

Counting in Social Capital When Easing Agricultural Credit Constraints

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Abstract: International trade liberalization often implies increased potentials for export production. In order to invest in increasing capacity in agriculture, farmers need to have credit access. However, farmers in Central Europe and East Africa, among other places, are credit constrained, due to collateral reasons. 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. The model and empirical findings suggest that improvements of agricultural credit can be achieved by relying on existing social structures, such as farmers' social capital. The paper concludes that such externalities need to be addressed when designing optimal agricultural credit institutions.

Introduction

Agriculture is an important issue in the upcoming World Trade Organization (WTO) round. Some of the largest economic gains arise from reducing agricultural trade barriers. To be able to extract these gains, countries will have to overcome a number of constraints, of which the WTO identifies capacity problems as the most severe (More, 2001). Inaccessibility of credit is often a particularly important constraint when enhancing or restructuring agricultural supply capacity to meet opportunities created, for example, by trade and commercialization (see, for example, Mathijs & Swinnen, 1999). In an

African context, the problem of credit is crucial. Nevertheless, as Mosley (1999) points out, distinction must be made between individual credit markets, such as urban versus agricultural credit markets, which is also the case of the Central and Eastern European countries (CEEC) (Chloupkova, 1996).

All around the world, there are numerous cases of discrimination against low-income farmers' credit, based on the lack of suitable collateral, the high transaction costs of rural lending, and the various government interventions in the market.¹ Therefore, substantial demand for agricultural credit remains unmet, particularly in the low-income segment. The objective of this paper is thus to conceptualize the importance of agricultural credit markets in seizing the full potential of increased access to international markets. A simple model illustrates the theoretical effects of credit constraints. As a consequence of the endemic lack of relevant data for econometric analysis, regional cases from Central Europe and East Africa explain and document the effects derived from the model.

The paper is structured as follows: first, a model used for analyzing the importance of credit access is presented, and agricultural credit markets in the two selected regions are described. The next section addresses the potential of trade liberalization. The section following describes the gains from trade liberalization with and without avoiding credit constraints. The last two sections suggest a design of agricultural credit institutions and offer some tentative conclusions.

The Model

In an ideal situation, farmers would respond to new market opportunities by increasing supply. Since farmers often operate at the limit of their supply capacity, they must invest in

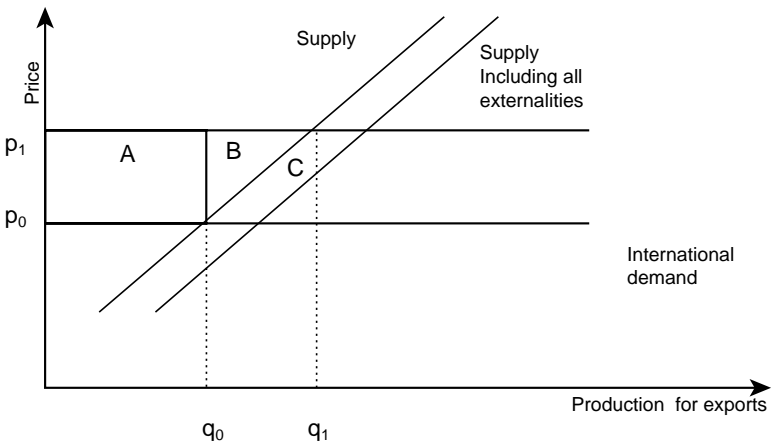
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order to seize these opportunities. The prerequisite for such investments is the availability of financial capital from retained farm-earnings or from having access to various sources of credit. Yet low-income farmers are often unable to retain earnings, either because there are no saving facilities or because earnings are not sufficiently high; thus they have to rely on obtaining credit. However, farmers all over the world often face credit constraints and are therefore unable to seize new opportunities, and may even struggle to maintain the current level of supply. In other words, having access to agricultural credit is crucial in order to seize opportunities arising from trade liberalization.

In the following illustrative analysis, the agricultural sector faces a beneficial exogenous-demand shock in the form of new market opportunities. This shock is indirectly depicted in Figure 1 as the derived producer-price increase. For reasons of simplicity, the analysis ignores any effects of the domestic

Figure 1: Producer gains from trade liberalization and access to credit



market; thus the analysis assumes that production for foreign and domestic markets respectively are completely separated.

Figure 1 depicts a situation in which the agricultural sector initially produces the quantity q_0 and producers receive the price $p_0 = p_f / (1+t)$, where p_f is the price in the foreign market, t is the applied tariff level, and p_0 is the price received on exports to the foreign market. Following a trade liberalization, such as a removal (or reduction) of tariffs, the producer price on internationally traded agricultural commodities increases to $p_1 = p_f$. In other words, farmers in general receive higher export prices following trade liberalization.

Area A in Figure 1 represents direct producer gains from trade liberalization as a consequence of the higher prices received on exports. The trade liberalization enables an export expansion, which in turn allows the production to increase. Note that the analysis implicitly assumes that the exporting country is small, because the demand curve is flat. Area B represents the indirect gains from a production expansion leading to a trade expansion. This can be achieved only by investing in production capacity when farmers are operating at or near the capacity limit, which is assumed in the following. These potential gains from investment thereby imply an increased demand for credit.² Area C represents additional potential externalities, e.g., positive spill-overs that can be achieved by certain institutional setups, discussed later in more detail. The total gain ($A + B + C$) is divided among producers, consumers and trade agents.³ Only the gains of producers are considered in the following.

Area A represents the gains from receiving higher producer prices on exports to the foreign market. With access to credit, the farmer is able to invest in increased capacity and thus extract the full immediate gain of liberalization, ΔA and ΔB . These gains are unambiguously positive.

The benefits arising from externalities, which are depicted as a shift of the supply curve in Figure 1 generating area C, are specifically connected to social capital. Social capital can be

defined in a multitude of ways, the most popular of which refers to "features of social organizations, such as trust, norms and networks, that can improve the efficiency of society by facilitating co-ordinated actions" (Putnam, 1993, p. 167). In the present context, the most prominent feature is social networks that enable efficiency gains through resource-sharing.

These externalities may derive from learning spill-overs associated with the credit-disbursement process, such as social capital augmenting human capital. Such learning spill-overs can arise when clients attend meetings at the credit institution and interact while waiting, thereby improving their networks; for example, learning spill-overs contribute to the social capital of farmers by enabling them to draw upon the human capital of one another. Enhanced social capital might lead to improved knowledge or adoption of new methods creating a productivity externality, which produces positive gains if and only if the transaction costs are relatively small in comparison to the productivity gains. Drawing on other forms of capital through such social networks may create even more social capital and thus other positive externalities.

In summary, this model illustrates three effects—both direct and indirect—of increased market access depicted in Figure 1: ΔA , the immediate gain from producers receiving higher prices on their exports; ΔB , the additional indirect gain to be captured when farmers invest in an increased supply capacity; and ΔC , a potential social-capital effect external to the investment decision. These effects are discussed in the next section.

Agricultural Credit in Central Europe and Eastern Africa

The model described above illustrates the importance of well-functioning agricultural credit markets, but in transition countries, credit markets do not function well, and in some developing countries, formal agricultural credit markets are entirely missing.

Agricultural Credit in Central Europe

Central Europe represents the transitional economies that are front-runners for the EU enlargement. Agriculture under the communist regimes was collectivized in most Central European countries. Later, in the process of transition, most collectivized farmland was restituted, although a substantial part of this farmland has been leased back to the transformed cooperative farms. Poland was an exception; it maintained private ownership of eighty percent of the land and farm assets, thereby maintaining small and inefficient farms throughout the communist period (European Commission, 1998). This coexistence of relatively small private farms and large-scale cooperative and state farms is typical of the dualistic character of agriculture in all Central and Eastern European Countries (CEEC).

The process of transition from centrally planned to market economies, complemented by the removal of state subsidies, led 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 are often reluctant to finance agricultural investments. This lack of investments further lowers profitability thereby putting a "brake" on additional investments.

The lack of investment in agriculture is closely related to the land market, which is not functioning well in the CEEC (Swinnen et al., 2001). 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 that distort land markets. For example, Hungary, like Russia, linked agricultural land purchase with the requirement of professional qualification and obligation of cultivation (CIVITAS, 2001).

As a response to these problems, Central European countries have launched various measures to tackle the 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 lesnický fond)—to provide collateral guarantees and interest-rate subsidies through various programs. Other CEECs have applied similar measures. These programs have successfully treated symptoms, but neglected the main source of the problem: land cannot be used as collateral, and as demonstrated by Stiglitz and Weiss (1981), subsidies lead to credit-rationing problems.⁴ These problems must be solved in order to enable the much-needed investments.

Agricultural credit in East Africa

The CEECs have relatively minor credit problems in comparison to the situation in developing countries. As Yaron & Benjamin (1997, p. 40) document, the endemic failure of previous 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 a number of other African countries, East African semiformal rural financial markets are relatively developed, although they exemplify the problems typical of developing countries. East African financial markets are shallow, as indicated by broad money (M2) being only twenty-five of GDP—about half of the average for Central Europe—implying that the general access to credit is restricted.⁵ In addition, limited existing credit sources are usually allocated to urban purposes, which means that formal types of agricultural credit are virtually nonexistent for at least three-fourths of the population.

A number of high-profile microfinance organizations in these countries provide both urban and rural financial services. In addition, a few formal banks have entered the microfinancial markets, but East Africa is still far from having well-functioning agricultural credit markets. For example, only one

semiformal organization in Uganda, FOCCAS, focuses entirely on agricultural credit. In addition, the Centenary Rural Development Bank (CRDB) serves the non-poor rural population. Findings show that even microfinance schemes discriminate against farmers; for example 82 percent of the Ugandan population works in agriculture, while only 46 of the microfinance clients are farm-based, implying that even these subsidized, high-profile microfinance schemes discriminate against agriculture (Barnes et al., 1999). The average loan size at the CRDB is 877 US\$—about 80 percent of yearly GDP per capita, indicating that the poor segment of the population, which includes most farmers, is not served by the bank. Moreover, nationwide, there is less than one bank branch per 120,000 inhabitants, implying that less than 20 percent of microentrepreneurs, including the vast majority of farmers, have access to credit (Jacobson, 1999).

In other East African countries, agricultural credit markets are also thin. From a potential of 4 million Tanzanian informal enterprises, of which a substantial part 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 low-income agricultural population without sufficient access to credit. This population is excluded from the benefits of investing in farm production, and, as the worldwide inventory by Paxton (1999) suggests, low-income farmers in developing countries in general have significant demands to be met. Currently, the effect of microfinance in Africa is limited, but the experiences from Southeast Asia demonstrate its potential.

The Importance of Credit Markets

As the model illustrates, an agricultural sector receiving a positive exogenous demand shock, for example through an increased market access provided for by various trade liberalizing agreements, will be able to react optimally, and thus benefit

from the increased export opportunities, if efficient agricultural credit markets are in place. The model shows how the effects leading to producer gains can be split into three components, which are treated separately below. Because the EU market is important for both regions, it serves as an example of the foreign market in the model (Ministry of Agriculture of the Czech Republic, 2001).

Immediate Gains from Trade Liberalization

The EU enlargement and the Cotonou Agreement are examples of such potentially beneficial demand shocks. In the presence of ill-functioning credit markets, the good will of the European Union's trade agreements might not be exploited optimally. The EU accession will allow Central Europe, as well as the EU countries, to trade freely and thus benefit from their comparative advantages, entailing an increased agricultural-export potential related to increases in producer prices. For example, producer prices on Czech and Hungarian beef exports, identified as important by O.E.C.D. (1995), will increase by 20 to 25 percent.⁶ Based on available data, a guesstimate of the ΔA gains (see Figure 1) in the beef sector are in the vicinity of 600,000 US\$ for the Czech Republic, and 4 to 5 million US\$ for Hungary.

In the East African context, the "Everything but Arms" initiative dramatically increases the access of Least Developed Countries (LDC) to EU markets, thereby increasing the export potentials of Uganda and Tanzania. The ΔA gains for the Ugandan beef-production are in the vicinity of 100 000 US\$, following a fifty percent increase in producer prices. Similar to the C.E.E.C. accession to the EU, extracting the full potential of the E.B.A. initiative requires investments.

Gains from Investments

As shown in Figure 1, the potential investment effects, ΔB , can only be captured by investing in production capacity or by employing any excess capacity that farmers might possess at present.⁷ Khandker & Faruquee (2001) provide a striking example

of Pakistani agricultural credit markets. The study documents the severe constraints in the Pakistani agricultural credit market. In 1985, only ten percent of rural households borrowed from formal institutions, and a negligible share of the households borrowed from semiformal institutions. Nevertheless, the study estimates that marginal returns to agricultural production are 69 percent. Borrowing from the Agricultural Development Bank of Pakistan hence translates into a six percent average marginal return to credit on agricultural income. The results indicate that poor households benefit much more than richer households.

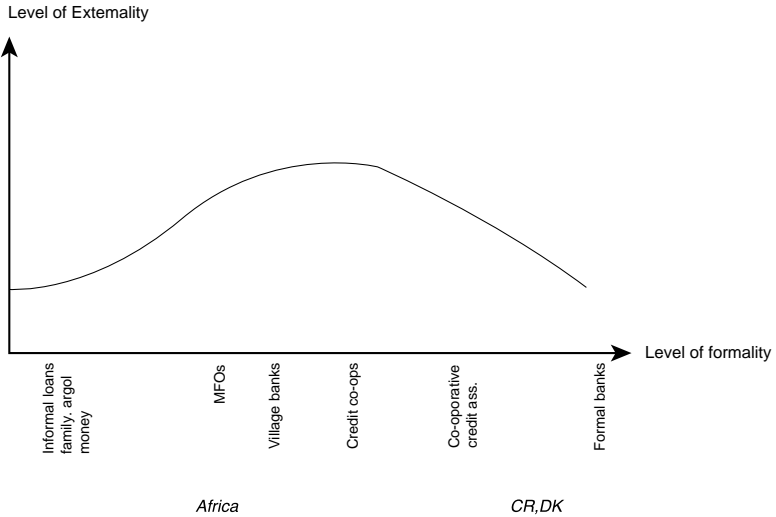
A study sponsored by USAID estimates the impact of Ugandan credit schemes, which demonstrate that the impact of having access to credit can be significantly positive for low-income clients, raising their income by as much as 50 percent (Barnes et al., 1999).⁸ Deininger & Olinto (2000) undertook a similar 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.

Gains from externalities

The findings of Deininger & Olinto (2000) suggest that there are significant externalities connected to credit access. All other things being equal, these additional benefits work "magic" on total factor productivity. The increased productivity is not explained by a standard economic investment framework and could perhaps be attributed to various psychological and social effects. The "supervision" externality mentioned by Deininger & Olinto (2000) can for example be attained through an increased responsibility level and by signaling a higher level of trustworthiness. Such signals and the knowledge of increased responsibility will be spread in communities (the farmers' social network) through a shared "social language."

In other words, the externality probably works through increasing social capital at the individual and the community level, which is complementary to other forms of capital.

Figure 2. Externalities



The beneficial effects of social capital can, for example, include impacts of learning spill-overs (Kilpatrick & Falk, 1999), increased capacity utilization—for example, from sharing machinery—(Weijland, 1999), and improved common pool resource management (Anderson et al., 2000).

Figure 2 shows these potential gains from social-capital externalities, ΔC . The magnitude of these gains 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; in other words the social capital relied upon consists of bonding social capital—trust in the network nucleus formed by families and close friends (Woolcock, 1999). Similarly, formal banks also seem to rely on and create some social capital (Deininger & Olinto, 2000). However, this

social capital is of a more institutional character, comprised more of rules than norms. Because this capital is partially separated from clients' networks, it should perhaps be denoted as institutional capital.

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 organization, which is thereafter disbursed among group members. Repayment thus depends on trust and norms within the group, or in other words, the social capital of the group (Bjørnskov, 2000).

In general, Grameen replications 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, or trust and networks of more distant friends and acquaintances. The externalities arising from semiformal institutions are therefore larger than in either formal or informal institutions because they create relatively more social capital by expanding clients' networks (Iarance, 1998).

The total magnitude of these externalities associated with having social capital might be greater than the simple sum of its various subcomponents, due to potential cross-effects between single components that create a synergistic effect. These effects lead to the additional producer gain depicted in Figure 1 by area C. In other words the magnitude of these externalities depends on the accumulation of social capital attributable to farmers' participation in the credit institutions. As is evident in the mathematics of the model, it must not be forgotten that even these positive benefits come with some transaction costs, mainly the time spent outside productive activity. Researchers have recently criticized many microfinance institutions for not being sufficiently aware of this problem. An awareness of the importance of minimizing

transaction costs is often seen as the key to the success of Latin American programs (Bhatt & Tang, 1998). Therefore, at the end of the day it must be considered where best to invest farmers' time.

Suggestions for Institutional Design

The simple model and research findings point to the need for tailoring the institutional design 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 improving the agricultural credit institutions. By providing low-income farmers with sufficient credit, efficient investment decisions can be taken, thus increasing agricultural capacity and 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 "pain killers."⁹ Under the current circumstances, the use of collateral subsidies may be necessary during a transition period, because they function as a "bandage on a wound" while the proper institutions are being set up.

To solve the credit issue in developing countries like East Africa, the formation and use of microfinance 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 microfinance can also evolve into formal bank structures, illustrating the feasibility of bottom-up development in the financial sectors (Charitonko et al, 1998).

As Bjørnskov (2000) points out, governments and international development institutions should probably subsidize the education and training components of these institutions, but must avoid direct subsidy of the actual financial component of the institutions. The financial component should focus on

achieving financial sustainability in the medium to long term, while minimizing transaction costs for both borrowers and lenders in order to function without destabilizing political intervention.¹⁰ Research suggests that social capital can be accumulated from participation in both components, leading to a virtuous circle of economic benefits thereby furthering additional access to credit (Grootaert, 2001). In addition, governments should take any additional benefits to this social capital into account when supporting the institutional design.

Apart from improving the access to credit, the institutional design in developing countries should focus more on social-capital externalities than in Central European countries, where other institutional means for education and the distribution of learning are in place. For most countries in Central Europe, the transaction costs of standard microfinance solutions are probably too high, taking the current agricultural structures and history into account, but possible solutions that build on the insights gained from microfinance could be used.¹¹ In particular, a positive feature to be borrowed from microfinance 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, these lessons show that their success will depend both on the self-selection of members of the group (the members must trust each other) and the legal provisions for joint-liability lending operations. Farmers joining resources for buying machinery, for example a harvester, can use their social capital both for obtaining the needed credit and for sharing the harvester, as well as perhaps obtaining additional information and learning from each other.

Summarizing in terms of the model, the access to credit as such enables farmers to extract gains ΔB . An optimal institutional design also takes at least some of the externality gains, ΔC , 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 microfinance in both regions. Although access to credit in itself holds the promise of reducing poverty, the model and evidence suggest that the reduction efforts could be magnified by accounting for beneficial social-capital externalities.

Conclusions

Agricultural sectors must 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, access to credit is a real bottleneck in both Central Europe and East Africa, as well as in a range of other countries. Formal banks in these countries are usually reluctant to lend to low-income farmers, often because 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 programs are addressing the symptoms by subsidizing interest rates and providing collateral guarantees, rather than addressing the causes. Although at first sight successful, this approach only postpones a real solution of the collateral issue. In addition, the experiences of several developing countries show that simply subsidizing interest rates for agricultural credit can be both expensive and dangerous.

Based on a simple model and empirical findings, this paper argues that the cause of the problem can be alleviated by tapping into existing social structures, 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 microfinance. Some of the lessons learned from microfinance, such as farmers' ability to share collateral and responsibility, can be applied in Central Europe. Employing social capital often creates additional social and

economic benefits external to the original investment decisions.

The increased capacity and profitability in the agricultural sector derived from improved financial institutions can provide direct benefits to rural areas by improving low-income farmers' welfare. These benefits may imply that such low-income farmers do not leave rural areas to seek alternative employment opportunities in overcrowded urban areas, and may thereby be supporting a move towards a more sustainable rural and social development.

Notes

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1. The first wave of microfinance proved that interventions often had adverse effects (see Yaron & Benjamin, 1997). During the last decade, Russia introduced a similar approach with similar consequences (Wegren, 1998). In some CEEC, highly subsidized agricultural credit schemes have not solved the issue of access to credit either (Swinnen et al., 2001).

2. 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. This one-sector model captures only one aspect of the problem, irrespective of other influences coming from within or outside of the sector, necessitating further investments.

3. The share of the total gains accruing to the trading 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 the degree of competition.

$$\Pi = pY - rK - wL = p\theta K^\alpha L^{1-\alpha}(H\omega)^\beta - rK - wL$$

In order to make informed guesses about the size of the effects, the model can be formulated in mathematical terms. The model uses a profit function proxying because welfare consists of a production function (Cobb-Douglas for simplicity), a price and a repayment term:

$$\Delta A = \delta p \left(\frac{2+r}{1+r} \right) p_0 \vartheta K^\alpha L^{1-\alpha} H^\beta, \delta p = \frac{p_1 - p_0}{p_0}$$

$$\Delta B = p_1 \vartheta K^\alpha L^{1-\alpha} H^\beta \left(\frac{2+r}{1+r} \right) \left[\left(1 + \frac{M}{K} \right)^\alpha - 1 \right] - (1+r)M$$

$$\Delta C = p_2 \vartheta (K+M)^\alpha L^{1-\alpha} H^\beta \left[\left(1 - \frac{t}{L} \right)^{1-\alpha} \omega^\beta - 1 \right]$$

where p = producer price, ϑ = a technology coefficient, K = composite capital, L = labor, H = human capital, r = interest rate, w = wages, and ω (initially = 1) is the social capital term. To be able to capture the full gains, farmers borrow the amount M , which is repaid over two periods. This yields the effects

In the ΔC effect, social capital augments human capital, making $\omega > 1$, which tends to make the effect positive. This is countered by the negative effect of the transaction cost t associated with creating and maintaining social capital.

4. 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).

5. Averages for both regions conceal the fact that the Czech Republic and Kenya have better-developed financial markets (data based on WDI, 2001).

6. Calculations are based on data from UNCTAD (2001) and TARIQ (2001).

7. For the lack of estimates on product specific supply elasticities, ΔB cannot be calculated with any accuracy. However, relying on estimates of the supply elasticity of total agricultural sectors, Central European supply responses, and hence ΔB gains, in general will be approximately three to five times larger than East African responses (communication with Hans G. Jensen, SJFI, October 2001).

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

9. 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 subsidizing ordinary credit disbursement can be harmful (Hulme & Mosley, 1996).

10. Examples from Russia and Senegal emphasize the adverse link between party politics and decision-making in credit programs (Wegren, 1998; Warning & Sadoulet, 1998).

11. Contrary to small and medium sized enterprises, for which microfinance solutions seem to be working in Central Europe (the Funduz Mikro in Poland,

for example), relatively high transaction costs and the dismal experience of forced agricultural cooperation in the communist period in general makes standard group-loan solutions not apt in all but the poorest parts of Central and Eastern Europe.

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