering, but lacking formal agricultural credit markets, is given as an example from the developing countries.

Table 1. **Selected countries economic profiles**

	Agriculture (% GDP)	Share of population in agric. (%)	Financial depth	Total export (% GDP)	GDP per capita (US$)
Denmark	2.6	4	57.3	36.2	25 353
Czech Republic	3.3	5	67.8	60.4	13 026
Hungary	6.3	10	40.2	49.6	10 808
Poland	6.3	26	36.1	26.6	8 040
Kenya	25.7	75-80	43.8	25.8	1 023
Uganda	43.7	82	13.2	11.6	1 114
Tanzania	45.4	80	17.6	13.9	489

Note: Indicators are averages for 1997-1999. Financial depth is M2 pr GDP %.
Source: World development indicators (2001), CIA World Factbook (2001) and European Commission (2001).

3.a.   Agricultural credit in Central Europe

In the last decade of transition from centrally planned to market economy, the Central European agricultural sector underwent significant changes. In the Czech Republic, Hungary as well as other CEEC, most agriculture was collectivised by the communist regime. Later, in the process of transition, most

---

[5] *Lukas (1999) suggests that this could imply a shift from low-value added to high value-added production.*

farmland was restituted. However, a substantial part of the restituted farmland has been leased back to the transformed cooperative farms. On the other hand, Poland (as well as Slovenia) maintained private ownership of 80 % of the land and farm assets, thereby maintaining small and inefficient farms throughout the communist time (European Commission, 1998). Either way, this coexistence of relatively small private farms and large-scale transformed cooperative and state farming is typical of the dualistic character of agriculture in the CEEC.[6]

The process of transition to market economies, complemented by the removal of state subsidies, lead to lowered profitability. Furthermore, the process of transition made much of the existing agricultural capital and infrastructure unfit for the emerging agricultural structure, necessitating additional investment in restructuring production. However, reformed credit institutions were reluctant to finance agricultural investments. This lack of investments further lowered profitability, putting a 'brake' on the production-credit circle (cf. figure 2).

The lack of investment in agriculture is closely related to the land market, which is not well functioning in the CEEC (Swinnen et al; 2001)[7]. Since land prices are low (due to the lowered profitability in agriculture), the demand for land is limited, and thus banks are reluctant to accept land as a collateral (Lukas, 1999). In addition, some CEEC have introduced measures, which distort land markets; for example Hungary has linked agricultural land purchase with the requirement of professional qualification and obligation of cultivation (CIVITAS, 2001).

As a response to these problems, CEEC states have launched various measures to tackle lack of credit. For example, the Czech Republic has employed the State Guarantee Fund for Farmers and Forestry – SGFFF (in Czech: *Podpurny a garancni rolnicky a lesnicky fond*) to provide collateral guarantees and interest rate subsidies through various programmes. Other CEEC have applied similar measures. These programmes have been successful in treating symptoms, but neglected the main source of the problem, that land cannot be used as collateral.[8] This problem has to be solved in order to provide the much-needed investments.

---

[6] *In other words, contrary to the EU, the distribution of farm sizes in the CEEC is bi-polar.*
[7] *In addition, in some CEECs, land markets are not well-developed.*
[8] *For example the Czech SGFFF has an impressive 96.5% repayment rate (in interview with SGFFF, October 2001). However, the underlying problem of farmers' high indebtedness has not been addressed (Swinnen et al; 2001).*

3.b.   Agricultural credit in East Africa

The Czech Republic might be moving away from solving the problems in agricultural credit market by treating symptoms, while ignoring the causes. However, this is only a minor problem in comparison to the situation in developing countries. As Yaron and Benjamin (1997, p. 40) document, the endemic failure of agricultural credit schemes in developing countries was partly a consequence of "biased sectoral policies, excessive government intervention, and legal and regulatory barriers".

In comparison to other African countries, East African semiformal financial markets are relatively developed. Nevertheless, the East African rural financial markets exemplify the problems typical to developing countries. Ugandan and Tanzanian financial markets are shallow, as can be seen from table 1 above, implying that the general access to credit is restricted.[9] Moreover, the limited existing credit sources are usually allocated to urban purposes, which means that the formal type of agricultural credit is virtually nonexistent for at least ¾ of the rural households.

A number of high-profile micro-finance organisations (MFOs) exist in these countries and provide both urban and rural financial services.[10] In addition two formal banks have entered the Ugandan micro-financial market. Still, there is a long way to go before east Africa can claim to have well-functioning agricultural credit markets. Findings lead to the conclusion that even micro-finance schemes discriminate against farmers. A rational explanation is that transaction costs in reaching farmers are higher, in comparison with clients in densely populated urban areas.[11] For example, only one semiformal organisation in Uganda, FOCCAS, focuses entirely on agricultural credit. In addition, the Centenary Rural Development Bank serves the non-poor rural population, thus excluding most farmers.[12] Moreover, nationwide, there is less than one bank branch per 120 000 of inhabitants, implying that less than 20 %

---

[9] *Tanzania and Uganda are currently classified as least developed countries (LDC) by the United Nations Development Programme (UNDP). As Table 1 illustrates Kenya is somewhat more developed, all three countries are members of the African, Caribbean and Pacific Group of States.*
[10] *The concept of Micro-finance covers a range of institutional set-ups, providing financial services to small scale low-income enterprises, often through group-based joint liability schemes.*
[11] *This is based on the fact that 82% of the Ugandan population works in agriculture, while only 46% of the micro-finance clients are farm based, implying that even these subsidised, high profile MFOs discriminate against agriculture.*
[12] *The average loan size at the CRDB is 877 US$ - about 80 % of yearly GDP per capita, indicating that the poor segment of the population including most farmers, is not served by the bank.*

of micro-entrepreneurs, including the vast majority of farmers, have access to credit (Jacobson, 1999, p. 15). This described lack of agricultural credit thus pertains to the supply side, and is typical of developing countries in East Africa.

In the other East African countries, agricultural credit markets are very thin. From of a potential of 4 million informal Tanzanian enterprises, of which a substantial part without doubt are based in agriculture, semiformal credit institutions currently cover only about 40,000, or 1 % of the prospective market (Hulme, 1999). The coverage in Kenya is higher, but unsatisfactory in relation to the total demand, pointing to a large agricultural population without sufficient access to credit. This population is therefore excluded from any beneficial effects from investing in farm production.

Generally speaking, as the worldwide inventory by Paxton (1999) suggests, developing countries have significant demands to be met. Currently, the effect of micro-finance in Africa is limited, but the experiences from South East Asia demonstrate its potential.[13]

4.   The effects of EU trade agreements on agriculture

Assuming that the agricultural sectors receive a positive exogenous demand shock, for example through an increased market access provided for by various trade liberalising agreements, the sectors will be able to react optimally, and thus benefit from the increased export opportunities, provided that efficient agricultural credit markets are in place. The EU enlargement and the Cotonou Agreement are examples of such potentially beneficial demand shocks.

However the good will of the European Union's trade agreements might not be exploited optimally, due to ill-functioning credit markets in for example Central Europe and East Africa. The next subsections will describe the potential of the given EU trade agreements for agricultural sectors.

4.a.   EU enlargement and the Association Agreements

---

[13] *The common examples of the success of micro-finance are the Grameen Bank in Bangladesh that currently serves more than 2 millions women; Bank Rakyat in Indonesia that serves 16.2 million clients; and Bolivian micro-finance, consisting of a number of schemes, which currently serve more than 100,000 clients (Bjørnskov, 2000).*

The association agreements between Central Europe and the EU serve as a mechanism for gradually opening domestic markets to sensitive products, including agricultural and food products through the introduction of tariff rate quotas (OECD, 1995).[14] This liberalisation serves as one of the instruments in the process of EU enlargement.

The EU accession will allow Central Europe, as well as the EU countries, to trade freely, thus enabling all the partners to benefit from their comparative advantages. For example, in Czech agriculture these advantages include barley, malt and hops (OECD, 1995, p. 170). Accession should improve the agricultural trade balance for the Czech Republic, which has been and still is negative, figure for 1999 is – 472 millions US$ (for some illustrative examples, see table 1. in the appendix).

Nevertheless, the EU accession entails an increased agricultural export potential for Central Europe as well as for other CEEC.[15] There are numerous examples of new export opportunities related to the increases in producer prices. OECD (1995) identifies the production of beef and pork as important Czech and Polish exports under the EU association agreements. For example, Mahé (1996) suggests that the price of bovine meat in the Czech Republic will increase by the year 2002 by 16-76%. Since the EU market price for bovine meat is high (relative to world market prices), and it is an important export commodity for the Czech Republic (OECD, 1995), this will create increased export opportunities for Czech beef producers due to a 54% increase in real export prices.[16] The European Commission (1998) estimates that there will be a slight export potential in the year 2003, i.e. before the EU accession.[17] It is important to note that there is a direct link between the production of beef and milk (European Commission, 2001).

Nevertheless the estimates of future prices imply that there will also be real export price decreases, for example a 25% decrease of real export price of pork (calculation based on Mahé, 1996). Such percentage changes correspond to δp

---

[14] *The main characteristic of trade under the planned economies 1949-91 was the existence, as in other former CMEA countries, of two foreign trade areas, the 'rouble zone', and the 'dollar zone', which severely limited trade with Western Europe (OECD, 1995).*

[15] *Some researchers have argued that the liberalisation efforts contained in the Association Agreements are biased against products in which the CEEC have comparative advantages.*

[16] *Based on calculations using data from UNCTAD (2001) the potential price increase is 32%, implying an approximate gain of 600 000 US$.*

[17] *The export surplus projection of the European Commission (1998, p. 49) is 12 000 tonnes in the year 2003.*

in the model in section 2. Based on available data imputed into the simplified model in section 2, a guesstimate of the potential gains in the beef sector represented by ΔA in the model is in the vicinity of 1.2 million US$ for the Czech Republic. The potential loss due the lowered prices on pork could be more than 240 000 US$. These numbers only serve to demonstrate the potentials of trade liberalisation. In general, new trading opportunities in the accession countries could potentially bring in total annual gains of 1-3% of GDP (Frandsen and Jensen, 2000). Nevertheless due to the relative unimportance of the Czech agricultural sector, these gains will probably be significantly smaller for the Czech Republic than for Hungary and Poland.

4.b. EBA, Cotonou and regional agreements

During the last two years, the EU has launched two new development and trading initiatives.

One is the Cotonou agreement with the ACP group, which replaces the former Lomé conventions.[18] The Cotonou agreement is built on three pillars: political cooperation, development aid and trade.[19] The intentions of the trade pillar are to reduce tariff barriers under the aegis of regional agreements. One of the candidates for forming Regional Economic Partnership Agreement with the EU is East African Cooperation (EAC). The agreement with EAC, a formal regional association comprised of Kenya, Tanzania and Uganda, is expected to reduce tariff rates on a number of agricultural EU imports that are important to East Africa, thereby increasing the access to EU markets.

The second is the unilateral EBA initiative, which removes tariffs on all non-weapon commodities exported to the EU by LDC.[20] Apart from the potential offered by the Cotonou agreement, the EBA dramatically increases the LDC access to EU markets, thereby increasing the export potentials of Uganda and Tanzania. For example, the ΔA gains for the Ugandan beef production are in the vicinity of 100 000 US$

---

[18] *ACP is an abbreviation of the African, Caribbean and Pacific Group of States, which in 1975 formed an official association with the purpose of gaining bargaining strength in various international negotiations.*
[19] *The Cotonou agreement is evaluated in more detail by Bjørnskov and Krivonos (2001).*
[20] *The EBA provides for a transition period in the case of sugar, bananas and rice.*

As is the case in the CEEC, extracting the full potential of Cotonou and the EBA requires investments, which will be the content of the following section.

5. Avoiding constraints and benefiting from given trade agreements

The model showed how the effects leading to producer gains could be divided into three components. Guesses on the magnitude of ΔA were provided above; the next section documents the gains from ΔB and ΔC.

5.a. Investment effects

Stevens and Kennan (2001), examining the future impacts accruable to the EBA initiative, stress that supply capacity in particular is a constraint to extracting the full potential of trade opportunities. The benefits of investing in supply capacity correspond to the gains denoted as ?B in the model[21].

As shown in figure 3 in section 2, the potential supply effect depicted by area B can only be captured by investing in production capacity or employing any excess capacity that farmers might posses at present. Khandker and Faruqee (2001) provide a striking example of Pakistani agricultural credit markets. The study documents the very severe constraints in the Pakistani agricultural credit market. In 1985, only 10 % of rural households borrowed from formal institutions, and a negligible share of the households borrowed from semiformal institutions. By 1995, these percentages had decreased even more (op.cit., p.5).

There is no reason to believe that Pakistani credit markets are functioning worse than agricultural credit markets in East Africa. On the contrary, South Asian credit markets are often found to be better functioning than their African counterparts.

The study by Khandker and Faruqee (2001) provides an estimate of the impact on agricultural households' income from borrowing at the Agricultural Development Bank of Pakistan. Marginal returns to agricultural production were estimated at 69 %, which translates into a 6 % marginal return to credit on

---

[21] *Due to the lack of estimates on product specific supply elasticities, **DB** can not be calculated with any accuracy. However, relying on estimates of supply elasticity of total agricultural sectors, Central European supply responses, and hence **DB** gains, in general will be approximately 3-5 times larger than East African responses (in interview with Hans G. Jensen, SJFI, October 2001).*

agricultural income. Moreover, the results indicate that poor households benefit much more than richer households.

A study sponsored by USAID estimated the impact of Ugandan credit schemes. The USAID findings demonstrate, that the impact of having access to credit can be significantly positive for clients (Barnes et al., 1999).[22]

Deininger and Olinto (2000) undertook a similar quantitative study in Zambia. The conclusion of the study suggests that apart from the quite substantial effects of investing in production (livestock, fertilizer, etc.) comparable to the study from Pakistan, there is an additional benefit of having access to credit, corresponding to ΔC in the model of section 2.

## 5.b.   Externalities and institutional design

The findings of Deininger and Olinto (2000) in particular suggest that there can be significant external effects of having access to credit. All other things being equal, this additional benefit works 'magic' on total factor productivity. The effect of increased productivity is not explained by a standard economic investment framework, and could perhaps be attributed to various psychological and social effects. This "supervision" effect mentioned by Deininger and Olinto (2000) could for example be attained through an increased responsibility level and by signalling a level of trustworthiness. This signal and the knowledge of increased responsibility will be spread in the community, i.e. the farmers' social network, through a shared 'social language'. In other words, the external effect might work through increasing social capital, at the individual as well as the community level.

Figure 4 shows the potential gains (positive external spill-over) depicted by ΔC in the model. The magnitude of these potential gains, and whether they will take place or not, depends on the design of credit institutions. In an entirely informal institutional framework - the act of borrowing from friends and family - credit depends on farmers' social capital, to the extent that lenders must trust borrowers. Thus, the social capital relied upon consists of *bonding social capital*, i.e. trust in the network nucleus formed by families and friends (Woolcock, 1999).

---

[22] *The study is, however, methodologically flawed, not correcting for self-selection and a range of other client characteristics, as pointed out by Bjørnskov (2000). Results should therefore be interpreted with some caution.*

At the other end of the formality scale, formal banks also seem to rely on and create social capital (Deininger and Olinto, 2000). However, this social capital is of a more institutional character, being regulated more by rules than norms. As this capital is partially separated from clients' networks, it should perhaps be denoted as institutional capital.

Figure 4. **Externalities**
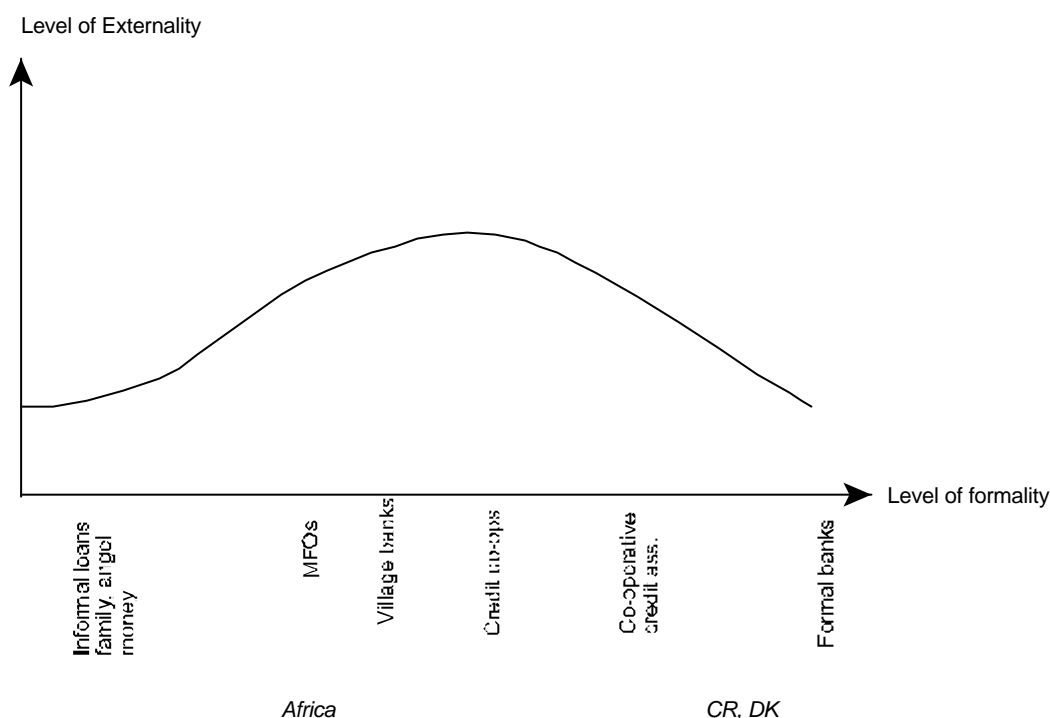
Source: Based on suggestions in Bjørnskov (2000).

The largest externalities probably arise in connection with borrowing at semiformal institutions. These institutions, depicted in the middle of the formality scale, usually rely on forming groups with joint liability and responsibilities, instead of relying on formal rules. These groups receive access to credit at the semiformal organisation. The credit is thereafter disbursed among group members. Repayment thus depends on trust and norms within the group, i.e. the social capital of the group.

In general, MFO and village banks rely relatively more on social norms, whereas cooperative structures rely more on formal rules. Both institutional

structures rely on and create *bridging social capital*, i.e. trust and networks of more distant friends and acquaintances. The externalities arising from semiformal institutions are larger than in either formal or informal institutions, because they create relatively more social capital by expanding clients' networks (Larance, 1998).

The total magnitude of these externalities associated with having social capital might be greater than the simple sum of its various subcomponents (cf. figure 3). This is due to potential cross-effects between single components creating a synergy effect. Mathematically speaking, the effects of social capital can be perceived as: $c = c_1 + c_2 + c_3 + f(c_1, c_2, c_3)$. These effects lead to the additional producer gain depicted by area C.

The beneficial effect of social capital can for example include impacts of learning spill-overs (Kilpatrick and Falk, 1999), an increased capacity utilisation for example from sharing machinery (Weijland, 1999), and improved common pool resource management (Anderson, Locker and Nugent, 2000), in addition to the "supervision" effect documented by Deininger and Olinto (2000).[23]

In other words the external effects depend on the accumulation of social capital attributable to farmers' participation in the credit institutions, be it of formal or semiformal character. As is evident in the model, it must not be forgotten that even these positive benefits comes with some transaction costs, mainly the time spent outside productive activity. Researchers have recently criticised many micro-finance institutions for not being sufficiently aware of this problem. An awareness of the importance of minimising transaction costs is often seen as the key to the success of Latin American programmes (Bhatt and Tang, 1998). Therefore, at the end of the day it must be considered where best to invest farmers' time.

6. Suggestions

The simple model and research findings point to the imperative need for tailoring the institutional design respective to its social and economic environment. In many countries, agricultural profitability is lowered due to constraints in the agricultural credit market. These constraints call for

---

[23] *Note that Lopez (1998) documents the importance of common pool resource management in developing agriculture.*

improving the agricultural credit institutions. By providing farmers with sufficient credit, efficient investment decisions can be taken, thus improving agricultural profitability. If farmers gain sufficient access to credit, there will be no use for state interventions, and in particular not for distortionary interest rate subsidies that work only as a 'pain killer'.[24] Nevertheless, the use of collateral subsidies may be necessary in a transition period, as they function as a 'bandage on a wound' while the proper institutions are being set up.

For solving the credit issue in developing countries, e.g. East Africa, the authors suggest that the formation and use of micro-finance institutions should be encouraged, providing access to both savings and credit facilities. The institutions do not need to be semiformal, but can be a part of an already existing formal bank structure; a top-down approach. However, the success of the Kenyan Rural Enterprise Programme has shown that MFOs can also evolve into formal bank structures, which illustrates the feasibility of bottom-up development in the financial sectors (Charitoneko et al, 1998).

As Bjørnskov (2000) points out, governments and/or international development institutions should probably subsidise the education and training components of these institutions, but must avoid directly subsidising the actual financial component of the institutions. The financial component should focus on achieving financial sustainability in the medium to long term, while minimising transaction costs for both borrowers and lenders. Research findings suggest that social capital can be accumulated from participation in both components, leading to a virtuous circle of benefiting economically and thus gaining further access to credit (Grootaert, 2001). There are however additional benefits to social capital, which governments should take into account when setting up the institutions.

Apart from improving the access to credit, the institutional design in developing countries should focus relatively more on the external social capital effects, in comparison to Central European countries, where other institutional means for education and the distribution of learning are in place.

---

[24] *For example, the Malawi Mudzi Fund had a sufficient loan recovery for some year, but due to one instant of failed harvest, repayment rates dropped dramatically. They did not recover the following years, and the Fund therefore collapsed, demonstrating that simply subsidising ordinary credit disbursement can be harmful (Hulme and Mosley, 1996).*

For the Central European countries, standard micro-finance solutions as known from the developing countries probably have too high opportunity costs and are not fitting the current agricultural structures. However, possible solutions building upon the insights gained from MFOs could be utilised. In particular, a positive feature that can be borrowed from the MFOs is the use of the existing social structures, including the social capital of rural communities. For example, if a group of five farmers join together in order to purchase a shared investment item, and aim at obtaining credit with joint liability, their success will depend on both the self-selection of members of the group (for the members to trust each other) and having the legal provisions for joint liability lending operations.[25] Farmers joining resources for buying machinery, for example harvester, can use their social capital both for obtaining credit and sharing the harvester, as well as perhaps obtaining additional information and learning from each other.

Herewith, the authors are not advocating a complete supplement of the educational infrastructure nor the social fabric. Nevertheless, the external benefits of credit disbursement, such as learning spill-overs and the creation of horizontal social networks (e.g. trusting rural micro-communities, the initial pre-fabric of democracy) are present and should not be completely ignored. In terms of the model, the access to credit as such enables farmers to extract gains ΔB. However, an optimal institutional design will also take at least some of the ΔC, the gains from external effects, into account. The issue is relatively more important to East Africa than to Central Europe, where formal educational and institutional structures are fairly developed, but the importance of accounting for such effects is a lesson to be learned from MFOs in both regions.

7. Conclusions

Agricultural sectors have to be able to invest in necessary changes of production structures and capacity, in order to reap the gains from increased international market access. For these investment purposes, farmers need to have access to credit. Nevertheless, the access to credit is a real bottleneck in both Central European and East African, as well as a whole range of other countries. Formal banks in these countries are usually reluctant to lend to

---

[25] *This underlying idea of cooperation is known in many CEEC from the past, however, not always with a positive connotation. Under the communist regime, there was so-called 'cooperation' in collective farms, and 'machinery circles' in the case of Poland. Nevertheless this was not true cooperation, since the farmers did not self-select, and were forced into the cooperation.*

farmers, often due to the fact that farmers' assets are not accepted as sufficient collateral, because markets for such assets are thin. In addition, enforcing collateral rights in developing countries is often impossible.

In Central Europe, various state programmes are addressing the symptoms by subsidising interest rates and providing collateral guarantees, rather than addressing the causes. Although successful, this approach only postpones a real solution of the collateral issue. In addition, the experiences of several developing countries show that 'just' subsidising interest rates for agricultural credit can be both expensive and socially distorting.

Based on the presented model and empirical findings, this paper argues that the cause of the problem can be alleviated by tapping into existing social structures, as for example by relying on joint liability to supplement the traditional collateral. In an East African context, this can be achieved by encouraging the provision of traditional micro-finance. Some of the lessons learned from MFOs, such as farmers' ability to share collateral and responsibility, can be applied in Central Europe. Moreover, employing this social capital often creates additional social and economic benefits external to the original investment decisions.

The increased efficiency and profitability in the agricultural sector derived from improved financial institutions can have direct benefits on the social structure of rural areas. These benefits may imply that farmers and farm workers do not leave rural and marginal areas to seek alternative employment opportunities in overcrowded urban areas, thereby supporting a sustainable rural and social development.

Literature:

Anderson, C. Leigh, Laura Locker, Rachel Nugent, (2000), Microcredit, Social Capital, and Common Pool Resources, Presented at "Constituting the Commons", the eighth annual conference of the International Association for the Study of Common Property, Bloomington, Indiana, USA, May 31-June 4.

Barnes, Carolyn, Gayle Morris, Gary Gaile, (1999), An assessment of clients of microfinance programs in Uganda, *International Journal of Economic Development*, vol.1, no. 1.

Bhatt, Nitin, Shui-Yan Tang, (1998), The Problem of Transaction Costs in Group-Based Microlending: An Institutional Perspective, *World Development*, vol. 26, no. 4, pp. 623-637.

Bjørnskov, Christian, (2000), Aspects of Microcredit, Master's Thesis, Department of Economics, University of Aarhus.

Bjørnskov, Christian, Ekaterina Krivonos, (2001), From Lomé to Cotonou. The New EU-ACP Agreement, SJFI Working Paper no. 14, Danish Institute of Agricultural and Fisheries Economics.

Charitoneko, Stephanie, Cecile Fruman, Glen Pederson, (1998), Kenya Rural Enterprise Programme, Case studies in microfinance, The World Bank, Washington, DC.

Chloupkova, Jarka, (1996), The Effectiveness of the Agricultural Credit Market in the Czech Republic, MSc. in Agricultural Economics Report, Wye College, University of London.

CIA, (2001), The CIA World Factbook, Central Intelligence Agency.

CIVITAS, (2001), The Hungarian Accession: Agricultural Aspect, CIVITAS, European Politics, accessed on October 8th, 2001 at http://www.proeuropa.gr/civitas/agriculture.html.

Coleman, James, (1998), Social capital in the creation of human capital, *American Journal of Sociology*, Vol. 94, p. S. 95-120.

Deininger, Klaus, Pedro Olinto, (2000), Why Liberalization has not Improved Agricultural Productivity in Zambia, Working Paper no. 2302, The World Bank, Washington, DC.

European Commission, (1998), Agricultural Situation and Prospects in the Central and Eastern European Countries: Czech Republic, Working Document, Directorate General for Agriculture.

European Commission, (2001), Prospects for Agricultural Markets in the Candidate Countries from Central and Eastern Europe, Directorate General for Agriculture.

Frandsen, Søren E., Hans G. Jensen, (2000), Economic Impacts of the Enlargement of the European Union. Analysing the importance of direct payments, SJFI Working Paper no. 15, Danish Institute of Agricultural and Fisheries Economics.

Grootaert, Christiaan, (2001), Does Social Capital Help the Poor? A synthesis of findings from the local level institutions studies in Bolivia, Burkina Faso and Indonesia, Local Level Institutions Working Paper no. 10, The World Bank, Washington, DC.

Hulme, David, Paul Mosley, (1996), Finance against poverty. Volume II, Routledge, London.

Hulme, David, (1999), Client Exits (Dropouts) from East African Micro-Finance Institutions, Report prepared for Micro-Save Africa.

Jacobson, Jessica L., (1999), Uganda: The Provision of Microfinance in the wake of conflict, School of Advanced International Studies, Johns Hopkins University.

Khandker, Shahidur, Faruqee, Rashidur, (2001), The Impact of Farm Credit in Pakistan, Working Paper no. 2653, The World Bank, Washington, DC.

Kilpatrick, Sue, Falk, Ian, (1999), Benefits for All: How Learning for Farming can Build Social Capital in Communities, CRLRA Discussion Paper no. 6, University of Tasmania.

López, Ramon, (1998), The Tragedy of the Commons in Côte d'Ivoire Agriculture: Empirical Evidence and Implications for Evaluating Trade Policies, *World Bank Economic Review*, vol. 12, no. 1, pp. 105-131.

Lukas, Zdenek, (1999), Agriculture in Transition: Widening gap between the CEECs and Russia and Ukraine, Research Report No. 258, Vienna Institute for Comparative Economic Studies (WIIW).

Mahé, Louis P., (1996), The Compatibility of the GATT Commitments of the Czech Republic with those of the EU: Potential Accession Issues, The Policy Advisory Unit in the Czech Ministry of Agriculture, Prague.

Mathijs, Erik, Swinnen, Johan, (1999), Major features of the New Farming Structures in Central and Eastern Europe, p. 22-38, in Structural Change in the Farming Sectors in Central and Eastern Europe, Technical Paper No. 465, The World Bank, Washington D.C.

Mosley, Paul, (1999), Micro-macro linkages in financial markets, Finance and Development Research Programme, Working Paper no. 4, University of Manchester.

Larance, Lisa Young, (1998), Building Social Capital from the Center: A Village Level Investigation of Bangladesh's Grameen Bank, Grameen Trust Working Paper, Dhaka.

OECD, (1995), Review of Agricultural Policies: Czech Republic, Centre for cooperation with the economies in transition, OECD.

Paxton, Julia, (1999), A World-Wide Inventory of Micro-Finance, Case studies in microfinance, The World Bank, Washington, DC.

Putnam, Robert, (1993), Making Democracy Work: Civic Traditions in Modern Italy, Princeton University Press.

Stevens, Christopher, Jane Kennan, (2001), The Impact of the EU's 'Everything but Arms' Proposal: A Report to Oxfam, Institute of Development Studies, University of Sussex.

Swinnen, Johan F.M., Dries, Liesbeth, Mathijs, Erik, (2001), Constraints on Employment Growth and Development in Rural Areas in Transition Countries: Analysis and Policy Implications, Paper presented at the 74th EAAE Seminar, September 12-15th at Wye College, University of London, United Kingdom.

UNCTAD, (2001), TRAINS (Trade Analysis and Information Systems), CD ROM, UNCTAD, Geneva.

WDI, (2001), World Development Indicators, CD-ROM, the World Bank, Washington, DC.

Weijland, Hermine, (1999), Microenterprise Clusters in Rural Indonesia. Industrial Seedbed and Policy Target, *World Development*, vol. 27, no. 9, pp. 1515-1530.

Woolcock, Michael, (1999), Managing Risk Shocks and Opportunity in Developing Economies: The Role of Social Capital, Work in Progress, The World Bank, Washington D.C.

Yaron, Jacob, McDonald Benjamin, (1997), Developing rural financial markets, *Finance and development*, December.

Appendixes

Table A. Imports and Exports between the Czech Republic and the EU

	Exports to EU			Imports from the EU		Balance [000 US$]
Commodity	Value [000 US$]	Import share [%]	Price [US$/tonne]	Value [000 US$]	Import share [%]	
Bovine meat	2.282	0.24	3 568	2.418	65.39	- 136
Swine meat	975	0.85	2 419	15 776	95.17	- 13 357
Milk powder	15 043	14.72	1 257	526	47.43	14 517
Sugar	2 910	0.23	-	3 655	27.47	- 745
Hops	8 790	36.00	4 289	1 304	44.83	7 486
Wheat	250	0.09	-	97	1.26	153
Barley	1 760	21.82	105	0	0	1 760
Fruit	18 924	0.23	-	85 176	41.10	- 66 252
Agriculture in total	**382 769**	**0.61**	**-**	**854 420**	**48.71**	**-471 651**

Source: UNCTAD (2001).