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**Working Paper**

## Russian food and agricultural import ban: The impact on the domestic market for cattle, pork and poultry

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## **DISCUSSION PAPER**

# **Leibniz Institute of Agricultural Development in Transition Economies**

## **Russian Food and Agricultural Import Ban: The Impact on the Domestic Market for Cattle, Pork and Poultry**

**Oleksandr Perekhozhuk and Thomas Glauben**

**DISCUSSION PAPER NO. 170**

**2017**



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## ABSTRACT

This study analyses the impact of the Russian food and agricultural import ban on import of meat, the structural changes of trade pattern and reallocation of import flows of meat and meat products, and the price development in the import market and its impact on producers and consumers market for cattle, pork and poultry meat in the Russian Federation (RF). There is empirical evidence that the collapse of meat exports to Russia and, hence, the increase of meat prices happened even long before the import ban was introduced. The structure of Russian import market for meat has significantly changed. Brazil became the largest meat exporter in the Russian meat import market achieving market share in the total meat import of the RF almost 50% in 2015-2016. The structural changes of the Russian import market suggests that the beef and pork exporters are not price-takers on the one hand. On the other hand, they may be able to discriminate prices in the Russian import markets.

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JEL: Q11, Q17, L11, L13

Keywords: Import ban, meat export, market structure, pricing, Russia.

## ZUSAMMENFASSUNG

RUSSISCHES AGRAR- UND LEBENSMITTELIMPORTVERBOT: AUSWIRKUNGEN AUF DEN HEIMISCHEN MARKT FÜR RIND-, SCHWEINE- UND GEFLÜGELFLEISCH

Diese Studie analysiert den Einfluss der russischen Einfuhrverbote von Lebensmitteln auf den Import von Fleisch, die Veränderung von Handelsstrukturen und die Umverteilung von Handelsströmen im Hinblick auf Fleisch und Fleischprodukte. Außerdem wird die Preisentwicklung auf dem Importmarkt und der sich ergebende Einfluss auf Produzenten und Konsumenten auf dem Markt hinsichtlich Rind-, Schwein- und Geflügelfleisch in Russland untersucht. Es gibt empirische Evidenz dafür, dass der Zusammenbruch der Fleischimporte nach Russland und damit der Anstieg der Preise für Fleisch- und Fleischwaren schon lange vor der Einführung des Einfuhrverbots geschah. Die Struktur des russischen Importmarktes für Fleisch hat sich erheblich verändert. Brasilien ist der größte Fleischexporteur auf dem russischen Fleischimportmarkt und erreichte zwischen 2015 und 2016 einen Marktanteil von fast 50% am gesamten Fleischimport Russlands. Die strukturellen Veränderungen des russischen Importmarktes legen nahe, dass die Rindfleisch- und Schweinefleisch-Exporteure einerseits keine Preisnehmer sind. Auf der anderen Seite sind sie offenbar in der Lage, Preise auf den russischen Importmärkten zu diskriminieren.

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JEL: Q11, Q17, L11, L13

Schlüsselwörter: Importverbot, Fleischexport, Marktstruktur, Preisbildung, Russland.

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## 1 Introduction

On 5 July 2017, the Prime Minister of the Russian Federation (RF) Dmitry Medvedev has signed the Resolution of the Government of the RF (RF) of 4 July 2017, No. 790 on an extension of the embargo on select agricultural products, raw materials and foodstuffs imports originating from Australia, Albania, Canada, the Kingdom of Norway, Liechtenstein, Iceland, the United States of America, the European Union and Ukraine until 31 December 2018. The food embargo was initially introduced by the Resolution of the Government of the RF of 6 August 2014, No. 778 to the five economies: Australia, Canada, the Kingdom of Norway, the European Union and the United States of America. It should also be noted that during the three years since the introduction of this resolution, twelve improvements have been made. Four improvements were implemented in 2014: August 20, June 25, August 13 and September 16 2014, five in 2015: December 21, March 1, May 27, June 30 and 10 September 2015, two in 2016: October 22 and May 20, 2016, and one in 2017: July 4, 2017. Moreover, a year after the imposition of the food embargo, the Government of the RF expanded the list of embargoed countries including Ukraine, the Republic of Albania, Montenegro, the Republic of Iceland and the Principality of Liechtenstein (see Resolution of the Government of the RF of 13 August 2015, No. 842).

According to the resolution of 6 August 2014, the forbidden list comprised fourteen-eight forbidden groups of goods belonging to the four digit HS Code of the Commodity Nomenclature of Foreign Economic Activity of the Customs union (CNFEA of the CU). At the two-digit level, these goods are related to these eight groups: "Meat and edible meat offal" (HS Code 02), "Fish and crustaceans" (HS Code 03), "Dairy products" (HS Code 04), "Edible vegetables and certain roots and tubers" (HS Code 07), "Edible fruit and nuts; peel of citrus fruit or melons" (HS Code 08), "Preparations of meat and of fish" (HS Code 16), "Preparations of cereals, flour, starch or milk" (HS Code 19) and "Miscellaneous edible preparations" (HS Code 21). By the Resolution of the Government of the RF of 13 August 2015, No. 842 were excluded goods intended for baby food.

Banned from import were almost all commodities, which belong to the group of socially significant essential foodstuffs. The introduction of the ban on import of food commodities immediately caused the increase of consumer prices. In confirmation, the phrase "growth in prices" is mentioned in the three out of seven paragraphs in the Resolution of the Government of the RF, which was introduced as first. The next resolution envisaged a series of measures in order to "prevent the acceleration of growth in prices", "prevent price increases", and "restrain price increases".

The imposition of sanction on countries, which were the main meat suppliers to the RF, raised a number of questions. First, how successful is the reallocation of meat import flows? Second, which countries took over the positions on the market from the traditional meat exporters? Third, are there new exporting countries of cattle, pork and poultry meat? Fourth, given the price formation, how far is it managed to curb an increase in import and consumer prices of meat?

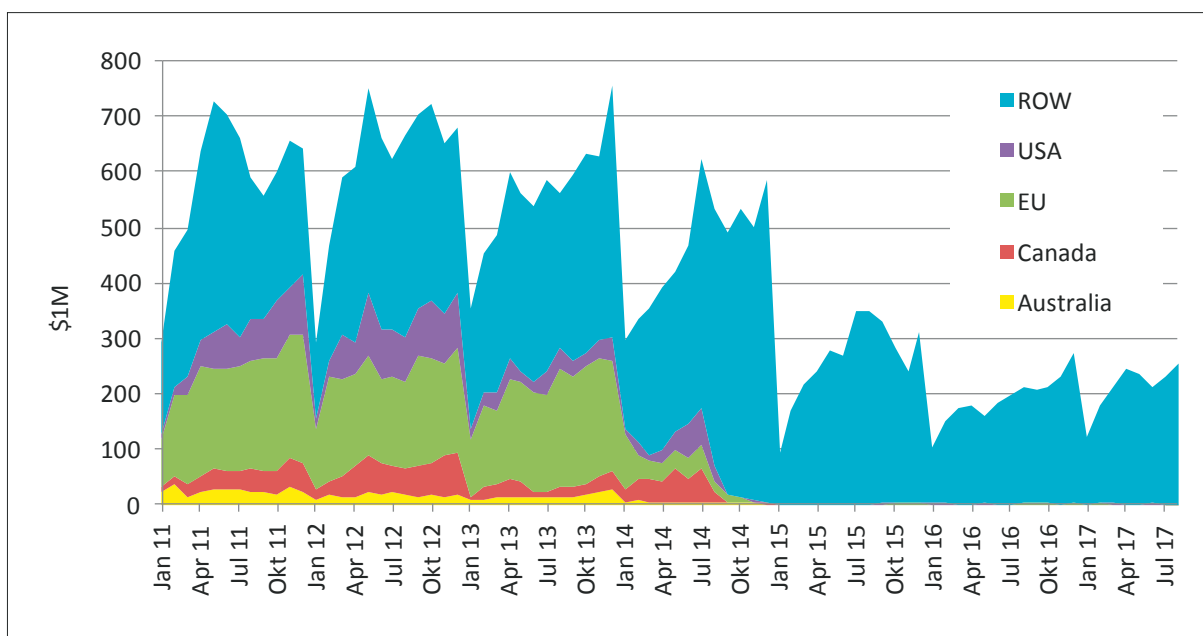
This study analyses the impact of the Russian food and agricultural import ban on import of meat, the structural changes of trade pattern and reallocation of import flows of meat and meat products, and the price development in the import market and its impact on domestic market of cattle, pork and poultry meat in the RF.



## 2 Impact of the import ban on the meat import into Russia

As resolution entered into force on 7 August 2014, at the beginning of September 2014 occurred the sharp collapse of the Russian imports of the commodity group 02 “Meat and edible meat offal” from any of the five banned economies: Australia, Canada, the Kingdom of Norway, the European Union (EU) and the United States of Amerika (US). However, the collapse of imports of cattle, pork and poultry meat from the EU countries started well before the resolution went into force. In confirmation, the monthly data of Russian customs foreign trade statistics show that the reduction of meat imports from the EU countries started in January 2014. At the same time, the initial increase in the imports of meat from Canada and the US started in January 2014. However, with the introduction of import ban, the imports from those countries was also sharply reduced (see Figure 1).

**Figure 1. Monthly meat import into Russia**



Note: ROW means rest of the world.

Source: Author's illustration based on the monthly foreign trade statistics at the 2-digit commodity level, provided by the FCS of Russia.

With the exception of Norway, Australia, Canada, the EU and the US were for many years the major exporters of cattle, pork and poultry meat to the RF. In 2011 and 2012, together they accounted for over 50% of the total imports of this commodity group in Russia (Table 1).

However, before the introduction of the food embargo, the import from these five countries decreased and already in 2013, their total share decreased to roughly 43% and accounted for nearly \$3 billion. With the import ban that came into force in August, by the end of 2014, their total share decreased to around 18% and brought together only \$1 billion. In the period from 2015 to 2016, and also in the past eight months of 2017 (January - August) Russian's meat imports from the embargoed countries fell to 1% and accounted for less than \$25 million.

**Table 1. Annual meat import into Russia**

	Australia		Canada		EU		US		ROW <sup>1)</sup>		Total
	\$1M	% <sup>2)</sup>	\$1M	%	\$1M	%	\$1M	%	\$1M	%	\$1M
2011	303.2	4.3	401.4	5.7	2,195.9	31.2	747.1	10.6	3,380.9	48.1	7,028.5
2012	191.4	2.6	630.7	8.5	2,028.4	27.4	933.1	12.6	3,628.5	49.0	7,412.1
2013	187.4	2.8	257.8	3.8	2,124.9	31.4	358.6	5.3	3,828.6	56.7	6,757.3
2014	50.3	0.9	338.3	6.1	363.4	6.6	257.3	4.7	4,518.5	81.7	5,527.8
2015	9.7	0.3	0.0	0.0	9.7	0.3	4.3	0.1	3,102.4	99.2	3,126.1
2016	8.0	0.4	0.0	0.0	12.7	0.6	4.2	0.2	2,266.9	98.9	2,291.9
2017 <sup>3)</sup>	6.4	0.2	0.0	0.0	15.8	0.6	2.9	0.1	2,598.8	99.0	2,623.9

Notes: <sup>1)</sup> ROW means rest of the world; <sup>2)</sup> Share in the total meat import of the RF (HS Code 02); <sup>3)</sup> For the first five months from January to August 2017.

Source: Author's calculations based on the monthly foreign trade statistics at the 2-digit commodity level, provided by the FCS of the RF.

It is important to note, that the US was the largest exporter of meat and meat products in Russia during 2011-2013. The US share of meat imports in Russia constituted 27% in 2012 and 31% in 2013. With the beginning of 2015, sanctioned countries exported insignificant amount of certain types of meat and edible meat offal. During January-December 2016, Russia imported meat products from Australia amounting to \$8 million, which is just a 0.4% from the total meat imports. Imports from the EU countries and the US decreased sharply to \$12.7 million and \$4.2 million equalling to less than 0.6% and 0.2% of the total Russian meat imports, respectively. In the period from January 2015 to August 2017, Russia completely stopped imports of meat and edible meat offal from Canada. At the same time, the total imports of meat and meat products decreased from \$7.0 billion in 2011 to \$2.3 billion in 2016. However, in the first eight months of 2017 the total import grew by 0.1% and amounted to \$2.6 billion.

### 3 Structural changes in the import market for meat products

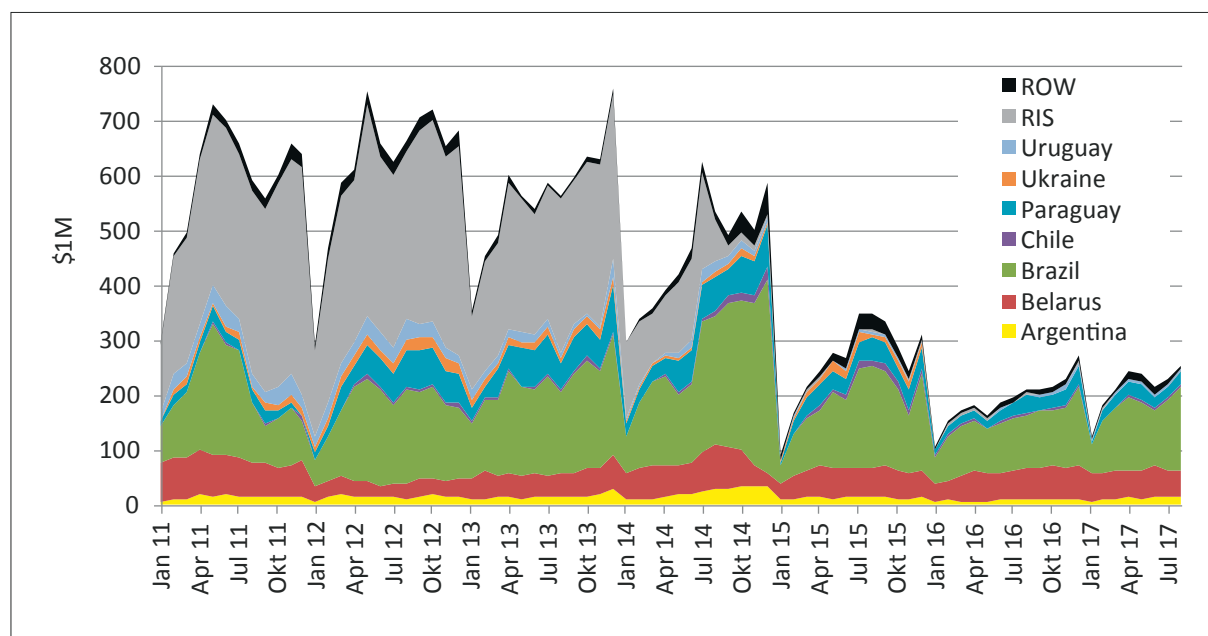
Figure 2 below visualises that for many years, until introduction of the import ban, besides Australia, Canada, the US and the EU, Argentina, Belarus, Brazil, Paraguay, Ukraine and Uruguay were among the ten largest exporting countries of meat into the RF.

Since the implementation of the food import ban, the structure of Russian import market for meat changed significantly. Brazil became the largest meat exporter in the Russian meat import market achieving market share in the total meat import values of the RF almost 50% in 2015-2016 and increased to 52% in the first eight month of 2017. In 2016 Brazil was 23% larger as a player than its next closest competitor, Belarus. Brazil and Belarus compete with other two, much smaller competitors, Argentina and Paraguay, whose share of the market was about 11% and 5%, respectively. In 2016, the share of the four largest countries, Argentina, Belarus, Brazil and Paraguay accounted together for about 92% and during January - May 2017 increased to 95%.

It is obvious that with the imposed import ban fundamentally changed the market structure. The number of countries exporting meat to the RF was sharply reduced. In 2011-2013 there were an average of 38 exporting countries per year, while in 2015-2016, as well as for the first eight months of 2017, only 7 countries, three of which have a market share of less than 1%. The im-

position of the import ban led to higher market concentration, which consolidated the market power of the major supplier, Brazil.

**Figure 2. Monthly import values of meat by major suppliers**



Note: RIS include aggregated data from banned countries by the Russian import sanction (Albania, Australia, Canada, Iceland, Liechtenstein, Montenegro, Norway, the US and the EU) excepting Ukraine.

Source: Author's illustration based on the monthly foreign trade statistics at the 2-digit commodity level provided by the FCS of the RF.

**Table 2. Annual import values of meat into Russia by major suppliers**

	2011		2012		2013		2014		2015		2016		2017 <sup>1)</sup>	
	\$1M	% <sup>2)</sup>	\$1M	%	\$1M	%	\$1M	%	\$1M	%	\$1M	%	\$1M	%
Argentina	159	2	173	2	191	3	264	5	156	5	108	5	140	5
Belarus	838	12	349	5	541	8	696	13	594	19	611	27	636	24
Brazil	1,532	22	1,670	23	1,952	29	2,418	44	1,532	49	1,135	50	1,358	52
Chile	18	0	66	1	60	1	102	2	87	3	33	1	46	2
Paraguay	198	3	570	8	653	10	603	11	385	12	262	11	270	10
Ukraine	126	2	228	3	162	2	71	1	130	4	0	0	0	0
Uruguay	314	4	316	4	175	3	136	2	39	1	28	1	42	2
RIS <sup>3)</sup>	3,648	52	3,784	51	2,929	43	1,009	18	24	1	25	1	25	1
ROW	195	3	257	3	95	1	229	4	180	6	88	4	106	4
Total	7,028	100	7,412	100	6,757	100	5,528	100	3,126	100	2,292	100	2,624	100

Notes: <sup>1)</sup> For the first five months from January to May 2015; <sup>2)</sup> Share in the total imports of the RF; <sup>3)</sup> RIS include aggregated data from banned countries by the Russian import sanction (Albania, Australia, Canada, Iceland, Liechtenstein, Montenegro, Norway, the US and the EU) except Ukraine.

Source: Author's calculations based on the monthly foreign trade statistics at the 2-digit commodity level provided by the FCS of the RF.

The statistical data on the meat imports illustrate significant changes in the import market, first of all, sharp decrease of the meat imports, a significant change in the market structure, the reduction in number of participants, and the sharp increase in concentration. All of this demonstrates the emergence of an artificial shortage of meat and decrease of competition in the market for meat and meat products which, in turn, inevitably promotes the increase in prices over the past three years. The above observations suggest price discrimination and market power in the Russian import market for meat products. Felt et al. (2011) point out that competition among exporters can be significantly affected by animal disease outbreaks and the resulting import restriction. The ban on meat exports from Australia, Canada, the EU and the US leads to imperfect competition making Brazil's residual demand even more inelastic. In view of this, the extent of potential market power by Brazil in the Russian meat market becomes an important issue. There are empirical studies that have examined the exporters' behaviour in the international meat markets and found empirical evidence of market power (Miljkovic et al. 2002; Miljkovic et al. 2003; Felt et al. 2010).

#### 4 Changes in the commodity structure of meat imports

Even before the introduction of the import ban, there appeared significant trends in changes of the commodity structure of meat imports in the RF. Additionally, with the beginning of 2015 these trends amplified sharply by a strong reduction of imports of all commodity groups. Comparing the data on the annual import values by commodity group, we can see a decrease in the import share of bovine meat, whose import was indicated in the two commodity groups: HS Code 0201 "Meat of bovine animals, fresh" and HS Code 0202 "Meat of bovine animals, frozen". To keep the commodity names concise, the description of the commodity groups is abbreviated,

**Table 3. Annual import value by commodity group of meat products**

4-digit HS code	2011		2012		2013		2014		2015		2016		2017 <sup>1)</sup>	
	\$1M	% <sup>2)</sup>	\$1M	%	\$1M	%	\$1M	%	\$1M	%	\$1M	%	\$1M	%
0201-Fresh beef meat	562	8	326	4	425	6	473	8	347	11	299	12	200	11
0202-Frozen beef meat	2,354	33	2,656	36	2,464	36	2,258	40	1,177	36	841	33	563	30
0203-Pork meat	2,323	33	2,458	33	2,137	31	1,504	27	962	30	669	27	575	30
0204-Lamb and mutton	47	1	52	1	57	1	63	1	20	1	17	1	12	1
0205-Horse beef	78	1	99	1	56	1	62	1	35	1	24	1	18	1
0206-Edible beef offal	444	6	468	6	372	5	286	5	214	7	184	7	147	8
0207-Poultry meat	789	11	888	12	913	13	867	15	444	14	435	17	347	18
0208-Other meat offal	7	0	17	0	19	0	38	1	9	0	12	0	7	0
0209-Pork fat	451	6	479	6	396	6	78	1	37	1	28	1	24	1
0210-Salted Meat	27	0	35	0	5	0	3	0	2	0	1	0	1	0
0200-Meat	7,080	100	7,478	100	6,844	100	5,633	100	3,246	100	2,511	100	1,894	100

Notes: <sup>1)</sup> For the first eight months from January to August 2017; <sup>2)</sup> Share in the total imports of meat and meat products to the RF calculated at the 4-digit HS code level.

Source: Author's calculations based on the monthly foreign trade statistics at the 4-digit commodity level provided by the FCS of the RF.

e.g. fresh beef meat (HS Code 0201) and frozen beef meat (HS Code 0202). Despite the reduction of import values, the total share of these two groups remained nearly unchanged accounting for about 45% of the total import value of meat (see Table 3).

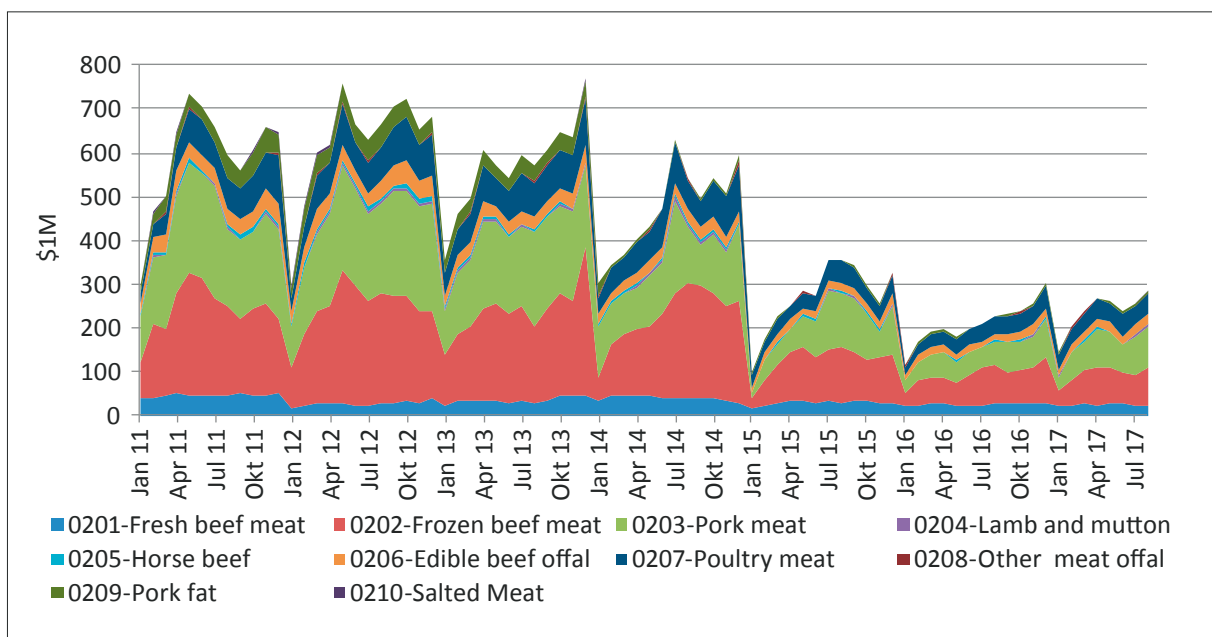
Between 2011 and 2016, import of fresh beef meat (HS Code 0201) was reduced by nearly two times from \$561.5 to \$298.6 million. However, the most imported commodity group in the RF was frozen beef meat (HS Code 0202) with import share of 33%. Nevertheless, at the same time, the import value of these commodity group decreased by nearly two times from \$2.4 billion to only \$841 million.

In the commodity structure of imports, pork and poultry meat occupy the second and third places. Comparing 2011 and 2016 shows that the import share of pork meat imports decreased by 5% from 33% to 27%. However, the import share of poultry meat increased by 6% (from 11% in 2011 to 17% in 2016). Import value of pork meat (HS Code 0203) was by more than triple (from \$2.3 billion to \$669.2 million). Import of poultry meat (HS Code 0207) was almost twice reduced (from \$788.7 million in 2011 to \$435.2 million in 2016). Nevertheless, the import values of the commodity group "0206-Edible beef offal" was reduced by more than two times, its share slightly increased and accounted for nearly 7% in 2016.

Although the import values of the other four commodity groups including lamb and mutton meat (HS Code 0204), horse beef (HS Code 0205), other meat products (HS Code 0208), and salted meat (HS Code 0210) are significantly reduced, the share of these five commodity groups was and remains marginal, accounting only for less than 1%. Between 2011 and 2016, import of pig fat (HS Code 0209) reduced by more the fifteen times from \$451.1 million to \$28.4 million.

Figure 3 demonstrates the monthly trend of import values from January 2011 to August 2017. The value of imported meat and meat products already slightly decreased in 2014 compared

**Figure 3. Import value by commodity groups of meat**



Source: Author's illustration based on the monthly foreign trade statistics at the 4-digit commodity level provided by the FCS of the RF.

to the previous three years. At the same time, there is a significant reduction of import value in the past three years from 2015 to 2017.

There are other important factors to be considered. The value of the imported commodities in the context of the food import ban is determined by sharp volatility in the forex market. Taking into account the fact that since the introduction of the import ban the exchange rate target was abandoned in August-November 2014, the rouble has depreciated sharply against the US dollar (see Figure 4).

**Figure 4. Exchange rate of the Russian rouble to the US dollar**

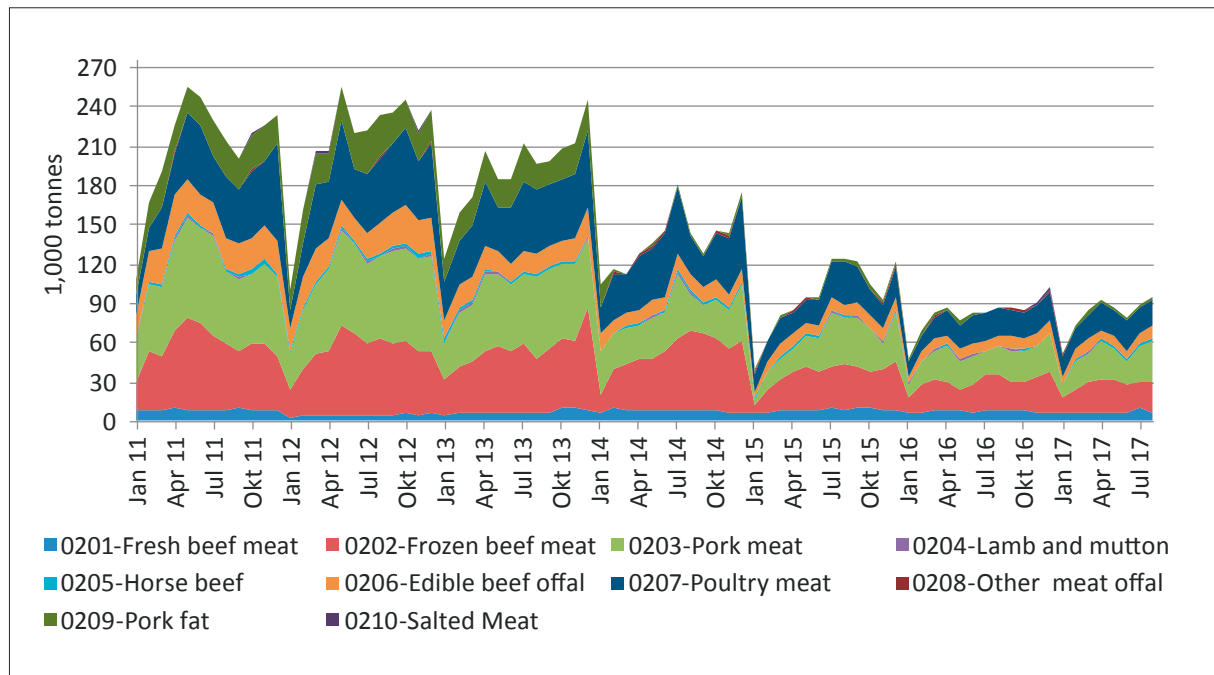


Source: Author's illustration based on the daily nominal exchange rate provided by the Central Bank of the RF.

Despite temporary appreciation in February-May 2015 and September-October 2015, overall, the rouble lost more than double of its pre-import ban value. At the beginning of January 2016, one US dollar temporarily cost more than 80 rouble; in the beginning of August 2014 it had been just over 33 rouble. Generally, Figure 4 shows less variability in nominal exchange rates between January 2011 and August 2014.

The substantial nominal depreciation affected values of imported meat products. A rich body of empirical studies focused on analysis of effects of exchange rate volatility on international trade. However, the results of these empirical studies vary and are often controversial. Using a meta-analysis of previous results from the 64 empirical studies, Coric and Pugh (2010) summarized that most empirical studies obtained evidence of a negative effect of exchange rate volatility on trade. However, 25 empirical studies do not confirm these findings. Only 6 studies associate exchange rate volatility with improvements of trade (Vieira and MacDonald, 2016).

To clarify the impact of import ban on imports the imported meats presented in physical units as imported volumes. Figure 5 more clearly demonstrates the sharp reduction of meat imports even before the ban was introduced. On the one hand, the imposed ban on imports by Government of the RF has led to a further reduction in both volumes and values of imports of meat products. On the other hand, the import ban evidently reduce a competition between the meat exporting countries in the Russian import market.

**Figure 5. Import volumes by commodity groups of meat**

Source: Author's illustration based on the monthly foreign trade statistics at the 4-digit commodity level provided by the FCS of the RF.

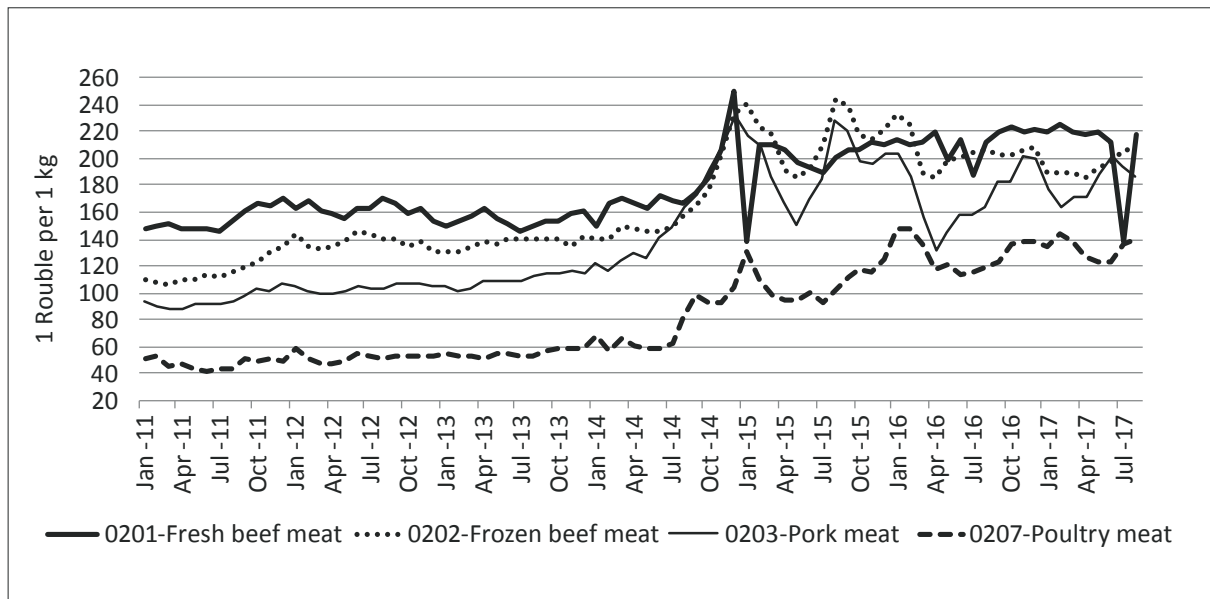
Moreover, this led to a decreasing in domestic competition between meat producers and importers. The decrease in the competition caused, in turn, an increase in prices of the imported meat production, as well as consumer prices of meat and meat products. Thus, created all economic conditions for importers and producers to increase their prices for meat and meat producers.

## 5 Import market for meat commodities

The development of monthly average prices for imported meat commodities almost completely reflects the situation with import values and volumes discussed above. Import price in Russian rouble rose dramatically from the beginning of 2014 and continues to rise today. Compared the price development over the period from August to December 2014 reveals that import prices increased by nearly 50% from 167 RUB to 249 RUB per 1 kg and from 157 RUB to 232 RUB per 1 kg for fresh and frozen beef meat (HS Code 0201 and 0202), respectively. The import price for pork meat (HS Code 0203) increased by more than 40% from 164 RUB to 231 RUB per 1 kg. Average prices of imported poultry meat (0207) increased by almost 30% from 81 RUB to 104 RUB per 1 kg (see Figure 6).

When looked at in the price volatility there is little to no evidence suggesting volatility in the Russian meat commodity prices before the import ban. However, the price volatility in the import market sharply increased and remains very high after August 2014 with the introduction of import ban. It is well established that the price volatility is strongly related to the exchange rate volatility. As discussed above the exchange rate of the Russian rouble versus the US dollars shows much increased variability (volatility) between September 2014 and April 2016. However, comparing the development of import prices expressed in the US dollar, there is evidence that the import prices increased temporarily in August 2014 and some continue to rise today, e.g. price for imported poultry meat. The volatility of import price expressed in the US dollar is very high.



**Figure 6. Import prices of meat commodities**

Source: Author's illustration based on the monthly foreign trade statistics at the 4-digit commodity level provided by the FCS of the RF and the daily nominal exchange rate provided by the Central Bank of the RF.

The question is - what were the economic reasons for that? As far as we know, the Federal Antimonopoly Service (FAS Russia) did not conduct any special investigations on the increase in prices of the imported meat and meat products regarding importers involved in the import of meat. If such investigations were conducted, the FAS of Russia would not reveal any violations. In their justification, importers would point out many reasons that influenced the increase in prices of the imported meat products. A large number of potential explanations and other reasons are available. Some of those are set out below:

- Depreciation of the Russian rouble, which increased the prices of imported meat and meat products;
- Reduction in the supply of meat and meat products caused by the introduction of the import ban.
- Increased demand and decreased supply;
- Increased product quality, production and transport cost;
- Low inventory levels;

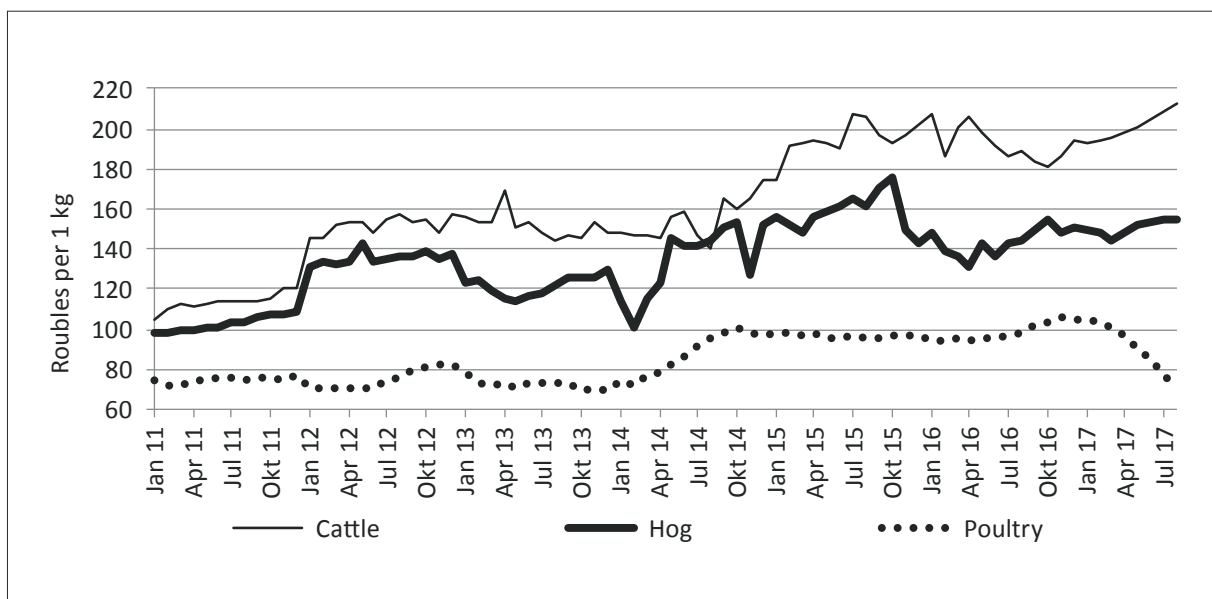
There are other reasons that can explain the observed increase in the import prices. It may be explained also by a structural change and increased market concentration in the import market. The drawback is that the number of competitors in the Russian import market is sharply decreased. While from 2011 to 2014, the RF imported meat from an average of 38 countries, over the last three years – mostly only from four countries, Brazil, Belarus, Paraguay and Argentina. Hence, the concentration in the import market of meat sharply increased. In 2016, Brazil alone accounted for 50% of the market share, followed by Belarus – 27%, Paraguay – 11% and Argentina – 5%. Only four origin countries account for 93% of the market, which indicates a rather high concentration of the Russian import market. High market concentration and low competitiveness are the main reasons for the increase in the prices of imported meat products.



## 6 Agricultural market for cattle, hog and poultry

Comparing the dynamics of agricultural producer price of cattle, hog and poultry from January 2011 to August 2017 there is a trend in price growth for all chosen agricultural products (see Figure 7). It is quite possible to distinguish three phases of price growth. The first phase in January 2012, the second in September 2014, and the third in September 2016. The strongest growth occurred between February and May 2014, much sooner than the imposed import ban. The monthly average price for cattle (slaughter weight) increased by 43% (from 145 in August 2014 to 207 RUB per 1 kg in August 2015). Producer prices of hog meat (slaughter weight) increased by 207% (from 100 in February 2014 to 176 RUB per 1 kg), prices of poultry meat by 37% (from 73 in February 2014 to 100 in October 2014 RUB per 1 kg).

**Figure 7. Producer prices for agricultural products**



Source: Author's illustration based on the monthly average producer prices for agricultural products provided by the FCS of the RF.

Here the question arises: what caused the increase in prices of agricultural production? Based on the results of an investigation of the Federal Antimonopoly Service (FAS Russia) regarding the increase in wholesale and retail prices on the poultry meat market, the service did not reveal any facts of violation of the Federal Law "On Protection of Competition". Producers suggests six major factors that influenced the increase in prices in the poultry meat market:

1. reduction in supply as a result of an introduction of the import ban;
2. increase in interest rates on the investment loans;
3. reduction of subsidies;
4. increase in prices for grain and mixed fodder;
5. seasonal reduction in agricultural production;
6. decrease in the exchange rate of the rouble, which led to an increase in costs of imported inputs.

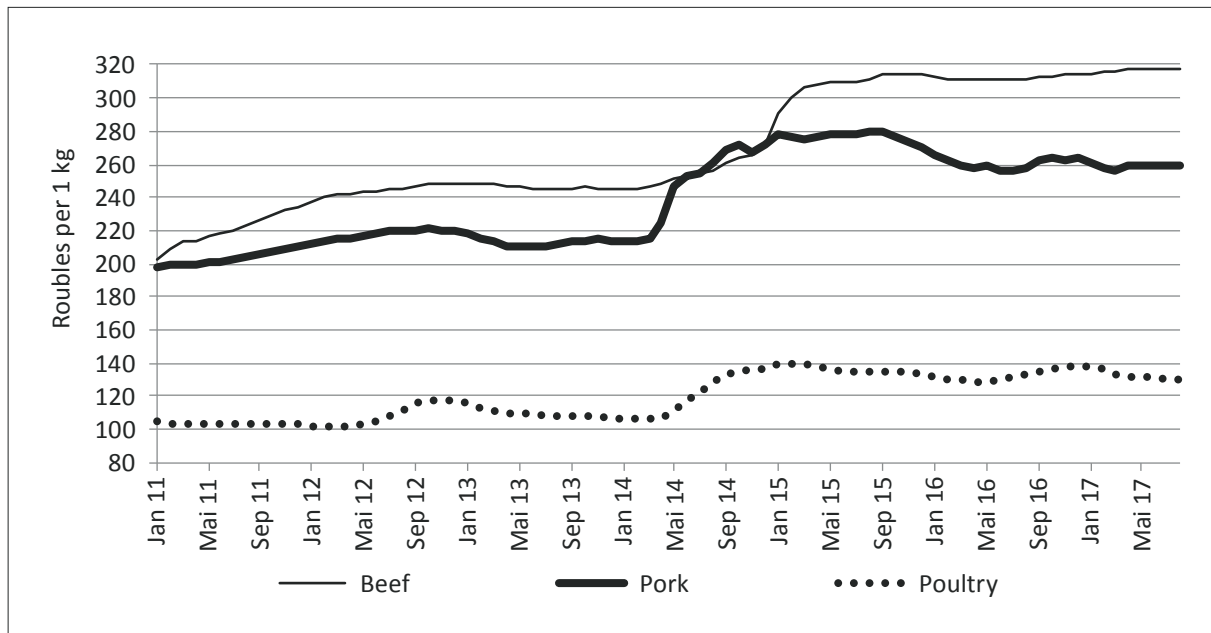
There are certain tensions regarding the factors indicated by producers, for example, regarding the first factor. As noted, the increase in producer prices of meat was long observed before the introduction of the import ban. The same applies to the factor number six. The decrease in the exchange rate of the rouble began only in early November 2014, namely - on November 3, the exchange rate was 45.8 roubles per US dollar. A week earlier, the rate was 42.5 roubles per US dollar.

Comparing the price increase of agricultural producers with imported meat and meat products over the same period must be noted a significantly greater price increase of the imported products rather than produced. The sharp increase in prices for the imported products is associated not only with the low competitiveness between meat-exporting countries but also with a sharp decrease in the exchange rate of the rouble. In addition, with the fall of sales volume, the prices of products tend to rise.

## 7 Consumer market for meat and meat products

The similar trend is observed in the Russian consumer market while comparing the dynamics of consumer prices over the investigation period. The consumer prices for beef, pork and poultry meats began to increase for several months before the import was introduced. However, the sharp jump in consumer prices occurred with the introduction of an import ban in August 2014 (see Figure 8).

**Figure 8. Consumer prices for meat and meat products**



Source: Author's illustration based on the monthly average consumer prices provided by the FCS of the RF.

The average monthly prices of beef (except boneless meat) increased by 29% (70 RUB per 1 kg) from 245 RUB per 1 kg in January 2014 to 315 RUB per 1 kg in November 2015. As shown in Figure 8, beef prices continue to rise achieving 318 RUB per 1 kg in August 2017. The consumer price of pork rose by nearly 31% (by 66 RUB per 1 kg) from 214 RUB per 1 kg in January 2014 to 280 RUB per 1 kg in September 2015. However, unlike the pork price decreased from Oc-

tober 2015 to July 2016, while over the last month of 2017 these prices remained more or less unchanged. After the introduced import ban, the consumer prices of chilled and frozen poultry showed the same trend as the pork prices. The average monthly prices of chilled and frozen poultry increased by 31% (by 34 RUB per 1 kg) from 107 RUB per 1 kg in January 2014 to 140 RUB per 1 kg in January 2015. However, in contrast to the consumer prices of beef and pork, the consumer price of poultry continued to decrease since January 2017 till today.

## 8 Summary and conclusions

Analysing the dynamics of meat imports, the changes of market and commodity structure in the import market and the development of prices within each individual meat supply chain including import, producer and consumer markets the following conclusions were obtained.

First, the collapse of meat imports from the EU countries started well before the resolution on import ban was introduced by the Government of the RF. The reduction of meat imports from the EU countries started in January 2014. At the same time, the imports of meat from Canada and US were initially increased. However, with the introduction of import ban, the imports from those countries were sharply reduced.

Second, the meat prices in import, producer and consumer markets increased long before the introduction of import ban. The increase in prices on all the markets began in April 2014. During this period, the world's leading countries imposed international sanctions against the RF.

Third, different price developments and trends were observed within each individual meat supply chain before and after import ban. In the beef and pork supply chains the import prices of beef and pork were close to the domestic producer price of beef cattle before import ban was introduced. While in the poultry supply chain the import price of poultry were much lower than the domestic producer prices of poultry. With introduction of the import ban, the import price of cattle, pork and poultry sharply increased and are much higher than the domestic producer prices on the one hand. On the other hand, price volatility increased dramatically.

Fourth, cattle, pork and poultry meat belong to the essential food whose prices of supply and demand are inelastic. Price inelasticity of meat supply and demand signify, on one hand, that the change in prices of meat does not cause significant changes in the quantity of supply and demand but on the other hand. Even minor changes in the quantity of supply and demand cause the essential changes in prices of meat. Low price inelasticity of meat supply and demand on the producers market is caused by the difficulty for agricultural producers (sellers) and processors of agricultural products (buyers) to respond cost-effectively on a short notice to the price changes in the market, e.g. to increase or decrease the quantity produced or processed. That is due to the low elasticity of substitution of goods during the production, as well as processing of agricultural products such as cattle, pork and poultry meat.

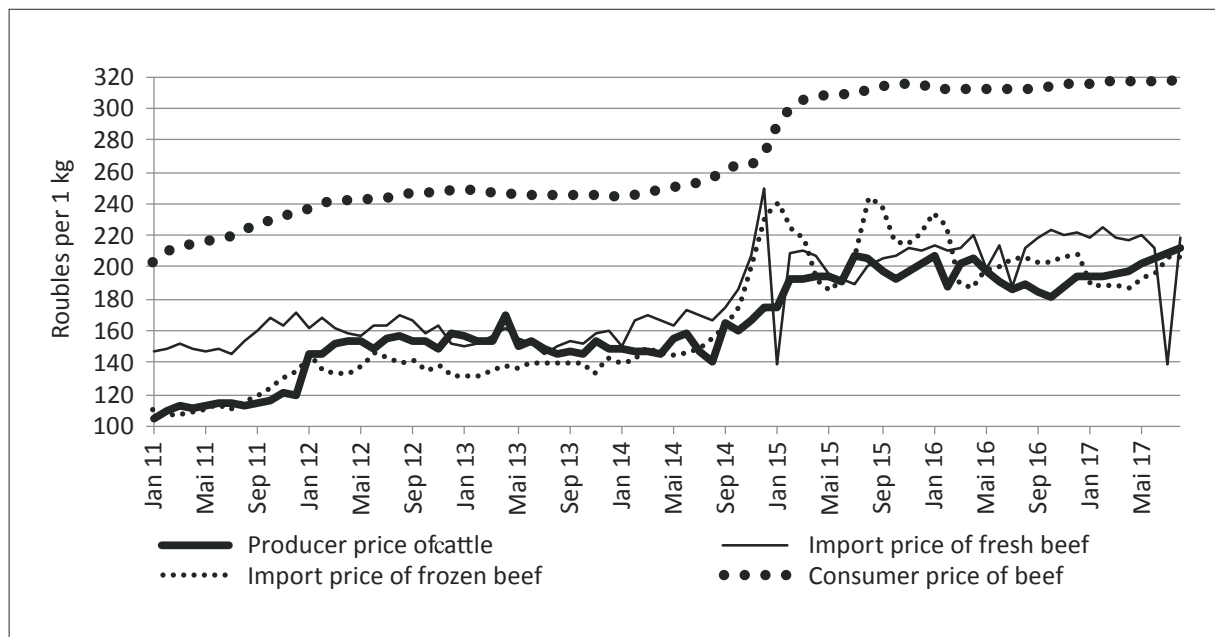
Fifth, structural changes in the Russian import market suggests that the beef and pork exporters are not price-takers. They may be able to discriminate prices in the Russian import markets. Moreover, the government market interventions and trade policies that restrict market access due to the import ban were critical in determining the effects of higher prices in the consumer markets.

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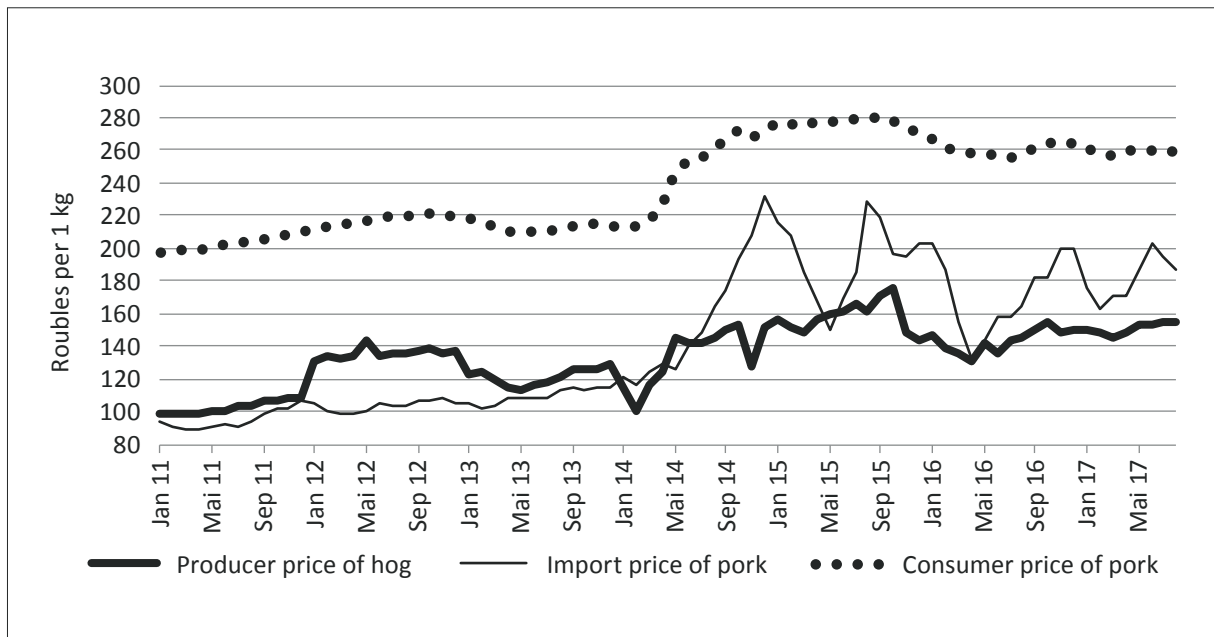
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## Appendix

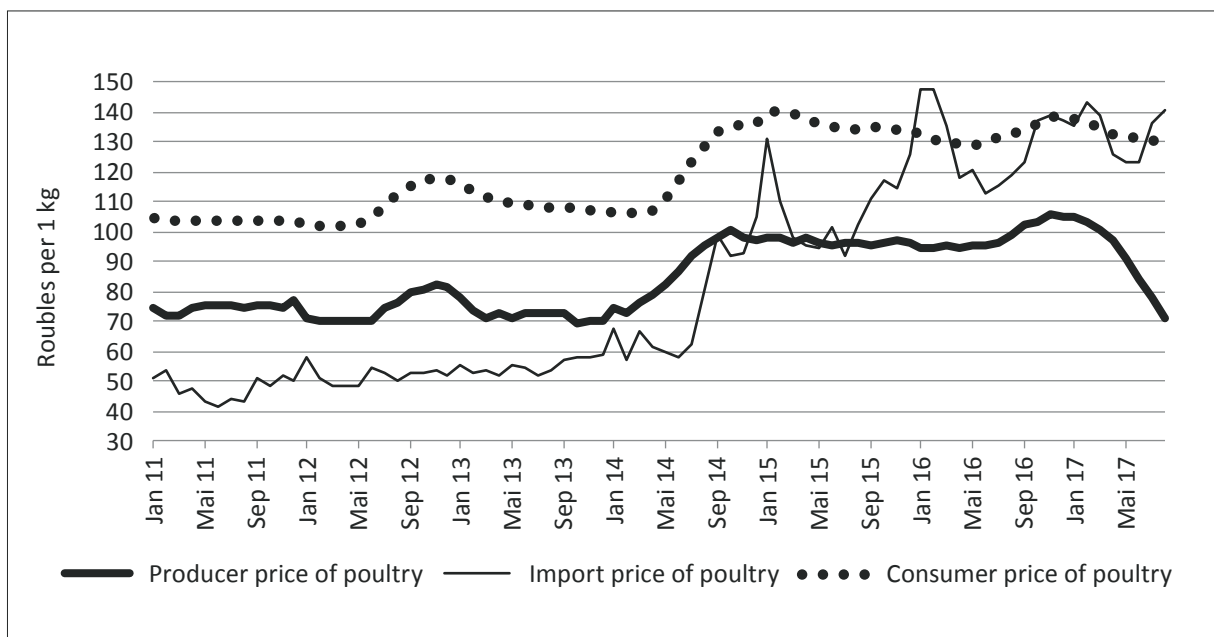
**Figure A1 Price developments in the beef meat supply chain**



Source: Author's illustration based on the monthly average producer, import and consumer prices provided by the FCS of the RF.

**Figure A2. Price developments in the pork meat supply chain**

Source: Author's illustration based on the monthly average producer, import and consumer prices provided by the FCS of the RF.

**Figure A3. Price developments in the poultry supply chain**

Source: Author's illustration based on the monthly average producer, import and consumer prices provided by the FCS of the RF.



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