

Trends and determinants of post-integration agricultural transformation in Poland and Bulgaria

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ABSTRACT

Agricultural transformation in Poland and Bulgaria, both characterized by unique farm structures compared to the old EU, has been a policy challenge for the Common Agricultural Policy (CAP) even before integration. Eurostat and Comtrade data over 2000 to 2016/2017 have been used to analyse agricultural restructuring at farm level, relating it to growth trends in agro-processing units and eventually to competitiveness in agricultural exports and trade specialization. CAP payment instruments, especially DPs have influenced farm restructuring, farming practices and income in both Poland and Bulgaria. Distinctive farm structures have evolved that have caused polarization and influenced productivity. Large farms are the main beneficiaries of farm aids and this polarization continues in the agro-industry sector as well. Multinational agro-firms, though insignificant in number are found to monopolise agro-based production in almost all the food processing sub-sectors in both the member countries. In terms of trade competitiveness indices, export specialization of agri-commodities has reduced in both members over 2000-2017, shares of processed commodities in exports with specialization have increased for Poland while Bulgaria has gained in medium-processing capabilities. For policy implications, small farms need to form producer groups and coordinate with small producers to increase both farm and firm level productivity. The subsidiarity principle of new CAP can be utilized by member states to facilitate this.

Keywords: farm study, agricultural policy, agro-industry performance, export competitiveness

INTRODUCTION

Post-war land policies and a market-economy based transition dynamics have curved distinctive transformational paths for the agricultural structures of the New Member States (NMSs) that joined the EU in 2004 and 2007. Assessing the synchronisation of the agricultural structural changes in the integrating countries with the evolving CAP policy designs and instruments have been the focus of a large section of literature. The present study endeavours to add a few more insights to this by understanding the trends and determinants of the changes in the agricultural product chain- beginning with the production stage involving the farm and farming practises, then to the consumption stage involving the agricultural enterprises and concluding with an assessment of the competitiveness of agricultural trade

patterns. In this context, post-integration agricultural transformations in two NMSs, namely Poland and Bulgaria have been studied as country cases. Possessing distinctly different farming structures compared to the largescale EU farms, the NMSs, despite their size differences, were characterised by apparently similar pre-integration farm structures and agro-enterprise patterns.

The history of land ownership strongly influenced changes in their farm organisational patterns, both during the transition period and afterwards. In Poland, agricultural practices were extremely traditional, often labeled as 'backward' or 'inefficient' and was characterized by farms primarily privately owned. Land sales were not restricted, nevertheless transactions were mostly through leasing, almost half of which concerned land sizes of 1 ha or less. Farm organisational changes during transition

were modest and post restitution, only the north and west constituting the state farms reported increase in shares of large privately owned land (Ciaian and Swinnen, 2005). In Bulgaria, restitution to almost three quarters of Bulgarians created very small subsistence private plots. A system of provisional land-rights created incentives for consolidation through cooperative formations. These pooled in the resources of the very small private farms and a form of corporatization evolved. Also, Bulgarian farmers were the least subsidised among all the NMSs and consequently starved of capital, farms remained mostly inefficient. The nature of farm adjustment in both the countries created polarised, fragmented farm structures with prevalence of small subsistence farms on one end and extremely large (especially in case of Bulgaria) private farms on the other end.

The evolution of the food industry has been a major contributory factor in the competitiveness of agriculture of a country, especially in an era of multinational corporations (MNCs), intra-industry trade and vertical integration. It caters to the conscious customer requirements for high quality products, while optimizing commodity supplies across the entire product chain, including the farming sector acting as suppliers of inputs to these enterprises. The development of the food industry is naturally then influenced by the rules and regulations of the CAP (Barnes et al., 2016). In both the NMSs, the oversized integrated state enterprises were liquidated during transition and policy directions encouraged the creation of many small and medium sized agro-enterprises. Also, many MNCs have started their operations in this sector. Finally, by assessing agro-trade specialization patterns of the two NMSs with EU-15, this paper attempts to open a new line of query that connects trade competitiveness with the process of agricultural transformation and agro-enterprise development in these NMSs.

The objective of the study is to a) determine the effects of EU integration on the Polish and Bulgarian farm organisation, farm efficiency, food industry development and patterns of agri-food trade and to b) assess nature of sustainability and equalisation of farm incomes across regions.

The paper is organised as follows: the next section introduces the data and the methodology and is followed by a section segregated into sub-sections dealing with the various aspects of farm restructuring, agro-enterprises and agro-trade patterns in Poland. A similar line of analysis is carried out for Bulgaria in the subsequent section. Lastly, a section on conclusions is provided summarising the main findings of the study.

DATA AND METHODOLOGY

Method of analysis followed is a mixed method that includes a descriptive method with elements of comparative analysis to determine the changes in the economic situation of the farm, food industry and trade in Poland and Bulgaria. Farm and Agro-based industry data are based on the Eurostat dataset. The farm level analysis includes selected economic data indicators (such as share of agriculture in GDP, size and number of agricultural holdings, distribution of Standard Output) for the period 2000-2016, while trade data analysis has been carried out for the period 2000-2017. In relation to the type of farm level data, statistical descriptive analysis and the observed trends of different selected indicators have been studied. Trade data for EU-15, the ten NMSs and separately for Poland and Bulgaria was obtained from the WITS Comtrade database, measured in dollar terms at a two-digit level of disaggregation in Standard International Trade Classification (SITC) system. Agri-food trade is defined as trade in product groups SITC 0, 1, 2 and 4 with the two-digit disaggregated product categories taken as 00 to 09, 11 to 12, 21 to 24, 26, 29, and 41 to 43. The full sample therefore covers 21 product categories and covers trade flows in each of the 17 years. Various measures have been analysed to find competitiveness of Polish and Bulgarian agri-commodities vis-à-vis the EU-15. These include the trade measures- Balassa Index (B-Index) or RXA (Balassa, 1965); the RMA and RTA index (Vollrath, 1991; Bojnec, 2001; Fertő and Hubbard, 2003) and the Lafay Index (LFI) (Lafay, 1992). The comparative export competitiveness calculations using the Balassa Index (RXA) and the Lafay Index (LF) to study trade specialisation are divided into three distinct phases: a pre-

integration phase between 2000-2006; post-integration phase between 2007-2013 and the post-CAP-2013 phase between 2014-2017. To assess the trend between export shares, comparative advantages, and specialization these measures are then averaged over each of these time spans and ranked according to the ascending scores of the Lafay Index (LFI) using Spearman's rank correlation.

AGRICULTURE IN POLAND

A major source of agricultural competitiveness arises from farm productivity which mainly depends on the structural organization of the farms. Poland initiated farm restructuring to align with CAP structures and instruments and consequently CAP payment and distributional patterns have been instrumental in determining post-integration pattern of farm reorganization.

Farm restructuring in Poland and role of CAP

Post integration, the Polish farmers have had access to the CAP supports under the financial perspectives of subsequent CAP 2004-2006, 2007-2013 and 2014-2020. These payments were expected to increase short term liquidity availability of farmers while its hectare-based nature of payments was expected to create incentives for production expansion. Under the EAGF payments or mainly the Pillar 1 payments, Poland applied the single area payment scheme (SAPS). CAP supports for SAPS have been mostly as Direct payments (DPs), essentially designed to support farmer's income.

The role of CAP in the farm economy has been analysed with the help of finding out the usage of CAP payments in the farmsteads. CAP usage decisions have been very much individualised and dependant on factors such as the structure of farms, the resource endowment and human capital availability (Ciaian and Swinnen, 2006 and 2009; Ciaian and Kanacs 2009, Mateusz and Gumieniak, 2020). Large farms mainly use it for farm investment, while smaller farms use it for farm consolidation or even children's education. A part leaks out to the retailers (food industry) as costs (GAEC costs) of farmers are not always fully incorporated in the farm-supply chain. Another substantial part is capitalised in terms of both high land prices and higher land rentals. Land demand increased

but with an inelastic land supply and the resultant surplus entitlements, the market land prices rose persistently. An imperfect land market meant that land sales involved high transaction costs and hence leasing in became more prevalent than land sales and consequently land rentals rose as well. This part of payment is subsequently obtained by the landowners and not farmers who were the original CAP payment recipients. A farm survey by Paloma et. al (2008) finds that the present value of DPs (discounted) during the first year of Poland's membership was equal to the value of the maximum credit that a farmer could obtain commercially. Thus, CAP payments have addressed credit constraints of the Polish farmers, majority of whom were small and marginal, and from table 1 the payments are observed to be positively related to increase in farm income.

However, the CAP payment structure has not been infallible for farm re-organisation. For the small and marginal farms that face no greening condition yet receive unemployment support or state pensions, farm income has not been adversely affected by re-organisation, unlike other farm sizes which even though have low productivity are obligated to maintain the CAP environmental conditions. The very small farms thus had no incentive to consolidate and increase their farm sizes and were quite satisfied with maintaining the status quo. This perpetuated the persistence of small and marginal farms in Poland. Secondly, farm polarisation has caused extreme inequality in payments. The distribution patterns of Direct aid in Poland as percentage of total EU Direct aids and number of recipients as percentage of total EU recipients over 2005 to 2017 is shown in Figure 1, and the distribution pattern of DPs over 2006 to 2017 is shown in Figure 2. In 2017, 57% of holdings received less than 1250 €, 30% received between 1.250,00 € to less than 5.000,00 € but a very negligible section (less than 1%) of beneficiaries received greater than 50.000,00 € that constituted just 10% of total payments (data obtained and calculated from European Commission, 2017). On the other hand, coupled payment share in Direct aid (DA) which was just around 3% till 2015 increased to 26% in 2016.

Table 1. Net income from agricultural activity (Index, 2010=100)

year	2004	2005	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Net income	72.0	64.7	72.4	76.0	85.3	100.0	116.0	107.1	117.2	94.2	95.0	102.3	119.8

Source: Own calculations based on Eurostat data

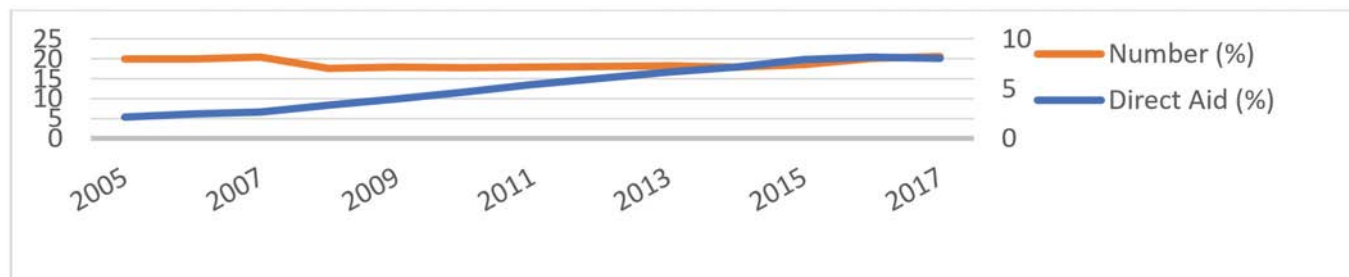


Figure 1. Distribution of Direct aid to farm holdings (2005-2017)

Source: own compilation based on Eurostat data

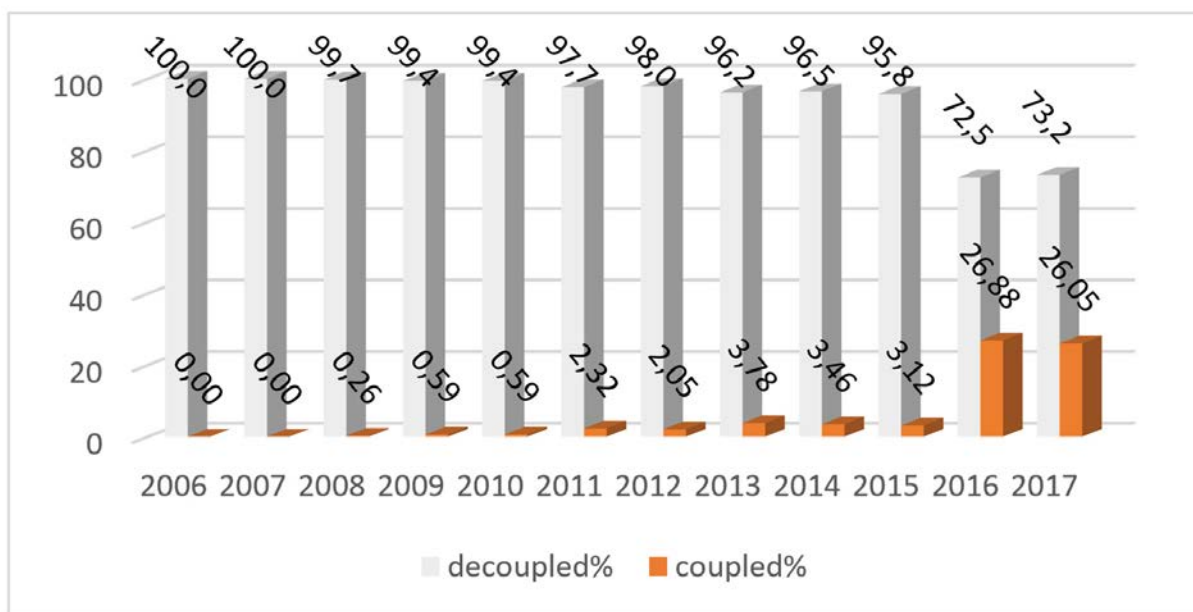


Figure 2. Distribution of Direct payments (2006-2017)

Source: own compilation based on Eurostat data

The observable effects of CAP instruments on farm structures are presented below in tables 2, 3, 4 and 5 respectively. Poland reported an intensified duality and fragmentation of land, leading to high distributional inequality in utilised agricultural area (UAA) and holdings. In 2016, 53.9% of holdings farmed 13.2% of UAA in the

<5 ha farm size category whereas only 2.5% of holdings farmed 31.6% of UAA in the >50 ha farm size category (Table 2). High land prices and high land rentals (due to capitalisation of DPs) both imply a high start-up price for farming and deters farm consolidation and expansion.

Table 2. Percentage distribution of holdings and UAA by farm size (2005-2016)

Distribution of Holdings by farm size (%)			Distribution of UAA by farm size (%)		
Year	<5 ha	>50 ha	Year	<5 ha	>50 ha
2005	70.2	0.8	2005	17.6	23.5
2007	68.1	1	2007	17.7	24.3
2010	54.7	1.7	2010	13.8	29.5
2013	53.9	2.2	2013	13	30.9
2016	53.9	2.5	2016	13.2	31.6

Source: own calculation from Eurostat (online data code:ef_kvftaa; ef_kvage)

However, some distribution of land sizes in the mid-size farm holdings over 2005 to 2016 have been observed. Farmland in Poland continue to be primarily privately owned (90% of the legal types of farm holdings are sole holders in 2016), of whom 94.8% operate less than 20 ha and these operational holdings have increased in the 2 ha to <20 ha farm size category over 2005 to 2016 (Table 3). On the other hand, average sizes of holdings have increased in all farm-sizes except in >100 ha. Table 4 calculations show that during 2005-2016, the decline in holdings has been greater than decline in UAA among the < 5 ha sizes (thus average size of farms rose from 1.48 ha to 2.50 ha) while the increase in holdings was greater

than increase in UAA in the >100 ha categories (thus decrease in average size from 355.7 ha to 252.5 ha). The very large farm sizes are aligning with EU average size.

Subsistence by economic size has been measured as farm holdings with Standard Output (SO) of < 2.000,00 € or holdings with > 50% for self-consumption. Table 5 shows that subsistence using the first measurement has reduced (SO decrease less than decrease in holdings over 2013-16 compared to 2010-2013). It can be inferred that most small subsistence farms have either exited farming or have, through leasing, moved to larger farm sizes.

Farm competitiveness

Various studies on farm productivity in Poland (Makieła et al., 2017; Marzec and Pisulewski, 2017, 2019; Smędzik-Ambroży et al., 2019) observed not only low level of overall technical efficiency of farms but almost the lowest productivity of resources of Polish agriculture in relation to other EU countries. Resource inefficiency was due to unfavourable workforce-land ratio and also underutilised land resources and the more diversified and less specialised the farm, less efficient it was. Any competitive advantages, in agriculture compared to other EU countries, resulted mainly from price advantages. The assessment of effect of input subsidies in farm productivity studied by Czyzewski and Majchrzak (2017) and Cunha and Swinbank (2011) found that contrarily DPs did not reduce market uncertainties on farmers' incomes.

Table 3. Distribution of sole holdings by farm sizes (2005-2016)

Sole holders (% of total sole-holders) by farm size				
Size of farms	2005	2010	2013	2016
<2ha	48.8	23.6	22.9	21.3
2-<5 ha	21.5	31.1	31.2	32.8
5-<10 ha	15.0	22.3	21.6	21.8
10-<20 ha	9.6	14.5	14.6	14.4
20-<50 ha	3.9	6.3	7.1	7.1
50-<100 ha	0.5	1.1	1.4	1.6
>100 ha	0.2	0.5	0.6	0.7

Source: own calculation from Eurostat (online data code:ef_kvftaa; ef_kvage)

Table 4. Average size of holdings and change in holdings and UAA, by size

Change in holdings 2005 -2016 (%)		Change in UAA 2005 -2016 (%)		year	Average size of holdings (hectares)			
<5	>100	<5	>100		<5	20-<50	50-<100	>100
				2005	1.5	28.8	66.9	355.7
				2007	1.7	28.9	67	344.9
-56.3	66.1	-26.4	17.9	2010	2.4	29.2	68	323.4
				2013	2.4	29.6	67.7	278
				2016	2.5	29.7	68	252.5

Source: own calculation from Eurostat data (online data code:ef_kvftaa; ef_kvage)

Table 5. Changes in Standard Output (SO) and Sole holdings, by SO (2010-2013, 2013-2016)

year	Standard Output									
	<2000	2000- 3999	4000- 7999	8000- 14999	15000- 24999	25000- 49999	50000- 99999	100000- 249999	250000- 499999	≥500000
	Change (%) in distribution of SO of sole holders by SO									
% change 2010-2013	-0.5	-0.7	-1.4	-2	-1.5	0.2	3.4	2.9	0.9	0.6
% change 2013-2016	-0.2	-0.6	-1.1	-1.1	-1.5	-2	0.1	1.8	1.4	0.2
	Change (%) in distribution of sole holders by SO									
% change 2010-2013	-3.3	0.55	0.1	-0.13	0.4	1.32	1.22	0.48	0.08	0.01
% change 2013-2016	-0.1	-0.7	-0.4	0.28	-0.08	0.14	0.59	0.41	0.11	0.01

Source: own calculation using Eurostat data for the relevant year's data (online code: ef_m_farmleg)

In fact, it resulted in a price expectation error that was also proportional to the share of subsidies in agricultural income. Thus, the authors find a case for distribution of CAP allocation in favour of Pillar II payments as compared to DPs, that even if decoupled, leak out and are capitalised.

Agro-industry restructuring

In Poland, the food industry is an important contributor to the economy. The modern food sector in Poland shows a moderately high competitiveness of various sub-sectors (processing of milk, meat, cereal, tobacco) in the EU markets. The source of competitive advantage has been lower costs (cheap labour) and product prices as well as lower processing margins. Post-integration, the member

state has emerged as the sixth largest food producer and a major net exporter of agro-based commodities in the EU. Its contribution to GDP is around 6% and its share in manufacturing sales is 20% while its share in total employment is 16% (own calculation based on Eurostat 2017 data). In the EU market, Polish products have a price advantage as they are recognized for their lower prices. Among the agro-industry sub-sectors, the food sector is the most important as it contributed the highest in terms of value-added, turnover as well as employment. It is followed by beverage, wood and then the textile industries. Keeping in cognisance the high share of food sector in manufacturing sales, a three-digit disaggregation of food sector is undertaken for a more detailed analysis.

Data from the three-digit industry codes under food industry manufacturing code 'C10' is taken and includes such sub-sectors as meat and its preparations, fish, fruits and vegetables, dairy, animal and vegetable oils and fats, bakery, animal feed and, other food. Meat and related processes have reported the highest increase in value whereas fruits, dairy, oils, fats and other food have declined in value (Figure 3).

The data in Table 6 show that for 2016 more than 70% of the number of firms in the food, beverage and tobacco sectors are the micro-enterprises (0-9 employed) but their contribution to turnover is less than 4%, while more than 87% of firms are micro-enterprises in textile, leather, and wood with contribution of around 11% to 16% to sectoral turnover. The medium (50-249 employed) and the large firms (>250 employed) constituting around 10% of firms in food and beverage and 21% of firms in tobacco contributed more than 95% to turnover while almost inconsequential percent of these medium firms in the textile, leather and wood sectors have contributed around 70% of the total agro-firm turnovers in these respective sectors. Also, data shows high contribution of MNCs or FATs in turnover since almost all the medium and large firms are FAT controlled.

Agricultural trade and competitiveness

Poland has reported surplus trade balance with EU-15 since 2003. However, moderate overall trade disadvantage was present before integration and has been increasing overtime as import growth rates has overtaken export growth both in case of trade with EU-15 as well as the rest of NMS as trading partners. A two-digit disaggregation level over 2000 to 2017 is carried out for SITC 0, 1, 2 and 4 products and an RTA index is calculated in table 7 combining both export competitiveness as represented by the Balassa Index (RXA) and import competitiveness (RMA). Overall, a decreasing comparative Export Advantage (mean RXA declining) was reported with a revival noticed from 2013 but falling again in 2016. High import penetration was noticed with mean RMA increasing rapidly since 2012 but RMA > 1 share decreasing. This meant that RTA mean was negative and falling, but share of RTA > 0 (showing Trade competitiveness) remained constant. Over the years 2000-2017, a disaggregated commodity data reveals that Poland has been able to retain competitiveness in fish, vegetables and fruits, sugar preparations, oil seeds, cork and wood but not in live animals and meat preparations; while competitiveness has been gained in cereals,

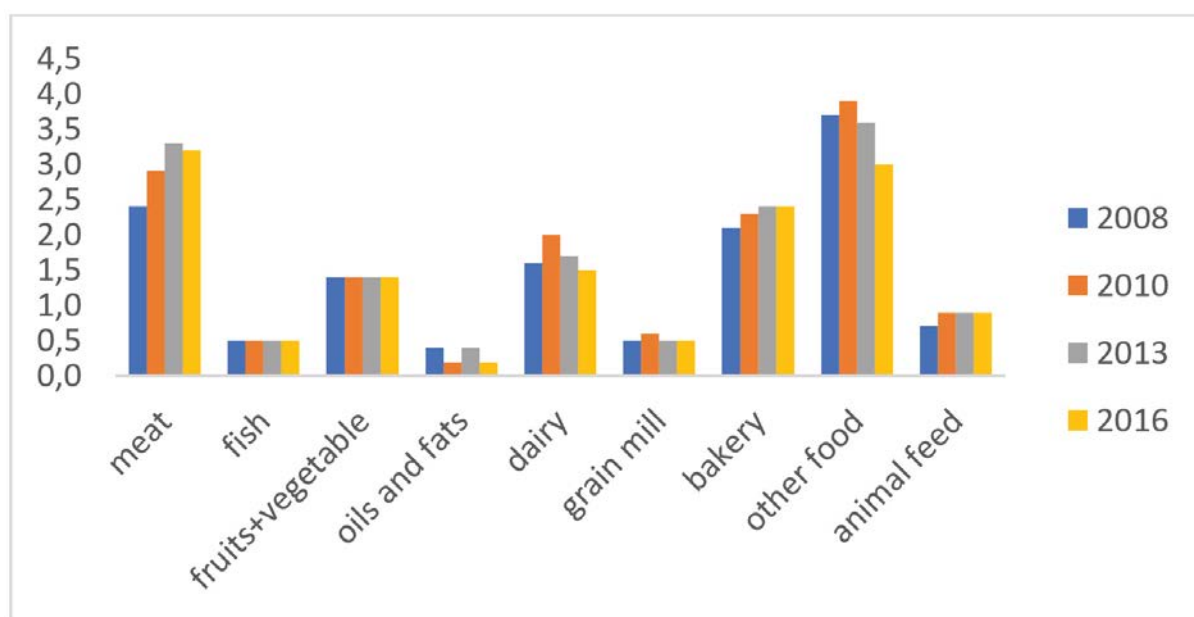


Figure 3. Comparison of shares of food industry sub-sectors in total manufacturing value added, 2008 -2016

Source: own calculation based on Eurostat data. (online code: sbs_na_ind_r2)

Table 6. Number and turnover of agro-enterprises, by employment size (2008, 2016)

Employment Size	Number						Employment Size	Turnover					
	FOOD		BEVERAGE		TOBACCO			FOOD		BEVERAGE		TOBACCO	
	Year	Year	Year	Year	Year	Year		Year	Year	Year	Year	Year	
	2008	2016	2008	2016	2008	2016		2008	2016	2008	2016	2008	2016
0-9	69	70	77	78	35	70	0-9	6	4	2	1	0	0
10-19	10	10	6	6	9	5	10-19	3	3	1	1	0	0
20-49	11	10	7	6	4	5	20-49	9	8	4	4	-	-
50-249	8	8	8	7	13	9	50-249	29	28	17	15	3	3
> 250	2	2	3	3	39	12	> 250	52	57	76	80	97	96
Employment Size	TEXTILE		LEATHER		WOOD		Employment Size	TEXTILE		LEATHER		WOOD	
	Year	Year	Year	Year	Year	Year		Year	Year	Year	Year	Year	
	2008	2016	2008	2016	2008	2016		2008	2016	2008	2016	2008	2016
0-9	85	89	89	87	92	91	0-9	12	11	16	11	21	16
10-19	4	4	4	5	3	4	10-19	4	4	8	6	4	5
20-49	5	4	3	5	3	3	20-49	10	10	11	12	9	11
50-249	5	3	3	3	2	2	50-249	39	26	38	29	25	25
> 250	1	1	0	0	0	0	> 250	34	48	28	41	41	43

Source: own calculation based on Eurostat data (online code is sbs_sc_ind_r2)

animal feed, coffee/tea/spices, tobacco and hides/skin. Additionally, in table 8, the more comprehensive Lafay Index (LFI) measuring specialization by separating business cycles from comparative advantage measures shows comparative advantage and specialisation of Poland (given by $LF > 0$) in seven, eight and again seven agricultural product groups respectively over the three phases. The RXA and the LF index rankings shows correlation increasing above 70 percent for all the three time phases. However, export shares of products with specialisation have fallen but exports of products with comparative advantage ($RXA > 1$) are seen to be increasing in many cases proving that more intermediates than finished products are being exported. Nevertheless,

Poland has capitalised on trade competitiveness in terms of value added as the index ranking shows that processed group shares in total export shares have increased.

AGRICULTURE IN BULGARIA

Farm restructuring and role of CAP

CAP payments have increased income inequality with main support beneficiaries being the big farms as 93% of beneficiaries received 22% of funds whereas 0.2% holdings received 20% of supports with 50% of supports concentrated in less than 1% of farms (data compiled from European Commission, 2017). Figure 4 shows how the percent of beneficiaries have fallen from 1.2% of total EU

Table 7. Trade Competitive Indexes (RXA, RMA, RTA) for Poland (2000-2017)

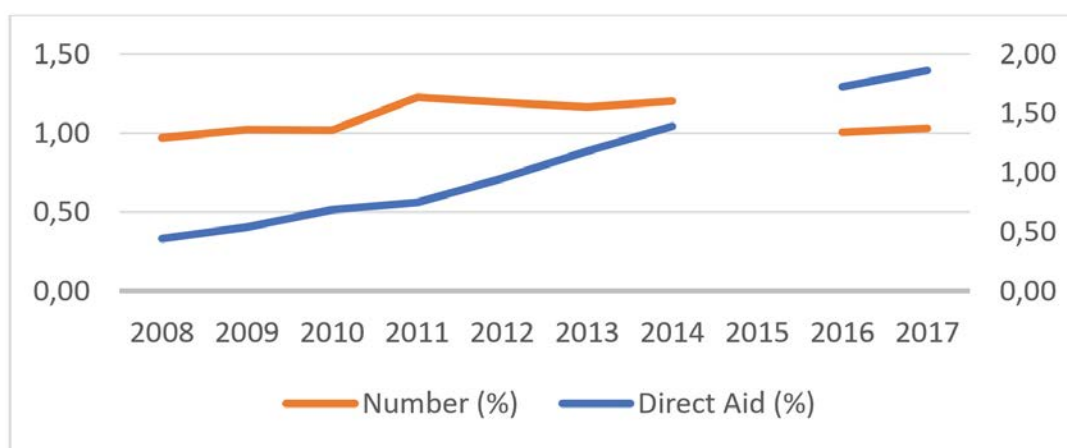
Year	RXA		RMA		RTA	
	MEAN	Share of RXA >1	MEAN	Share of RMA >1	MEAN	Share of RTA >0
2000	1.19	0.38	1.62	0.62	-0.43	0.38
2001	1.37	0.48	1.54	0.57	-0.17	0.38
2002	1.10	0.43	1.57	0.67	-0.47	0.33
2003	1.11	0.38	1.69	0.67	-0.58	0.33
2004	1.29	0.43	1.70	0.62	-0.41	0.43
2005	1.11	0.38	1.57	0.62	-0.46	0.38
2006	1.14	0.38	1.52	0.71	-0.38	0.38
2007	1.20	0.38	1.50	0.71	-0.30	0.33
2008	1.06	0.48	1.43	0.52	-0.37	0.24
2009	1.10	0.38	1.49	0.48	-0.39	0.38
2010	1.13	0.43	1.49	0.57	-0.36	0.33
2011	1.00	0.43	1.49	0.48	-0.50	0.33
2012	1.03	0.43	1.61	0.52	-0.58	0.43
2013	1.14	0.38	1.74	0.48	-0.60	0.38
2014	1.15	0.38	1.78	0.48	-0.63	0.33
2015	1.20	0.38	1.69	0.52	-0.49	0.38
2016	1.01	0.38	1.72	0.57	-0.70	0.43
2017	1.06	0.38	1.79	0.57	-0.73	0.43

Source: own calculation from WITS Comtrade data

Table 8. Specialisation (LF>0) and export shares, by degree of processing of agri-commodities

Years	EU-15 Export share (%) with LF>0	Processed commodities and share (%) of exports	Medium-processed commodities and share (%) of exports	Primary commodities and share (%) of exports
2000-2006	72	SITC 01, 02	SITC 00, 22	SITC 03,05, 24
2007-2013	58	SITC 01, 02,12	SITC 21, 22	SITC 03, 04, 24
2014-2017	58	SITC 01, 12	SITC 21, 22	SITC 03, 04, 24

Source: own calculation from WITS Comtrade data

**Figure 4.** Distribution of Direct aid to farm holdings, 2005-2017

Source: Eurostat data for relevant years. Data for year 2015 for Bulgaria is unavailable

beneficiaries in 2008 to around 1% in 2016-17 whereas DA percent has increased steadily from 0.44% of the total EU aid to 1.72% in 2016. But, unlike in case of Poland, most farm households in Bulgaria have experienced only nominal increase in farm income. One reason is that the minimum farm size requirement of 1 ha removed most households from subsidy since most farms less than 1 ha have been operating as unregistered farms.

The existence of these unsubsidised grey structures created incentive for consolidation of the very small farms while at the same time permitting the member state to maintain budgetary prudence. In terms of payment distribution, DP support remained the main support instrument in Bulgaria, increasing from 65% of total support in 2006 to 75% by 2013. However, post CAP-2013 reforms and the subsequent introduction of more flexible instruments, the DPs have decreased considerably

and has been rechanneled into the other newer elements such as redistributive payments, green payments, and payments to young farmers. From table 9 a redirection of policy initiatives towards CAP Pillar II RDP measures is observed, with share in support increasing from 1.4% in 2015 to 13.5% in 2016. Also, the CAP Pillar II funds rely primarily on a decentralized approach for implementation and thus the Bulgarian authorities have the responsibility to tailor the program according to national needs.

Another trend obtained from data is the rising shares of coupled payments in Pillar1 payments as seen from Figure 5. In 2013, 94.5% of total aid in Pillar 1 was in form of DPs while 5.5% was coupled payments. However, of the total aid of 705.3 thousand euros in Pillar 1 in 2016, 82.6% was paid as DPs while 122.7 thousand euros i.e. 17.4% was re-channelled as redistributive and other new payments, including voluntary coupled payments

Table 9. Distribution of CAP financial support, 2015/2016

	Payments 2015		Payments 2016	
	in Mio. EUR	Share (%)	in Mio. EUR	Share (%)
Pillar 1: Direct payments and market measures	1,189.51	88.1	1,260,20	78.8
Pillar 11 of rural development	18.57	1.4	216,49	13.5
Total support of the CAP	1,208.08		1,476,69	
Transitional National Payments	142.46	10.5	122.11	7.6
Total agricultural support	1,350.54		1,598.80	

Source: MARD; Agricultural Report 2016 and 2017

(VCS) and other state supported coupled payments (TNPs). Elements of coupled payments, even when they are successful as income support instruments, unevenly benefit different farm types and are thus detrimental to technical efficiency of farms (Minviel and Latruffe, 2017) and therefore influence the level of specialisation on farms (Kazukauskas et. al 2014). In Bulgaria, during transition land right was mostly provisional due to the long-drawn process for restoration within historical borders and this translated into a low own to leased land ratio, thereby driving up land rentals. An underdeveloped land market meant that land consolidation had very high transaction costs. Naturally the CAP payment was appropriated mainly by the landowners. The result has been distortion of the production structure of the farms. On one hand, the DPs have created land market distortions and rent-seeking activities.

On the other hand, the increasing trend in production payments directed towards certain crops created opportunities for extensive cropping patterns mostly in the form of emergence of very largescale oilseed and grain producers. These largescale producers have been replacing the high value-added traditional crops, fruits, vegetables, livestock farming and milk production culture of Bulgaria. For many of these farms, the CAP support cover only 4% to 5% of their costs (Beluhova-Uzunova et al., 2018) including costs for conforming to the high EU quality restrictions. Thus, farm organisations are

increasingly being dominated by agri-firms or large specialised enterprises (either in the form of newly pooled in cooperatives or joint ventures) characterised by highly mechanised and less employment intensive farming practises. Consequently, land-grabbing has become rampant, and focus has shifted away from concentrating on additional environmental issues (apart from maintaining the GAEC conditions). This has aggravated Bulgaria's environmental distress. Agri-environmental schemes (7.7%) and support for organic farming (5.2%) constituted one of the lowest budgetary shares among the EU countries in Bulgaria's 2014-2020 MFF Rural Development Programme (RDP). Interestingly, in contrast to this, the payments for Natura 2000 sites (4.8%) have the highest share within the EU (Trapp and Lakner, 2018).

A similar analysis to the one carried out in case of Poland is also undertaken in case of Bulgaria to assess farm organisational changes due to CAP instruments. In 2016, 91.6% of total holdings constituted of the sole-holders among whom 85.3% operated <20 ha and 66.9% operated <2 ha. Table 10 captures the evolution of the farm structures from 2005 to 2016. Percentage fall in holdings has been greater than percentage fall in UAA in <5 ha while percentage increase in holdings has been lesser than percentage increase in UAA in >100 ha farm size categories. Also, average size of holdings has increased in all farm sizes and large holdings (>100 ha) continue to report very high average sizes (602 ha).

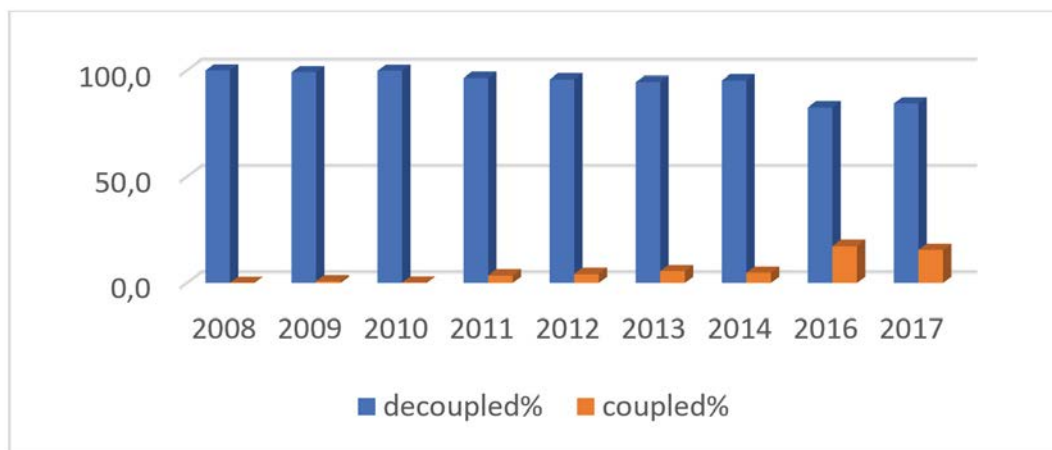


Figure 5. Distribution of Direct payments, 2006-2017

Source: own calculation based on Eurostat data

Table 10. Average size of holdings and change in holdings and UAA, by size

Change in holdings 2005 -2016 (%)		Change in UAA 2005 -2016 (%)		Year	Average size of holdings (hectares)			
<5	>100	<5	>100		<5	20-<50	50-<100	>100
				2005	0.72	29.5	67	538.5
				2007	0.67	29.9	70.8	558.8
-70	58.6	-63.5	77.4	2010	0.72	31	68.8	671.7
				2013	0.87	31.2	68.8	631.6
				2016	0.87	31.7	68.5	602.1

Source: own calculation from Eurostat (online data code:ef_kvftaa; ef_kvage)

Data in table 11 provides evidence towards intensified polarisation of farm wherein two distinct legal forms of holdings have emerged – the small farms and the big business farms. 74.6% of holdings farmed 2% of the available UAA in the < 5 ha while 4.8% holdings farmed 87.3% of UAA in the > 50 ha showing this distinct polarisation trend. This 4.8% of large farm holdings are mainly sole holders (as obtained from Eurostat data), dominating agricultural activity and operating in partnership formats such as joint-companies and large cooperatives. These structures are mostly vertically integrated, diversifying into multiple activities that are allied to agriculture such as trade, agro-tourism and processing (Bachev, 2017).

Also, as in case of Poland, data reveals that in both periods subsistence by economic size has also been decreasing with larger decrease in number of sole holders in the less than 2.000,00 € SO category than decrease in SO share. These farm entities, however do not include the unregistered farms whose subsistence nature remains a subject for policy deliberations.

Farm competitiveness

Studies by Kopeva et.al (2012) over 2005 to 2007 using SFA measures showed very high technical efficiency for cereal, horticulture, and wine farms in Bulgaria, but mainly owing to intrinsic growth factors such as managerial or organizational improvements than due to

Table 11. Percentage distribution of holdings and UAA by farm size (2005-2016)

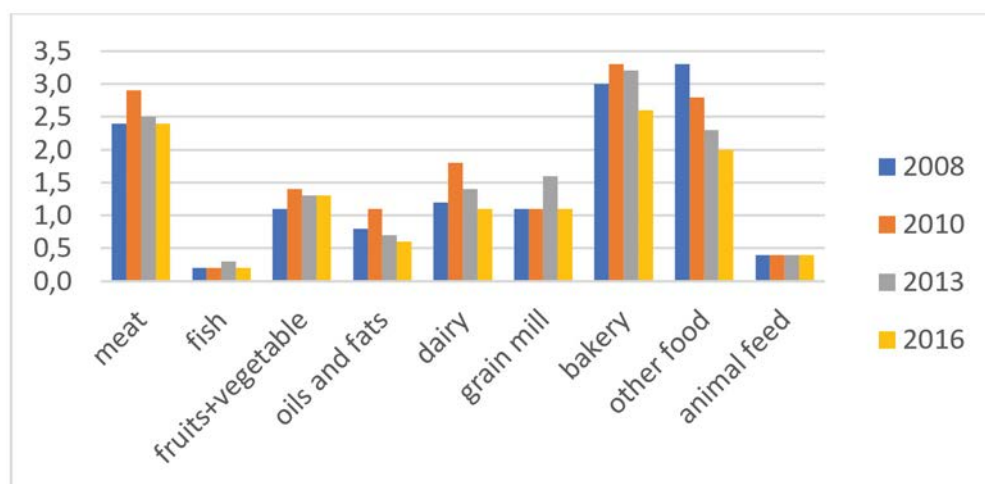
Distribution of Holdings by farm size (%)			Distribution of UAA by farm size (%)		
Year	<5 ha	>50 ha	Year	<5 ha	>50 ha
2005	93.0	1	2005	13.1	79.1
2007	92.6	1.3	2007	10.1	81.9
2010	87.8	2.3	2010	5.2	86.9
2013	83.1	3.6	2013	4.0	88.1
2016	74.6	4.8	2016	3.0	87.3

Source: own calculation from Eurostat (online data code: ef_kvage)

any technological up gradation. Factor accumulation and factor reallocation across sectors have played minimal role in this growth story. At the operational level, studies by Kaneva (2016) for the period 2005-2013 reveal technical efficiency highest for companies followed by cooperatives. However overall economic efficiency was less due to SAP payments, increasing land rentals, and the transaction costs of structural changes (small farms discontinuing production and larger farms expanding and intensifying their scale of production due to CAP) and not because of technical change or productivity increase. Another study by Bachev (2017) find that main indicators such as profitability, net income, and competitiveness of majority of farms in Bulgaria may not have been improving and if at all, were mainly caused by reduction in the number of the small agricultural holdings.

Agro-industry restructuring

At the two-digit level sub-sectors the food sector has been the highest contributing agro-based manufacturing sector, followed by beverages. However, all the sub-sectors have recorded falling shares in total value added, especially in 2016 while the share in turnover in food sub-sector has been rising. This points to rising input prices in production, specially of imported intermediate inputs. Keeping in cognisance the high share of food sector in manufacturing value-added, turnover as well as in employment, a three-digit disaggregation of food sector is considered for a more detailed analysis as shown in Figure 6. Significant increases in shares in food industry value added have been reported in fruit and vegetable processing and preservation, fish, crustacean

**Figure 6.** Comparison of shares of food industry sub-sectors (3-digit classification) in total manufacturing value-added, 2008 -2016

Source: own calculation with Eurostat data (online code sbs_na_ind_r2)

and molluscs processing and preservation, grain mill and starches. Decline in value added shares have been reported in vegetable and animal oils and fats and in other food.

In terms of the size and contribution composition, the 2016 data in Table 12 reveals that except leather, around 70% to 80% of the number of firms are micro-enterprises (upto 9 persons employed) but with contribution to turnover of zero to 18% only, while the medium (50-249) and large firms (> 250) representing around only 5% to 7% of number of firms contribute greater than 75% in food, beverage, and tobacco and 85%, 56% and 50% respectively in textile, leather, and woods. Thus, although compared to 2008 the micro-enterprises have increased in numbers, the contribution to turnover remains the same. In-fact since 2008 the contribution share of the textile sub-sector has fallen in spite of an increase in the number of micro-firms while although tobacco sector data for 2016 on firm numbers are not available, the entire tobacco turnover is contributed by the large firms. The study therefore reveals very strong monopolistic nature of the agro-business sector.

Agricultural trade and competitiveness

Free trade within the EU has resulted in serious ramifications in the Bulgarian farming culture. In terms of values, Bulgaria showed a continuously increasing trade deficit with the EU-27, since 2006. Analysing the trade values region-wise, data reveals that export growth of agri-commodities have been quite robust with respect to the EU-15 over the period 2000-2017, although recent increases in import growth have also been considerable. However, with the other nine new member states (NMS-9) as trade partners, Bulgaria had a trade deficit since 2000 (except in years 2001, 2002, 2003, 2009 and 2010), and this deficit has seen a sharp rise since 2011. The spikes in imports from 2008 with both EU-15 and NMS-9 as partners can be broadly considered to be an effect of the burgeoning domestic demand in an integrated market as the country opened up post integration. Trade competitiveness data reporting mean values and shares

of RXA, RMA and RTA of 21 products are provided in Table 13. Bulgaria has been experiencing overall trade disadvantage before integration with mean RTA being negative till 2008, but growing trade advantage is observable with mean RTA not only yielding positive scores but increasing substantially, post-integration. Share of commodities with trade advantage ($RTA > 0$) has also increased. Export competitiveness ($RXA > 1$) as well as import penetration ($RMA > 1$) both have been declining over the years. A detailed product wise analysis for all the 17 years in terms of both RXA and RMA for Bulgaria reveals that the country has experienced a loss in competitiveness in tobacco; retained in fish, vegetables and fruits, animal feeds, hides/skin, oil seeds, cork and wood; gained competitiveness in cereals, sugar preparations, animal plus vegetable oils and fats.

A three phase LF Index calculation covering 2000-2006, 2007-2013 and 2014-2017 in Table 14 reveals comparative advantage and specialisation of Bulgaria (given by $LF > 0$) in ten, seven and again seven agricultural product groups respectively. Export shares of specialised products have fallen from 65% to 55%, however these $LF > 0$ commodities comprise the highest shares in exports to EU-15 as well. When the commodity groups are categorised as 'Processed', 'Medium-processed' or 'Primary products' based on the level of processing skills required for export and imports, data reveals that Bulgaria has lost substantial competitiveness in the processed commodities whose share in exports fell from 21% in 2000-2006 to 3% in the 2014-2017 phase, with specialisation obtained only from sugar and sugar preparations (SITC 06). On the other hand, medium-processing capabilities seem to have been established, with export shares of hides and skins, oil seeds and oleaginous fruit, fixed vegetable oils and fats increasing considerably since the second phase. Data shows a decline of 10% in export share with comparative advantage and specialisation in high-value added processing sector have reduced in post-integration period. Also, the RXA and LF ranking have very low correlation.

Table 12. Number and turnover of agro-enterprises, by employment size (2008, 2016)

Employment Size	Number						Employment Size	Turnover					
	FOOD		BEVERAGE		TOBACCO			FOOD		BEVERAGE		TOBACCO	
	Year	Year	Year	Year	Year	Year		Year	Year	Year	Year	Year	
	2008	2016	2008	2016	2008	2016		2008	2016	2008	2016	2008	2016
0-9	65	73	72	83	23	-	0-9	4	5	1	1	0	0
10-19	14	11	9	7	10	-	10-19	5	5	1	2	0	0
20-49	12	9	9	6	30	-	20-49	14	14	5	8	2	-
50-249	8	6	7	4	20	-	50-249	52	47	20	17	7	18
> 250	1	<1	2	1	17	-	> 250	25	28	73	72	91	82
Employment Size	TEXTILE		LEATHER		WOOD		Employment Size	TEXTILE		LEATHER		WOOD	
	Year	Year	Year	Year	Year	Year		Year	Year	Year	Year	Year	
	2008	2016	2008	2016	2008	2016		2008	2016	2008	2016	2008	2016
0-9	70	77	46	56	76	77	0-9	10	4	10	11	13	18
10-19	11	8	18	14	12	12	10-19	2	3	11	7	13	13
20-49	10	7	17	17	9	8	20-49	7	8	13	27	23	20
50-249	7	7	17	12	2	2	50-249	21	30	52	44	20	20
> 250	2	1	2	1	<1	<1	> 250	59	55	15	12	31	30

Source: own calculation based on Eurostat data (online sbs_sc_ind_r2)

Table 13. Trade Competitive Indexes (RXA, RMA, RTA) for Bulgaria

Year	RXA		RMA		RTA	
	MEAN	Share of RXA >1	MEAN	Share of RMA >1	MEAN	Share of RTA >0
2000	0.98	0.33	1.75	0.48	-0.78	0.41
2001	1.69	0.29	1.9	0.52	-0.22	0.33
2002	1.68	0.33	1.95	0.43	-0.28	0.38
2003	2.21	0.33	1.93	0.48	0.28	0.43
2004	1.5	0.33	2.19	0.38	-0.69	0.38
2005	1.8	0.33	2.16	0.57	-0.36	0.33
2006	1.6	0.33	1.83	0.57	-0.23	0.33
2007	0.92	0.29	1.68	0.57	-0.76	0.29
2008	1.47	0.33	1.48	0.52	-0.01	0.43
2009	2.61	0.24	1.38	0.52	1.23	0.43
2010	2.28	0.24	1.3	0.48	0.98	0.38
2011	2.66	0.24	0.76	0.33	1.9	0.48
2012	2.13	0.24	0.76	0.33	1.37	0.38
2013	2.55	0.24	0.73	0.29	1.82	0.48
2014	2.44	0.33	0.76	0.29	1.68	0.52
2015	2.27	0.33	0.83	0.33	1.44	0.48
2016	2.28	0.24	0.94	0.33	1.34	0.48
2017	1.95	0.19	1.05	0.38	0.90	0.52

Source: Own calculations based on WITS, Comtrade data. RXA – Relative export advantage, RMA – Relative import penetration advantage, and RTA – Relative trade advantage

Table 14. Specialisation (LF>0) and export shares, by degree of processing of agri-commodities

Years	EU-15 export share (%) in LF>0 products	Processed commodities (LF>0) and share (%) of exports	Medium-processed commodities and share (%) of exports	Primary commodities and share (%) of exports
2000-2006	65	SITC 01,12 21	SITC 22 8	SITC 04,05, 23,24 36
2007-2013	54	SITC 12 6	SITC 21, 22, 42 20	SITC 04,08,24 28
2014-2017	55	SITC 06 3	SITC 21, 22, 42 22	SITC 04, 08,24 30

Source: Own calculations based on WITS, Comtrade data

CONCLUSION

Over the integration years, various studies reveal farm productivity and profitability gap of both the members with EU-average farm data. This study confirms that farm organisation and CAP policy instruments are key factors affecting farm efficiency. Although Poland has a more equitable distribution of farm sizes, yet, resilience to changes in the farm organisational structure have been observed, mainly due to short run and persistent inefficiencies. For Bulgaria, definition of farm size has influenced the extreme polarisation of farms and average farm sizes are still far larger than the EU average. Consequently, convergence of CAP payments has not occurred either across member states or between farms within the member states (both for Poland and Bulgaria). Nevertheless, organisational changes are taking place. Family farms are redefining their roles. In Poland, large number of small farms continue to exist and receive CAP payments but archaic inefficient forms are giving way to niche products. On the other hand, large family farms both in Poland and Bulgaria, with accentuated concentration of land and other resources are rapidly expanding as agribusiness entities. Bulgarian farm restructuring study reveals that vertically integrated large farms have evolved through land grabbing, and practise large-scale heavily mechanised mono-cropping, posing stiff competition to the small family farms.

In the context of agri-business development, both the member states reveal increasing monopolisation of market shares of the various sub-sectors by the large sized agro-firms, mostly controlled by MNCs. However, number-wise, there has been proliferation of micro-enterprises mostly due to policy driven incentives. But the contributions of these micro-firms are inconsequential in terms of sale turnovers.

Trade competitiveness with the EU-15, in terms of export advantage and specialisation of agri-commodities has been decreasing considerably in Poland in comparison with Bulgaria. However, Poland has been able to capitalise on rising specialisation of processed commodities thus increasing its value added. Bulgarian trade has been

experiencing rising specialisation of medium processed agricultural commodities among its trade competitive commodities ($LF > 0$), with a very sharp drop in primary commodity specialisation.

Areas that need targeting for Agricultural Development-

- Under new Subsidiarity and responsibility sharing principle, setting of specific objectives and solutions will govern the direction of competitiveness of NMS farm and agro-industry.
- Small scale farm and agro-industry efficiency can be targeted through establishment of short vertical chains linking the two and through formation of producer groups.
- Priorities for the direction of investment should be in farm modernisation (e.g. introducing clean energy innovations).

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