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Modernising Russia's cattle and dairy sectors under WTO conditions: Insights from East Germany

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ABSTRACT

How to revitalise the cattle and dairy sectors under the WTO commitments has emerged as a major policy challenge for the Russian government. This article raises the question whether livestock recovery in East Germany does provide any insights that could be of value to current policy makers in Russia. Similar to Russia, livestock numbers plummeted in the first years after the end of central planning. Unlike in Russia, milk output per cow increased spectacularly and almost doubled in a period of 20 years. It is argued that reforms of the institutional environment of agriculture were at least as important for this outcome as the generous availability of funding. Incentives set by financial aid were sometimes unintended, inconsistent, and led to misallocations that were costly to correct later on. More recent capital subsidies were inefficient in reaching any of the manifold goals they were hoped to achieve. While the Russian government may face little difficulty in dressing up its investment subsidies to make them look like green box compatible, the structural elements of the EU's Common Agricultural Policy are regarded as a poor guide for policy reform.

JEL: P52; Q14; Q17

Keywords: Agricultural policy; investment aid; East Germany; livestock sector; WTO.

ZUSAMMENFASSUNG

DIE MODERNISIERUNG DER RUSSISCHEN RINDER- UND MILCHPRODUKTION UNTER WTO-BEDINGUNGEN: ERFAHRUNGEN AUS OSTDEUTSCHLAND

Die Wiederbelebung der Rinder- und Milchproduktion unter den Bedingungen der WTO Verpflichtungen zählt derzeit zu den wichtigen politischen Herausforderungen der russischen Regierung. Dieser Beitrag wirft die Frage auf, ob die Entwicklung der Tierbestände in Ostdeutschland Erfahrungen bereithält, die für die politischen Entscheidungsträger in Russland von Nutzen sein können. Ähnlich wie in Russland brach der Tierbestand in den ersten Jahren nach dem Ende der Planwirtschaft massiv ein. Anders als in Russland stieg die Milchleistung je Kuh binnen weniger Jahre jedoch spektakulär an und verdoppelte sich in einem Zeitraum von 20 Jahren nahezu. Der Beitrag argumentiert, dass Reformen der institutionellen Rahmenbedingungen für die Landwirtschaft mindestens ebenso verantwortlich für dieses Ergebnis waren wie die großzügige finanzielle Unterstützung durch staatliche Mittel. Die finanziellen Hilfen setzten teilweise unbeabsichtigte oder widersprüchliche Anreize, die mitunter zu nur schwer korrigierbaren Fehlallokationen führten. Die in letzter Zeit gewährten Kapitalsubventionen erreichten die vielen mit ihnen verbundenen Ziele nur sehr ineffizient. Während die russische Regierung mit vermutlich nur geringem Aufwand ihre Investitionsförderung als "Green Box"-kompatibel darstellen kann, betrachtet dieser Artikel die strukturpolitischen Maßnahmen der Gemeinsamen Agrarpolitik (GAP) als schlechtes Vorbild für politische Reformen.

JEL: P52; Q14; Q17

Schlüsselwörter: Agrarpolitik; Investitionsförderung; Ostdeutschland; Tierhaltung, WTO.

1 INTRODUCTION[1]

Against the background of worldwide food price increases, the global economic crisis and recurrent droughts in some of the main agricultural regions, food security has become a key political goal of the Russian government. Defined as a far reaching self-sufficiency in food, it was codified in the 2010 "Doctrine on Food Security" and became the major objective of the current multi-year State Programme for the Development of Agriculture until 2020. The Doctrine sets specific goals for self-sufficiency ranging from 80 % to 95 % for grains, sugar, vegetable oil, meat, dairy and fish products. Given the collapse of the domestic livestock herd in the 1990s, these goals are particularly ambitious to reach in the area of meat and dairy production. Moreover, by acceding to the World Trade Organisation (WTO) in 2012, the Russian Federation committed to liberalising its trade regime and accepted a set of ceilings to its domestic farm support. How to modernise the cattle and dairy sectors under the conditions of WTO commitments has thus emerged as a major policy challenge for the Russian government. According to the current State Programme, it is mainly to be achieved by concessional credits to the livestock sector, which was singled out as the largest recipient of interest subsidies in the 2013-2020 period (OECD, 2013).

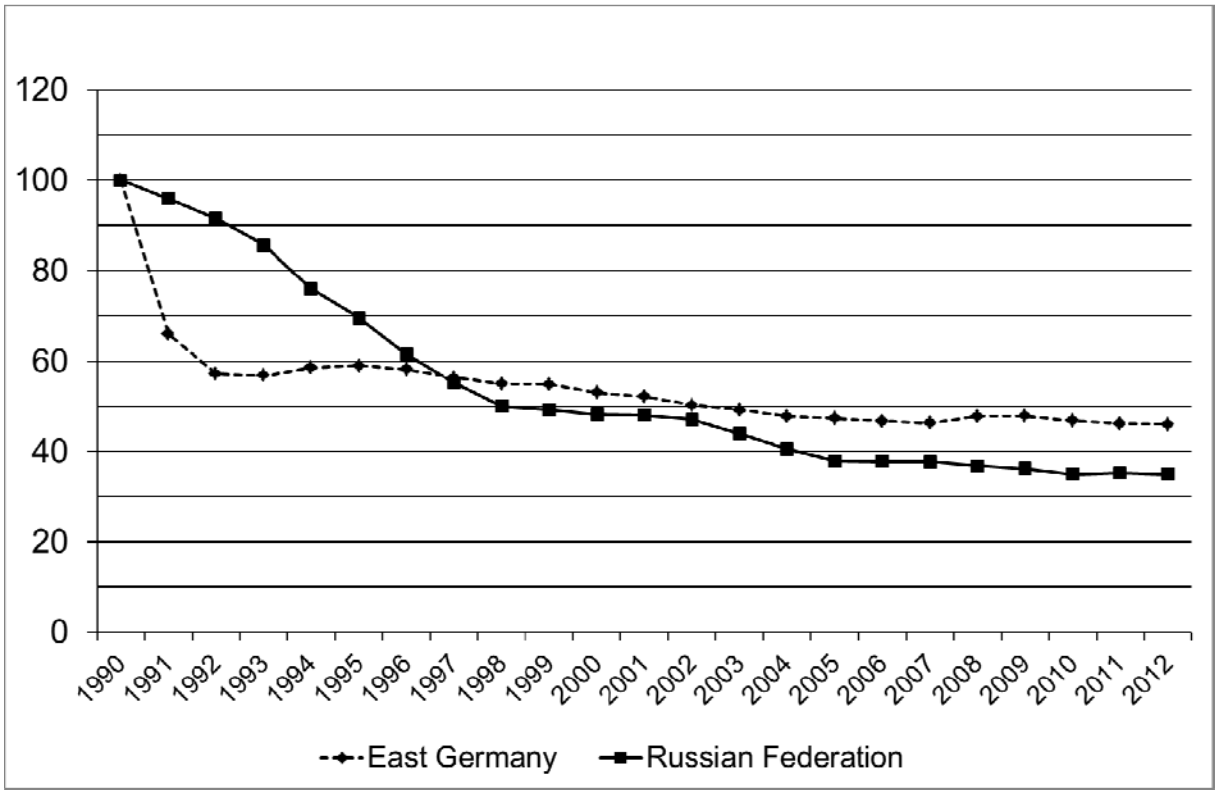
In the following, I raise the question whether livestock recovery in East Germany, i.e. the territory of the former German Democratic Republic (GDR), does provide any insights that could be of value for current policy makers in Russia. Similar to Russia, livestock numbers plummeted in the first years after the end of central planning. However, unlike in Russia, the introduction of a full-fledged market system occurred almost overnight and affected all parts of the economy. In agriculture, the Common Agricultural Policy (CAP) of the (then) European Economic Community was introduced instantaneously with German unification in 1990, and the results of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), the predecessor of the WTO, became effective in 1994. I therefore first ask whether the performance of cattle and dairy production in East Germany after 1990 displays any features that make it an attractive example for Russia. In a second step, I analyse to what extent policy action can be held accountable for these developments, and whether there are lessons to be learned for current policy making in Russia.

2 THE POST-SOCIALIST DEVELOPMENT OF CATTLE AND DAIRY PRODUCTION IN EAST GERMANY AND RUSSIA

At the end of 1990, just after the formal German unification, almost five million heads of cattle stood in what used to be 5110 socialist state farms (*Volkseigene Güter*, VEG) and agricultural collectives (*Landwirtschaftliche Produktionsgenossenschaften*, LPG). Within two years, this number collapsed to almost a half (Figure 1).

[1] Accompanied by an executive summary in Russian language, this article is forthcoming in *The Universe of Russia (Mir Rossii)* http://ecsocman.hse.ru/mags/mirros. I am grateful to Lars Brink, Martin Freier and Ulrich Koester for constructive comments on an earlier version of this article and to Andrei Dorofeev, Sergey Kiselev, Bill Liefert, Olga Melyukhina, Dmitri Rylko, David Sedik, Natalya Shagaida and participants of the Round Table Discussion "Using the WTO instruments for the benefit of national agricultural enterprises" at the Gaidar Forum 2014 in Moscow for helpful discussion and feedback. The usual disclaimer applies.

Figure 1: Cattle numbers in East Germany & Russia (1990=100)



Source: Author's calculations based on data by Eurostat and Unified Interdepartmental Statistical Information System of the Russian Government.

The reasons behind this drastic decline in the early transition years were summarised by observers as follows (FORSTNER and ISERMEYER, 2000; KOESTER and BROOKS, 1997):

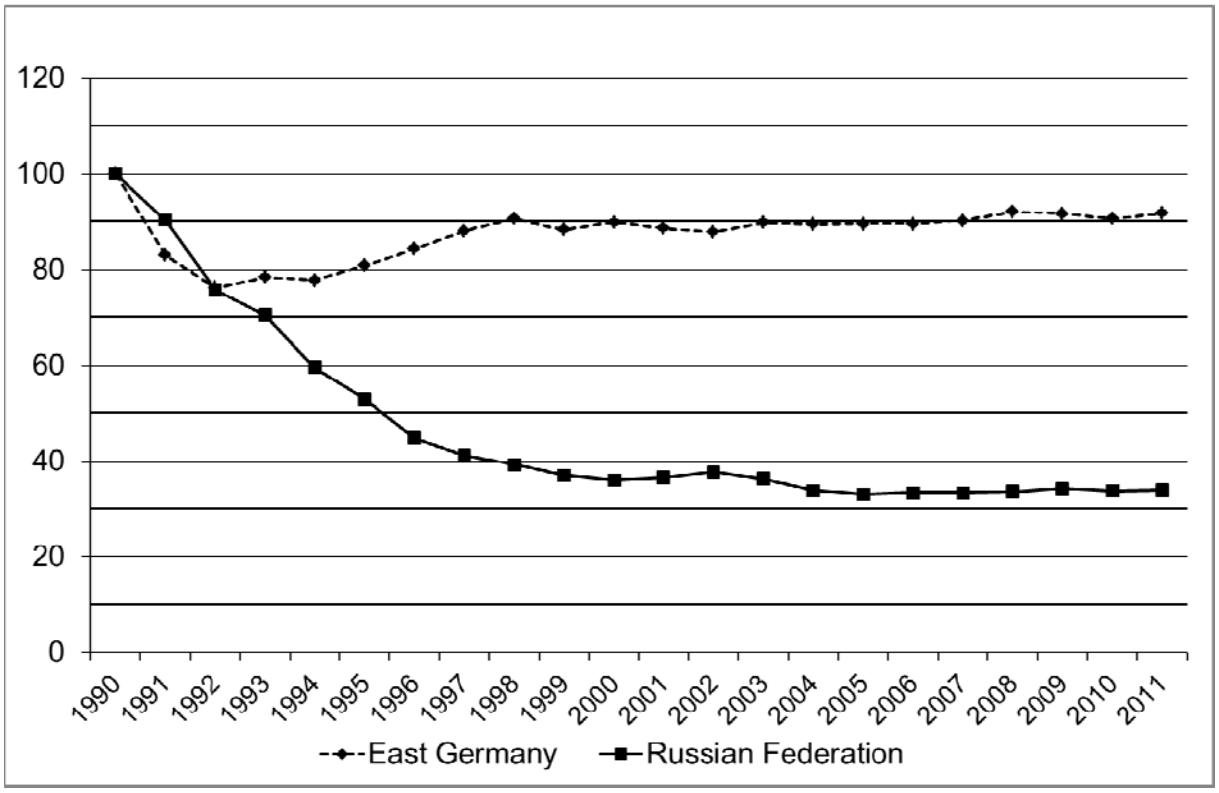
- Due to the breakdown of central planning across the region, traditional trade channels were disrupted. In particular, export markets for beef and dairy products in the member countries of the Council for Mutual Economic Assistance were suddenly lost, as the former GDR exited this organisation on the day of accession to the Federal Republic of Germany (FRG).
- Unification and access to Western consumer markets brought a sudden change in consumption patterns. East German consumers demanded products from the West. East German retail chains were taken over by investors from West Germany and willingly stocked the long-desired goods, thus driving out those of domestic origin.
- Taken together, these demand and supply factors led to a dramatic drop in agricultural producer prices, in particular for live cattle and raw milk. It took several years until price levels approached again those paid to producers in West Germany, so that the profitability of cattle and dairy production was severely depressed. The price drop was much less pronounced in crop production, which led farms to shift their production portfolio to the latter.
- Existing food processing facilities in East Germany were often in poor shape, which resulted in final products of inferior quality and little competitiveness.
- Collective farms exposed to hardening budget constraints and faltering sales channels were forced to make emergency sales of livestock, which put further pressure on cattle prices.

In relative terms, the decline in East German cattle numbers was remarkably similar to the drop in Russia (Figure 1). While cattle herds were dismantled more slowly in Russia, the relative decline was more pronounced than in Germany. In Russia, between 1990 and 2010, there was no single year with a growth in cattle numbers, so that Russia's cattle herd today has only about one third the size it had in 1990.

The mechanisms leading to the collapse of cattle herds in Russia's early transition period were similar to those in East Germany (BJORNLUND et al., 2002). Due to significant drops in real incomes, consumers turned to food staples that were cheaper than meat and dairy. Furthermore, domestic produce was replaced by poultry imports from the US and pork and beef imports from Europe (LIEFERT and LIEFERT, 2012). Worsening terms of trade for livestock producers and disrupting upstream and downstream networks in the process of farm restructuring destroyed the economic foundations of the existing production structures (SWINNEN and ROZELLE, 2006). One reason for the slower decline in total cattle numbers compared to Germany may have been that rural households served as a buffer and took over many animals released from the collective farms.

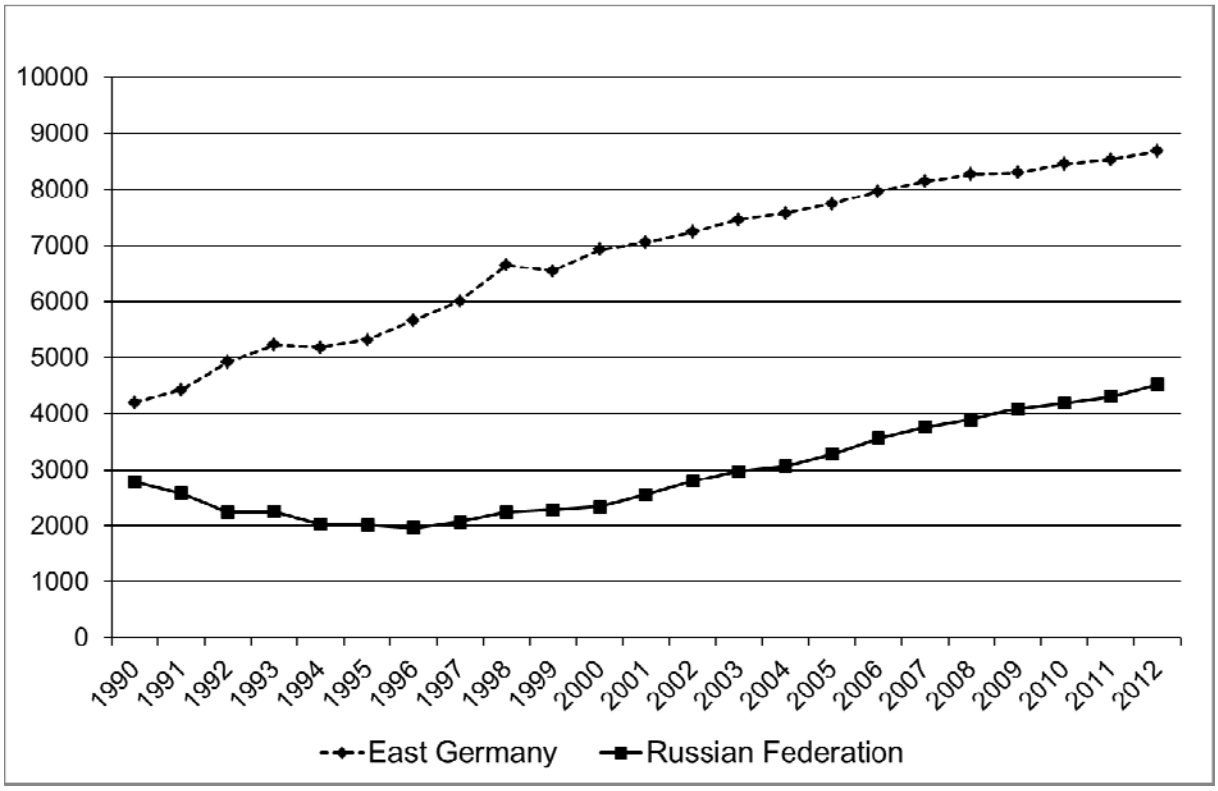
Whereas the relative drop in cattle numbers followed almost identical patterns in East Germany and Russia, productivity figures moved in very different directions. Taking total milk output as an example, Figure 2 shows that the East German line bottoms out already in 1992. Russia's watershed in milk production was 2005, and production levels have remained low since. While milk output in East Germany never reached the 1990 level again, it stabilised at some 90 % of the pre-transition value.

Figure 2: Milk production in East Germany & Russia (1990=100)



Source: Author's calculations based on data by Eurostat, Zentrale Markt- und Preisberichtstelle für Erzeugnisse der Land-, Forst- und Ernährungswirtschaft (ZMP), and Unified Interdepartmental Statistical Information System of the Russian Government.

Figure 3: Milk yields per cow in East Germany & Russia (kg/head)



Source: Author's calculations based on data by Eurostat, Zentrale Markt- und Preisberichtstelle für Erzeugnisse der Land-, Forst- und Ernährungswirtschaft (ZMP), and Unified Interdepartmental Statistical Information System of the Russian Government.

Figure 3 gives the technical reason why total milk output in Germany increased despite falling cattle numbers: from the very beginning of the transition period, milk output per cow increased outstandingly; it almost doubled in a period of 20 years. In contrast, it took Russian farmers more than ten years to reach the pre-transition level again. From the perspective of Russian dairy production, the 1991-2001 period was a lost decade.

Before we turn to the economic conditions that may explain the enormous growth in milk yields in East Germany, it is important to point out one main reason why total milk output has so far never moved beyond the level it had attained by 1998 (Figure 2). This quite visible ceiling is due to the maximum delivery quota for milk imposed upon East German producers with the accession to the CAP. It was fixed at 80 % of total milk deliveries on the territory of the GDR in 1989 (PIEHLER and STETTIN, 2004). Production supplied beyond this quota cannot be sold at cost-covering prices. From an economic point of view, given rising productivities per cow, the quota made it unattractive to increase herd size. Individual cow herds could only be stocked up if quota from retiring producers was acquired.

If the milk yield per cow is taken as a benchmark indicator for the state of livestock production in a country, Figure 3 suggests that Russia is now where East Germany was in 1991. It may thus be instructive to study some further conditions that allowed the strong rise in livestock performance observed in East Germany after 1991, with a particular eye on the policy framework.

3 POLICY ACTION RELATED TO CATTLE AND DAIRY RECOVERY IN EAST GERMANY

3.1 Establishing an institutional framework for livestock production

On October 3, 1990, the legal and institutional system of the Federal Republic of Germany (FRG) was imposed on the acceding East German *Länder*. For agriculture, this included the immediate abolishment of state orders in production, the introduction of an independent management and bankruptcy legislation in agriculture, and the adoption of the Agricultural Adjustment Law (*Landwirtschaftsanpassungsgesetz*) which governed the privatisation and restructuring of collective farms (see BECKMANN and HAGEDORN, 1997 and KLAGES, 2001 for details). Furthermore, a comparatively generous social security system according to West German standards was installed, and a full currency union with the FRG was put in place overnight.

According to restructuring legislation, the socialist collective farms (LPGs) ceased to exist as of December 31, 1991. They could be either liquidated or transformed into another legal form. In addition, a termination of membership in LPGs was made possible, as well as the re-establishment of individual farms out of the LPG resources. Finally, LPGs were forced to distribute their capital among the members according to certain statutory requirements, in order to repay the initial capital contributions and compensate for the foregone land rent of collective members (FORSTNER and ISERMEYER, 2000, p. 67). The privatisation legislation did neither endorse nor discriminate against any particular type of farm and allowed the maintenance of large-scale agricultural enterprises as successors of the former collectives. As a result, a mix of legal forms consisting of single enterprises, partnerships, co-operatives, and limited companies emerged, which kept the overall structure of agriculture quite large-scaled.

Compared to other transition economies, the decline in employment of farm workers was most dramatic in East Germany. The release of farm labour was eased by a bundle of government programmes aimed at cushioning these job losses (HAGEDORN and MEHL, 2000, pp. 137-139). This bundle included early retirement schemes as well as additional vocational training, re-training and job creation measures. Furthermore, unemployment benefits and pensions immediately after unification were about as high as wages earned prior to unification (KOESTER and BROOKS, 1997, p. 17). There was hence a strong incentive to leave the sector by applying for social security benefits. However, this was only possible due to the privileged situation of many former farm employees who benefited from the immediate introduction of the West German social safety net.

Changes in the business environment were not limited to the imposition of the West German economic and legal system. A number of specifically agriculture- and livestock-related institutions were established as well. Within a few years, a new agricultural administration was set up that could professionally handle the subsidy streams triggered by the adoption of the CAP in East Germany. New professional staff was trained and administration received significant logistical and professional support via "twinning" arrangements with West German counterparts (WOLZ, 2011). A completely new Agency for Reprivatisation of Industry in the GDR (*Treuhandanstalt*) was created, which handled the privatisation of assets, including agricultural land. The (West) German Farmers' Union (*Deutscher Bauernverband*) managed to transform itself into a union representing the different types of farming organisations existing in East and West Germany. This is a remarkable difference to lobby groups in other industrial sectors, which have typically been dominated by representatives from West Germany.

Private up- and downstream industries supportive to agriculture entered East Germany quickly after unification. These included service cooperatives and private agricultural trading companies, which supplied all kinds of agricultural inputs and marketing services. They were often established as branch operations of existing West German businesses. A diversified agricultural banking sector was set up in a similar fashion. Local savings and cooperative banks became its backbone, which were typically modelled after their West German affiliates. Banks with specialised agricultural lending operations at the state or regional level were complementing them.

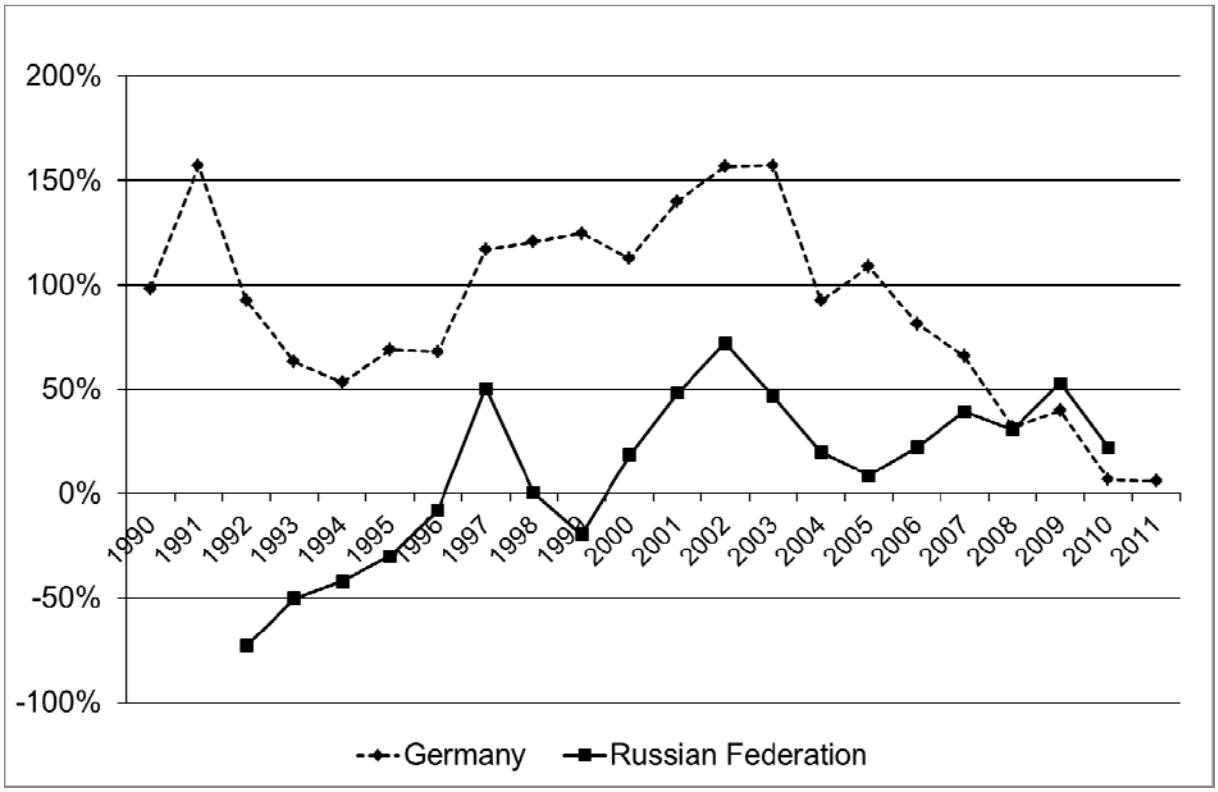
The modernisation of the regional meat and dairy processing infrastructure turned out to be a challenge. Attempts at establishing a new structure of slaughterhouses from scratch with the help of significant public support were only partially successful. Early plans had failed to take into account the unexpected drop in livestock numbers. Moreover, many state and sub-state administrations demanded slaughterhouses and dairy complexes to be established in local proximity to their constituencies. As a result, too many processing units were erected and the structures set up hastily in the early 1990s were operating much below capacity (WOLFFRAM et al., 1996). This triggered significant restructuring costs later on.

The regional dairy monitoring associations (*Landeskontrollverbände*) turned out to be of key importance for the improvement of milk yield. These associations date back to the early 20th century, but they were in need of restructuring and reconstitution after German unification. Their primary task is to monitor the milk performance of individual cows, by taking and analysing milk probes on a regular (typically monthly) basis. Moreover, the associations are engaged in animal registration and fodder probing. Their data serves as a basis for quality control at the dairy processing level as well as for breeding decisions, and it thus provides essential management information for the farmer. Again by taking the West German structures as a model, a network of regional dairy monitoring associations was established on the East German territory until the end of 1991 (PIEHLER and STETTIN, 2004). Their services are partly funded by government grants, but they are organisationally independent and legitimised by a general assembly consisting mostly of farmers. In 1992, 86 % of all cows in East Germany were regularly monitored by the associations. Ten years later, this number stood at 95 %. In a similar vein, state breeding associations (*Tierzuchtverbände*) were set up.

3.2 Beef and dairy market support

More direct incentives for increasing livestock productivity were set by the level of producer prices. One way of measuring the degree to which prices were influenced by market policies is by calculating Nominal Rates of Assistance (NRA) on a product basis. The NRA gives the percentage by which the domestic price for the product exceeds the price at the country's border (ANDERSON et al., 2009).

Figure 4: Nominal rate of assistance for beef



Source: ANDERSON and NELGEN, 2013.

Over the last 20 years, both beef and dairy markets in the European Union (EU) were highly protected from fluctuations in world market prices. Beef and milk prices were controlled by public intervention purchases. This is clearly reflected in the NRAs displayed in Figure 4 and Figure 5. The figures also make clear the sharp contrast in market price support between Germany as a EU member country and the Russian Federation. NRAs in Russia were negative until the mid-1990s, so that farmers were effectively taxed, and remained much below the level in Germany for most of the later years. Only very recently, after the liberalisation of milk and beef markets and the replacement of intervention measures by direct payments in the EU, did the relative positions of Germany and Russia change.

Figure 5: Nominal rate of assistance for milk

Source: ANDERSON and NELGEN, 2013.

3.3 Policies promoting capital intensification

The price support measures in Figure 4 and Figure 5 do not make transparent the importance of policies promoting the intensification of capital input in livestock production. This policy area has figured prominently in both the early transition period of East German agriculture and in current policy debates on livestock recovery in Russia. In East Germany, farms immediately benefited from huge capital subsidies as well as capital and technology transfers as the result of EU and national aid programmes. A specific assistance programme for East German agriculture was funded from federal and EU budgets, which primarily consisted of liquidity support and interest subsidies. The programme had a total volume of about 9 billion euro spent between 1990 and 1995 (KOESTER and BROOKS, 1997, p. 15).

However, other than the privatisation legislation as such, the credit schemes tended to favour newly established individual farms, especially partnerships, because the credit volume was capped by farm and workforce unit (FORSTNER and ISERMEYER, 2000, p. 68; KOESTER and BROOKS, 1997, p. 17). As most livestock was concentrated in the large successors of the former collectives, a majority of funds was flowing to crop farms. Furthermore, because the reform of the CAP in the early 1990s implied a shift towards hectare-related direct payments, large crop farms in the hands of natural persons were the winners of transition in East German agriculture. Moreover, crop farmers were chief beneficiaries of fuel subsidies, which have been regularly granted to the agricultural sector in Germany. Farms specialising in livestock, on the other hand, typically realised much lower profits per workforce unit. During the first ten years of transition, a non-negligible number of specialised livestock operations were in a critical financial situation (FORSTNER and ISERMEYER, 2000).

Many successor organisations of the former collective farms were forced to take over the debts that the socialist enterprises had accumulated. Many of these old debts were due to mandatory expenses on social and cultural services or infrastructure under central planning. While the debts had been extended by the former State Bank for Agriculture and Food Economy of the GDR, claims were transferred to the German co-operative banking system in the course of unification. In 1991, a major share of these debts was assumed by the Reprivatisation Agency, so that none of the farms went into bankruptcy due to existing debts (FORSTNER and ISERMEYER, 2000, p. 69). However, the remaining old debts were the subject of controversies and law suits. Between 1992 and 1994, balance sheets were relieved from old debts by shifting them into separate accounts. Following an agreement with the crediting banks, old debts had to be served only in years with positive profits. Moreover, a maximum of 20 % of profits was to be used for debt redemption. Following a judgement by the Federal Constitutional Court in 1997, the economic burden from old debts was reassessed and the rate of debt redemption was ultimately increased to 55 % of profits in 2004. In addition, farms were given the option to fully redeem their old debts by a single payment to be negotiated with the creditors. Most farms did so until 2008, effectively repaying 11 % of the old debts accumulated at the time of redemption.

Progress in the overall reform process implied that livestock farms entered the second half of the 1990s in structures that were still much bigger than the typical West European farm, but with considerably downsized labour stock and herd sizes. Moreover, due to special government programmes and immediate CAP implementation, farms had more rapid and easy access to capital than in any other transition country. On the other hand, rising capital stocks, labour-saving technologies, the terms-of-trade shock due to unification, and a generous social safety net implying increasing reservation wages explain why labour cuts in agriculture were higher than anywhere else in the region. Most of these factors equally applied to other sectors of the East German economy (SINN, 2002).

By the mid-1990s, labour productivity had reached the West German level (PETRICK and ZIER, 2012). A number of special support programmes expired, notably the specific assistance programme for East German agriculture in 1995. National structural policies in agriculture were now mostly uniform in East and West. CAP transfers became the major political determinant of decision making in agriculture.

3.4 Changes in the agricultural policy mix

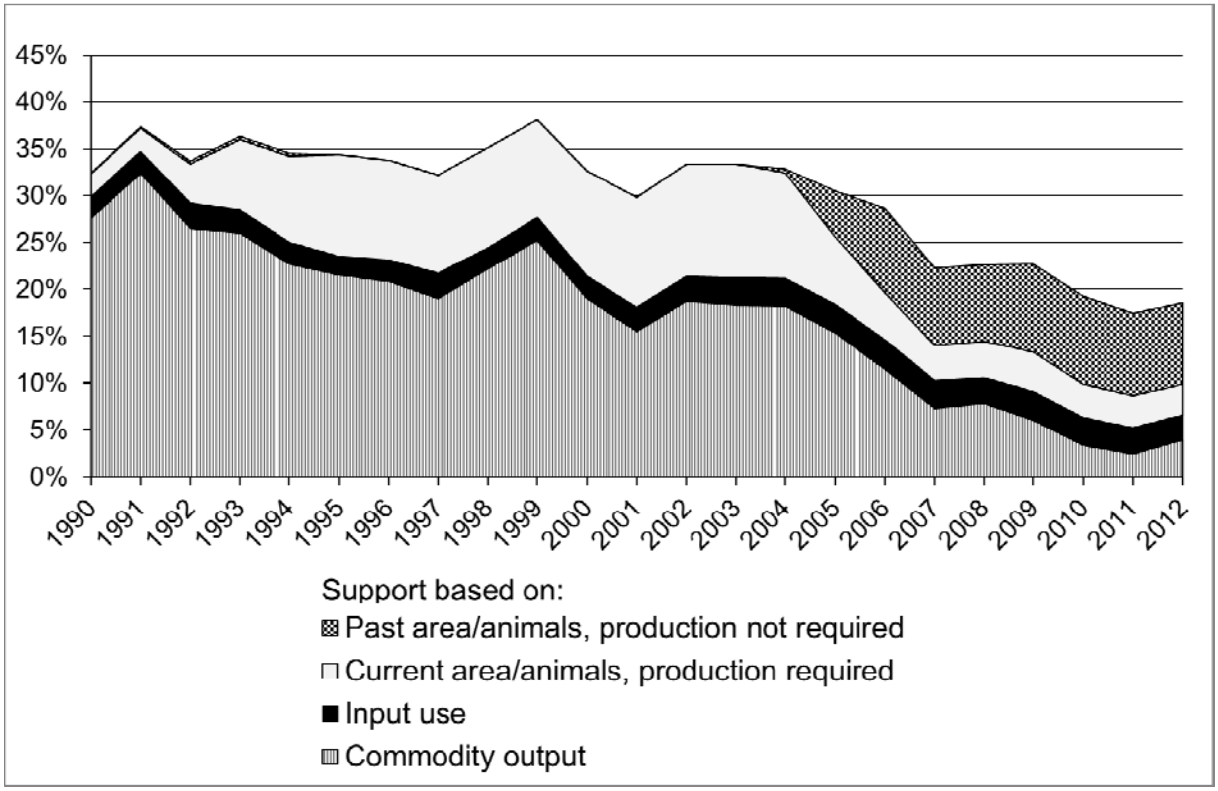
The changes in the CAP portfolio are clearly visible in the producer support estimate (PSE) calculated by the OECD, which sums up the monetary value of support at the farm gate for the EU as a whole. This approach takes into account different types of policy measures, not only those related to market prices. For the EU, it distinguishes four different types of policies. Support may be based on:

1. current commodity output, such as price support captured by the NRAs above,
2. current input use, such as fertiliser or capital subsidies,
3. area planted or animals kept, so that current production is required, or
4. entitlements that relate to past production decisions, so that payments are independent of current production.

Broadly speaking, the first two of these support measures represent the most drastic alterations of market prices and will thus have the most pronounced effect on current production decision, compared to a situation without policy intervention. The third measure still

provides incentives to keep resources in production, whereas the fourth is largely "decoupled" from current production decisions. The relative proportion of these four types of policies in total agricultural support to farmers in the EU, expressed as a percentage of the total value of production, is shown in Figure 6.

Figure 6: Producer support estimate for the EU (%-PSE)



Source: OECD, 2013.

As the figure shows, during the first 15 years of EU membership, farmers in East Germany were exposed to a policy mix that was dominated by output oriented measures, and thus measures that had highly stimulating effects on production. Only with the gradual replacement of market price policies by various types of direct payments did the policy mix change. A key reason for these changes was the ongoing international trade negotiations, in particular the disciplines imposed by the Uruguay Round of the GATT (JOSLING, 2009).

As a result of CAP reform, East German *Länder* have been spending about two thirds of their CAP budget on direct payments recently. Single farms receiving more than 300 thousand euro of direct payments annually have been no exception. This is the threshold above which farms are subject to subsidy cuts after the "health check" reforms of November 2008. Whether it implies a fair treatment of large farms in East Germany continues to be a contentious issue in the post-2013 CAP reform implementation.

4 CAPITAL SUBSIDIES AND WTO DISCIPLINES IN AGRICULTURE

As the previous section shows, East German farmers have benefited tremendously from public support to capital use in various forms. Today, investment aid is primarily granted within a joint federal-state programme called "Joint Task for the Improvement of Agricultural Structures and Coastal Protection" (*Gemeinschaftsaufgabe Verbesserung der Agrarstruktur*

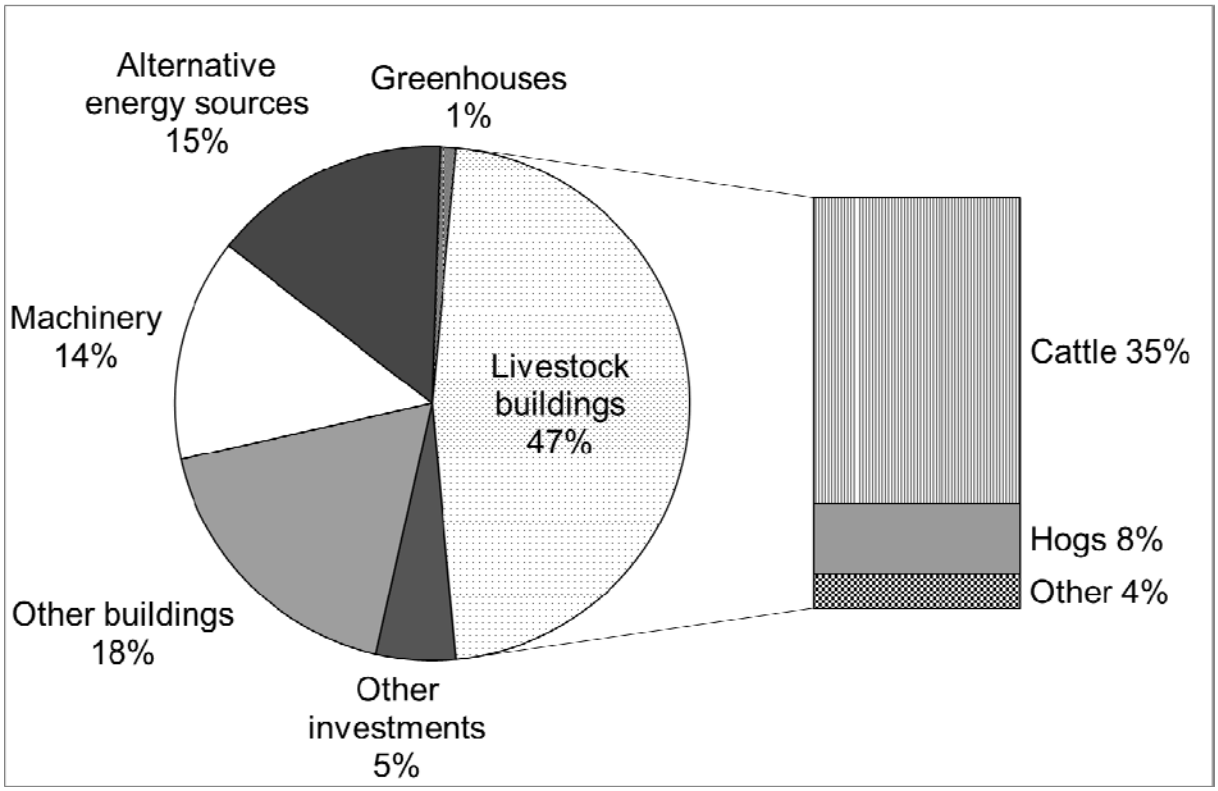
und des Küstenschutzes, GAK). This programme draws on EU, federal and state budgets (RUDOLPH, 2005). Across all East German *Länder*, investment aid includes credit subsidies for the modernisation or extension of livestock operations. Moreover, German farmers are entitled to discounted diesel purchases which are subsidised by the federal budget.

As similar measures feature prominently in current support programmes of the Russian government, I assemble some evidence on their economic impacts and discuss their compatibility with WTO regulations in the following.

4.1 Impacts of capital subsidies in East German agriculture

Rigorous analysis of subsidy impacts in East German agriculture is scarce. Some descriptive evidence comes from an ex-post evaluation of the agricultural investment support programme stipulated by the European Commission for the period 2000-2006 (BERGSCHMIDT et al., 2008). It focuses on the most northern of the East German states, Mecklenburg-West Pomerania. The state supported agricultural investments worth 170 million euro in total, partly by direct grants and partly by interest subsidies. Figure 7 shows that almost half of the total investment sum concerned buildings for livestock production, of which cattle barns represented the single most important item. The majority of investments in livestock buildings led to a growth of livestock herds.

Figure 7: Subsidised agricultural investments in Mecklenburg-West Pomerania 2000-2006 (% of total investment volume)



Source: Author's calculation based on BERGSCHMIDT et al., 2008.

According to the study, many farmers regard a lack of finance as a main obstacle to investment. However, asked about their investment behaviour in a hypothetical case without subsidies, 18 % of the respondents would have carried out the same investment project and 35 % would have implemented it later or in several steps. Only 9 % of farmers

would have cancelled the project without access to subsidies. The authors conclude that most of the possible positive effects on farm productivity would have occurred anyway, also without investment support. In its current form, the programme was regarded as insufficiently focused, inefficient and inadequately coordinated with other policies.

Based on data from three other East German states, PETRICK and ZIER (2012) investigate to what extent capital subsidies maintained or created jobs in agriculture. Using panel data methods that allowed the isolation of net policy effects, the authors found that capital subsidies did have a positive effect on agricultural employment. However, employment creation via capital subsidies was very expensive: about 50 thousand euros of subsidies were required annually to create one additional job in the short run.

This patchy evidence suggests that capital subsidy programmes in the East German farm sector suffered from a lack of focus and have not typically made efficient use of taxpayers' money to improve the resource base of agriculture. A recurrent problem of such programmes is that their specific objectives are quite vague. While programme documents typically contain long lists of seemingly unrealistic policy effects, including an improved competitiveness of agriculture but also environmental stewardship, animal health issues or job promotion in rural areas, it often seems doubtful that politicians are aiming at truly economic goals. They may rather have in mind to serve their political constituencies. If the objective is to make productive use of capital in an economic sense, it is not clear why an administrative bureaucracy should be in a favourable position to allocate these funds efficiently, compared to a private bank facing competitive pressure and a hard budget constraint.

4.2 Compatibility of capital subsidies with WTO disciplines

Since the Uruguay Round conclusion in 1994, the main thrust of WTO commitments in agriculture has been to establish "a fair and market-oriented agricultural trading system", as noted in the preamble to the Agreement on Agriculture. More specifically, the objective was "to provide for substantial progressive reductions in agricultural support and protection sustained over an agreed period of time, resulting in correcting and preventing restrictions and distortions in world agricultural markets". A key policy area to achieve this goal is the domestic support that member countries provide to their agricultural producers. According to a common understanding of the Agreement on Agriculture, it divides domestic support measures into four distinct categories which carry different expenditure commitments. While the categories broadly reflect the trade distorting potential of the so classified policy measures, they also served as a structuring device in the political process that led to the Uruguay Round conclusion. They should not be confused with the OECD categories presented above, whose primary goal is economic analysis. A shorthand description of the four WTO categories, or "boxes", is the following (see BRINK, 2011 for further details):

1. The "green box" includes measures that have no or only minimal trade-distorting effects or effects on production (Annex 2 of the Agreement). Measures qualifying for the green box are exempt from any reduction commitments. A prominent example is direct payments to producers that meet specific criteria disconnecting ("decoupling") the payments from production, prices and factor use.
2. The "blue box" was mostly created for political reasons and includes direct payments that were introduced in the framework of production limiting programmes (Article 6.5). While they may be linked to the current production of certain crops or livestock, payment levels are limited to fixed areas or number of heads and based on past yields,

such as in the EU's "MacSharry reforms" of the early 1990s. These measures are also exempt from commitments.

3. If a member state has the status of a developing country, it can exempt certain investment and input subsidies from its commitments by placing them in the "development box" (Article 6.2).
4. All remaining measures are potentially subject to reduction commitments. They fall in a residual category often called the "amber box". Their value is calculated as the Aggregate Measurement of Support (AMS) on a per product basis and for the aggregate of non-product-specific (NPS) measures. The AMS is calculated by summing up the public budget outlays for the measures related to that particular product or the NPS aggregate. However, for each product in the amber box and for the NPS aggregate separately, there is a so-called "de minimis" threshold of 5 % of the value of production. Only if a product- or non-product-specific AMS exceeds the de minimis threshold does it contribute to the measured support of a country. On an annual basis, this ultimate support measure called the "Current Total AMS (CTAMS)" is then subject to the support ceilings committed by the member country.

The Russian Federation entered the WTO with a developed country status and its support measures broadly fall into two categories: (a) border protection via import tariffs and non-tariff measures, particularly for livestock products, and (b) domestic support measures linked to production and input use (KISELEV and ROMASHKIN, 2012; SEDIK et al., 2013). In the base years relevant for the accession negotiations (2006-2008), most of the product-specific AMS fell below the de minimis threshold, so that the bulk of Current Total AMS was due to non-product-specific measures (BRINK et al., 2013). Among these, as also reflected in the current State Programme for the Development of Agriculture, input subsidies and credit concessions figure prominently (OECD, 2013). If WTO commitments are going to restrict Russian agricultural policymaking in the future, these measures will largely be responsible for it. Anticipating such possible restrictions, the Russian government has already projected to increase future policy spending primarily via measures that fall into the green box (SEDIK et al., 2013). This raises the highly policy-relevant question under which conditions capital subsidies can be made green box compatible.

It may come as a surprise that most of the capital subsidies granted to agricultural producers in Germany actually *are* considered as green box measures. As in all other EU member states, they claim exemption from AMS under paragraph 11, Annex 2 of the Agreement on Agriculture (ANTON, 2009). According to these provisions, "eligibility for such payments shall be determined by reference to clearly defined criteria in government programmes designed to assist the financial or physical restructuring of a producer's operations in response to objectively demonstrated structural disadvantages." Moreover, "the amount of such payments in any given year shall not be related to, or based on, the type or volume of production (including livestock units) undertaken by the producer in any year after the base period" and "the payments shall not mandate or in any way designate the agricultural products to be produced by the recipients".

While several studies question the effectiveness of agricultural investment subsidies in the (East) German farming sector (see above), it seems indisputable that such subsidies actually *do* promote (or "mandate") future production in some ways. If we recall that almost half of the investment aid in Mecklenburg-West Pomerania went into the construction of livestock barns (Figure 7) and that most of these were growth investments, a direct link to future production increases appears obvious. For agricultural policymakers, this insight implies a dilemma:

they either have to admit that investment aid is completely ineffective and purely redistributive, in which case it may legitimately be classified as green box. But if there are any productive effects to be expected from these programmes, they can hardly be considered as non-distortionary.

Which are the prospects for transforming the Russian capital subsidies into green box payments? In 2013, the government introduced an area payment that replaced previous fuel, fertiliser and pesticide subsidies as well as loans for sowing and harvesting purposes. The regulations declare this payment to be "decoupled" (*nesvyazannyi*), but at the same time stipulate that it is used to increase the intensity of production. The level of payment depends inversely on the soil quality and it is paid under the condition that the eligible area receives fertiliser and pesticide applications. No doubt such provisions are not in the spirit of the green box regulation on decoupled direct payments, which requires that the payment shall not be based on the employed factors of production and shall not require production as such (Annex 2, para 6 (d) and (e)). There are also plans to make the credit concessions more green box compatible, although the details are as yet unknown.

It seems that neither the EU's nor Russia's current policies of capital subsidisation in agriculture would pass an economic litmus test of non-distortion. The reasons why the EU measures are considered green box, whereas Russia's are not, are likely of a political nature. Several WTO members have challenged the green box eligibility of the CAP investment aids in the past. But as the EU has a lot of leeway to increase its Current Total AMS before reaching the bound commitments, other members have little incentive to probe the case exhaustively. On the other hand, the Russian government may have had an incentive to inflate its non-product-specific AMS in the accession negotiations in order to reach a high level of Current Total AMS to begin with. In fact, the non-product-specific AMS in the base years was only slightly above 5 % of the value of production, and it would have seemed easy to push it just below this threshold (BRINK et al., 2013).

5 CONCLUSIONS

The previous description of policy reform in East Germany may convey the message that rapid access to capital and plentiful government subsidies were the key to successful transformation of livestock operations. Indeed, East German farmers have benefited from both. No scientific study has rigorously scrutinised the relative importance of different success factors yet. But even insiders of the farming community und thus immediate beneficiaries of subsidies are eager to stress that *reforms of the institutional environment* were at least as important as the generous availability of funding. As an outcome of these reforms, East German farmers are now served by a professional government administration, a network of both cooperative-based and privately managed up- and downstream companies, a diversified rural banking industry, and a widely inclusive political interest representation. With regard to livestock farming, the role of member-oriented, democratically legitimised service associations focusing on the areas of knowledge extension, quality control and breeding progress can hardly be overstated. These factors ensured that qualified management was kept on the farms, genetic resources could be fully exploited, fodder generation and allocation optimised and technological innovations realised throughout the meat and dairy chains. It is undeniable that the West German institutional framework served as a prototype for these reforms, and that they were greatly eased by financial and logistical support from the "other" part of Germany.

While the structural development of agriculture in East Germany was highly determined by financial incentives set by policy makers, *these incentives were sometimes unintended and inconsistent*. In addition, they led to misallocations that were very costly or impossible to correct later on. Although various credit programmes were made available for both crop and livestock farms, investments in crop farms turned out to be much more attractive due to the simultaneous introduction of hectare-related direct payments during CAP reform. Funding limits due to legal form and the number of workers implied a disadvantage for livestock farms as well. Huge capital subsidies accelerated the shedding of workers, which was politically undesired in the first place. Centralised planning of regional slaughterhouses grossly failed in predicting expected cattle numbers. In sum, it proved very difficult for political administrators to cope with the enormous complexity arising from the interaction of a dynamic market environment and a multi-layered, partly inconsistent policy framework.

With regard to more recent capital subsidy programmes in East German agriculture, the existing evidence suggests that they have been *notoriously inefficient in reaching any of the manifold goals* they were hoped to achieve. These goals not only include the competitiveness of agriculture but also animal health issues or job promotion in rural areas. For decades, the CAP has promoted productivity increases on cattle and dairy farms via investment aids, while imposing a milk quota on output at the same time. This policy mix seems evidently contradictory. Moreover, productivity enhancing investment aids are at odds with the spirit of the WTO agreements aiming at a minimal role of government in setting production incentives.

Referring to the EU as a model, the Russian government may face little difficulty in dressing up its capital subsidies and make them look like green box compatible. Judged against the principles of a market economy, the structural elements of the Common Agricultural Policy are a poor guide for policy reform. The main lesson to take away from agricultural transition in East Germany is that it requires more than just money to end up with a productive and globally competitive livestock sector.

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