agri benchmark

THÜNEN

Pig Network

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Pig Report 2018

September 2018

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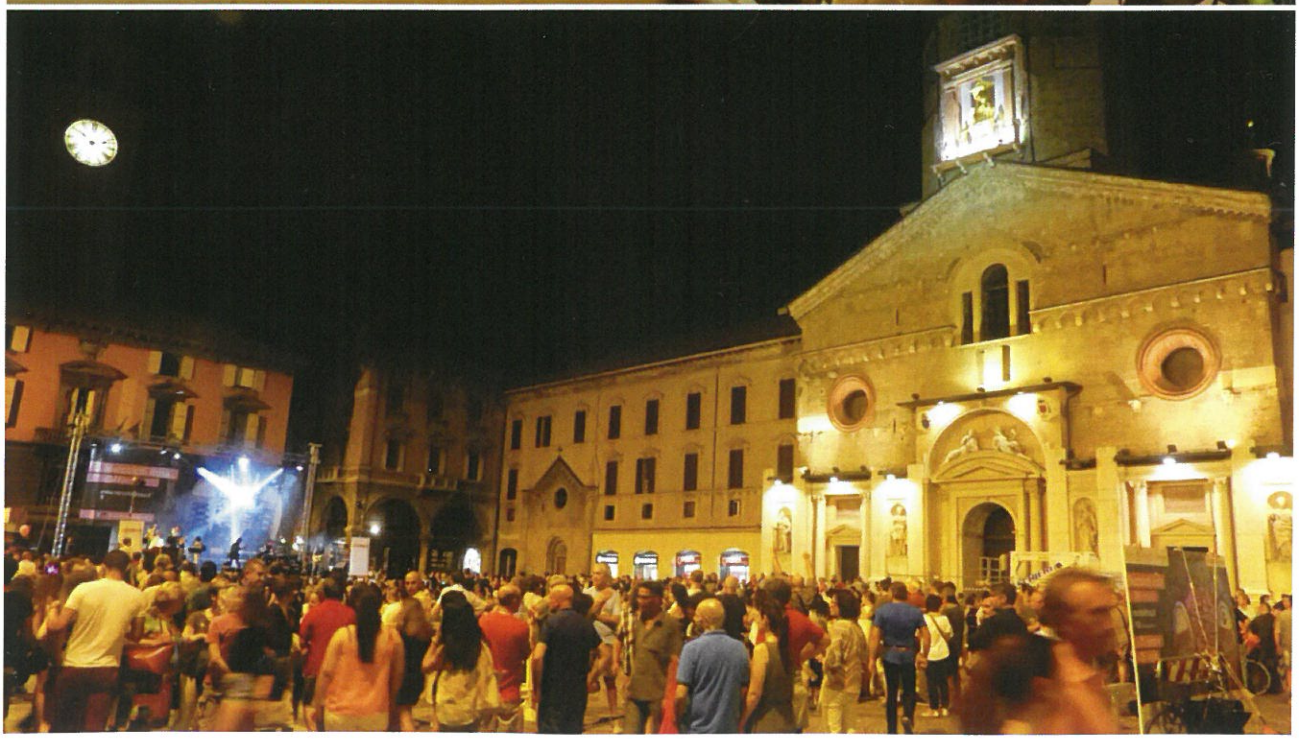
http://www.agribenchmark.org/pig.html

Braunschweig, 27.09.2018

Table of contents


InterPIG / agri benchmark
Pig Conference 2018



1 Preface and introduction

Dear readers,

this is a condensed version of the main findings of the 2018 *agri benchmark* Pig season. It covers some global developments, market developments, hot issues of the global pig sectors and an extract of our farm level analysis. Our partners have the full amount of data in the member section of our website.

We would like to thank again all contributors and sponsors who made the 2018 season possible, first of all our research partners who provide the expertise, data and information. In 2018 we could welcome Czechia and Japan as new countries and partners. Second, we would like to thank Kees de Roest, Claudio Montanari and their colleagues from CEPEA to host the 2018 conference in the pretty town of Reggio Emilia. Last but not least, we thank our sponsors for making financial contributions to the implementation of the conference.

We welcome feedback and suggestions to this report.

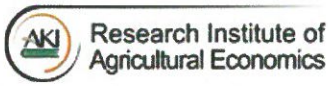
With best regards,

Dr. Claus Deblitz Mandes Verhaagh Christa Rohlmann

Thünen Institute of Farm Economics

1.1 Partners of the *agri benchmark* Pig Network
(in alphabetical order of countries)

Brazil	Marcos Iguma (until 2018) Caio Montero Renato Prodoximo	Center for Advanced Studies on Applied Economics (CEPEA)
Canada	John Molenhuis	Ontario Ministry of Agriculture, Food and Rural Affairs
China	Pu Hua Zhe Zengyong	Chinese Academy of Agricultural Sciences (CAAS)
Czechia	Tamara Rudinskaya Dan Král, Iveta Bosková	Institute of Agricultural Economics and Information (ÚZEI)
Denmark	Tommy Bjerregaard Pia Christiansen	Patriotisk Selskab

Denmark	Michael Groes Christiansen Nikolaj Kleis Nielsen	Landbrug & Fødevarer (SEGES)	
France	Boris Duflot Christine Roguet	Institut du Porc (IFIP) Institute of Animal Sciences	
Germany	Mandes Verhaagh Claus Deblitz Christa Rohlmann	Thünen Institute of Farm Economics	
Hungary	Norbert Potori Viktor Szili	Research Institute of Agricultural Economics (AKI)	
Italy	Kees de Roest Cluasio Montanari	Centro Ricerche Produzioni Animali (CRPA)	
Japan	Itsuro Yamane	National Agriculture and Food Research Organization (NARO), Agri-Food Business Innovation Center	
Netherlands	Jurgen Hijink Bennie Delfsma	Hijdeporc	
Poland	Bendykt Peplinski	Poznań University of Life Sciences, Faculty of Economics and Social Sciences	
Russia	Dmitri Rylko Dannil Khotko	Institute for Agricultural Market Studies (IKAR)	
South Africa	Patricia Davids	University of Pretoria, Bureau for Food & Agriculture Policy Research (BFAP)	
Spain	RENGRATI Team	Ministerio de Agricultura, Pesca y Alimentación (Sponsoring), Madrid	
	Jesús Llorente, Carlos García, Alfredo García and Francisco García	Tecnologías y Servicios Agrarios, S.A. (TRAGSATEC), Madrid	
		Red Nacional de Granjas Típicas (RENGRATI), Madrid	
USA	Dermot Hayes Lee Schulz	Iowa State University	
Vietnam	Hoang Vu Quang	Institute of Policy and Strategy for Agriculture and Rural Development	

1.2 *agri benchmark* Pig + InterPIG Conference 2018

The 2018 conference was the third joint conference of *agri benchmark* Pig and InterPIG. It took place in Reggio Emilia, Italy and was hosted by the Italian partner of *agri benchmark* / InterPIG (CRPA). The programme consisted of:

- Global overview and latest developments in the countries
- International comparisons
- Specific topics like the trade relationships between the US, EU and China and the successful marketing of Italian ham
- Workshops on animal welfare and vertical integration
- The field trip went to a relatively small but most interesting Parma Ham factory producing 70 000 hams per year (Prosciuttificio S. Giacomo S.R.L.). The entire Parma Ham Consortium produces more than 9 million hams annually
- The Result Data Bases and related tools which are now available for the partners in the member sections of the website
- The conference 2019 is planned for July 1-4, 2019 in Beijing, China

Participants of the *agri benchmark* Pig / InterPIG Conference 2018

The sponsors of the conference:

Boehringer Ingelheim

Big Dutchman

ASSICA Associazione Industriali delle Carni e dei Salumi

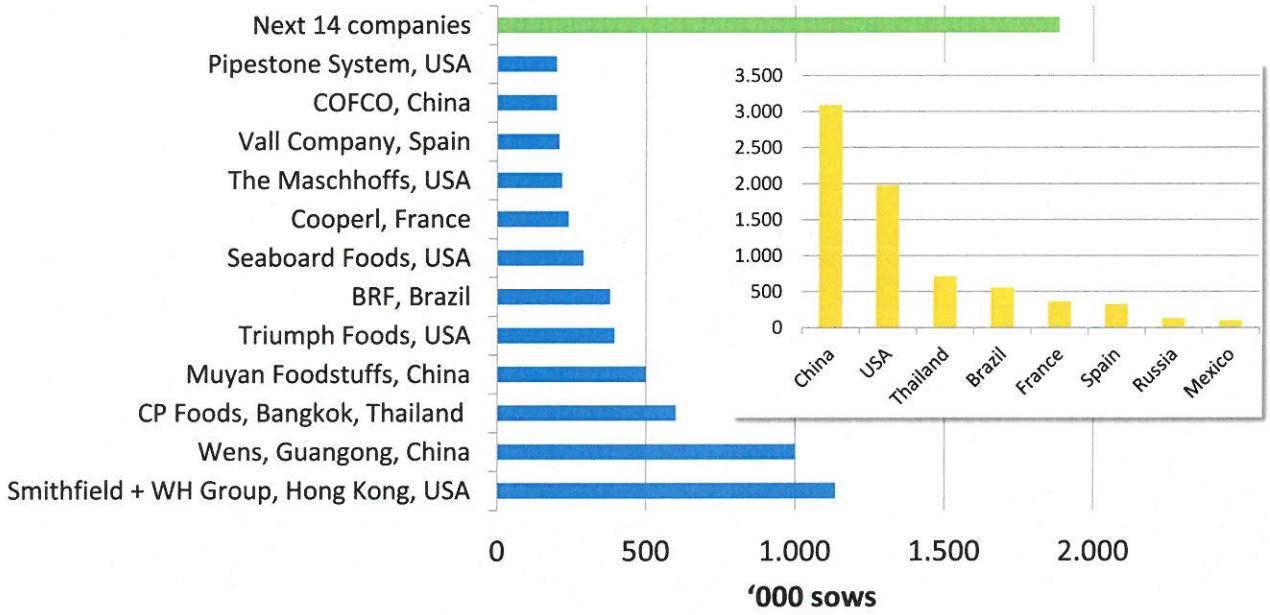
2 The global picture

2.1 Structure and production

Structural change has always been characterising pig production. Complete or partial vertical integration of genetics, feed, farm production, processing and trade has to be seen in this context. In some countries, vertical integration is already common practice (Spain, Brazil), in others it is fast growing (China) and in others it is not an issue yet (Germany).

Figure 1 gives an impression about the biggest sow keeping companies world-wide. Many of these companies integrate production as described above. The Top 5 companies come from China, the US and Thailand. From an aggregated country perspective, China and the US are also representing the majority of the Top 25 sow companies in the world. France and Spain are also in this group but on a much lower level.

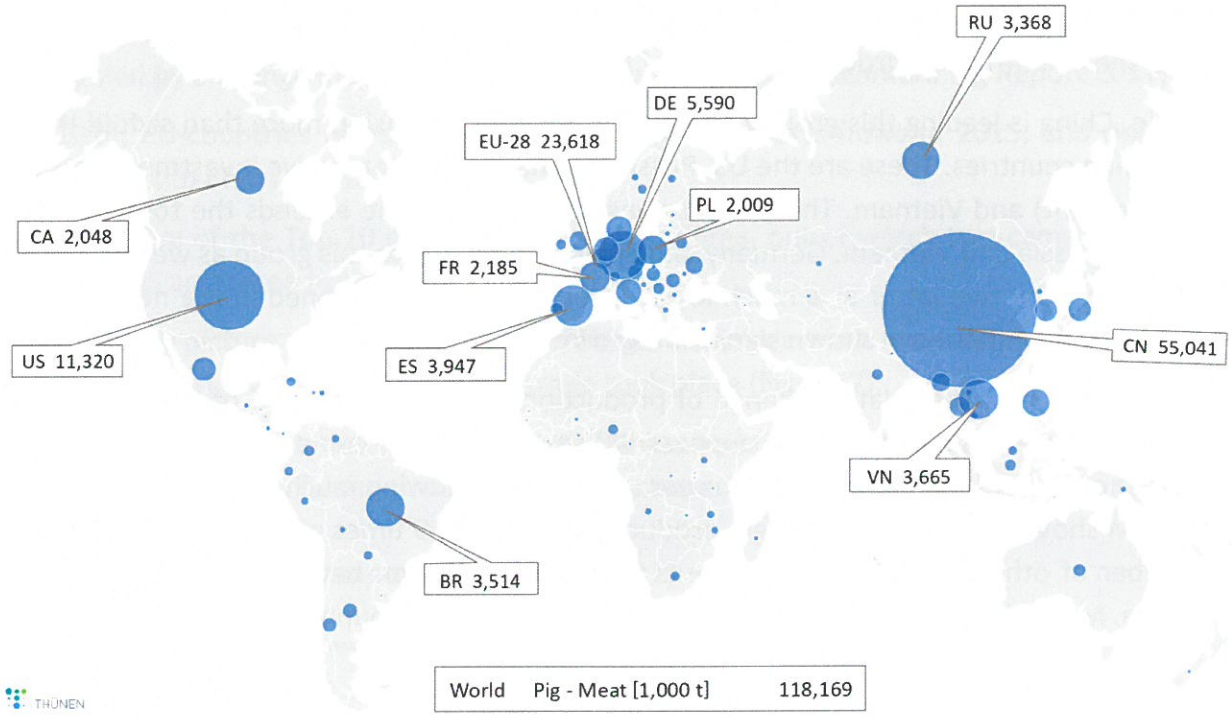
Figure 1 The biggest sow keeping companies world-wide ('000 sows inventory)



Source: https://www.topagrar.com/news/Schwein-News-Schwein-In-Asien-sitzen-die-Mega-Sauenhalter-der-Welt-8946289.html

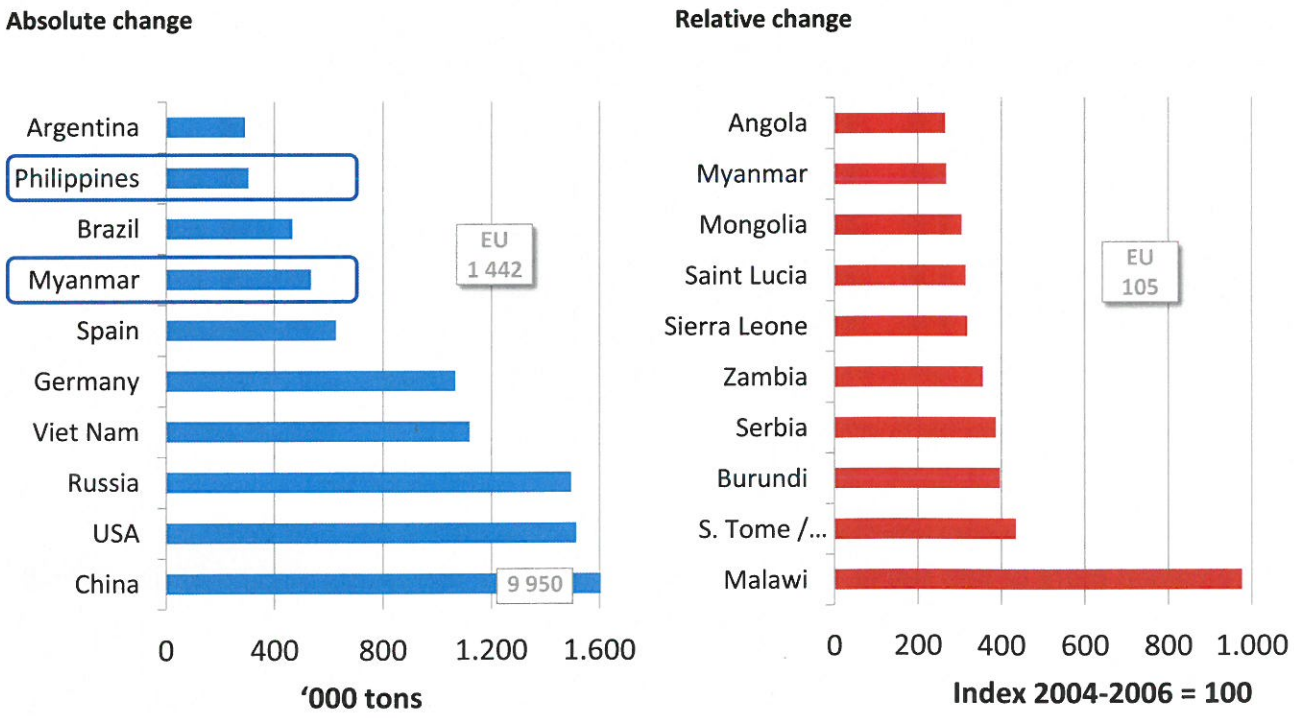
When it comes to **global production**, China remains the leader and could even increase its lead in the last decade, producing almost twice the quantity of the EU who follows on the second rank. The EU again produces more than twice the amount of the US (third rank), led by Germany and Spain as their biggest producers. After that a number of countries with a production of between 3-4 million tons annually follow: Vietnam, Brazil and Russia. Canada belongs to a group of countries producing around 2 million tons and less. A number of EU countries belong to this group but also Mexico, the Philippines, South Lore and Japan.

Figure 2 **Global pig production 2016**



Source: FAOStat 08.18

Figure 3 Change in global pig meat production 2014-2016 vs. 2004-2006 ('000 t) and index 2004-2006 = 100

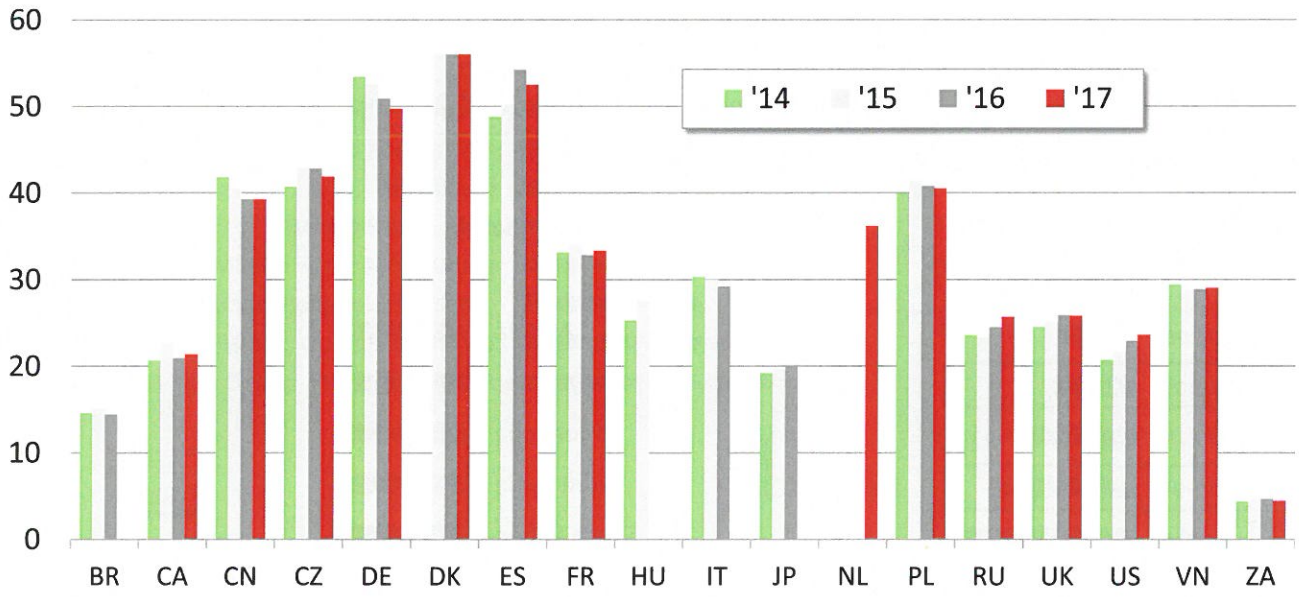


Source: Own calculations based on FAOStat 08.18

In the last decade there has been a growth of pig production in most of the countries. The EU (with diverse development between member countries), India and North Korea are exceptions from this development but their decline was easily overcompensated by the growth of others. Figure 3 shows the Top 10 growth countries of the last decade.

- Again, China is leading this group of countries, with an expansion more than sixfold than the following countries. These are the US, Russia (mainly driven by massive investment aids of the government) and Vietnam. Thus, the expansion of China alone exceeds the total production level of Russia and Vietnam. Germany and Spain also belong to this group as well as Argentina and Brazil, the two latter at a much lower level. Mostly unmentioned in the news Maynmar and the Philippines have shown significant growth, too.
- When looking at the relative change of production, with the exception of Maynmar, a completely different list of countries appears. All these countries come from much lower levels than those mentioned in the previous paragraph, thus showing much bigger relative changes. Malawi showed the biggest change, producing more than 9 times as much as 10 years ago. A number of other African countries could increase production between two and four times. Serbia, Mongolia and Saint Lucia also belong to this group of countries.

Figure 4 Developments in per capita consumption 2015-2017 (kg per capita)



Source: National statistics provided by *agri benchmark* Partners

Overall, the per capita consumption in the countries participating in the *agri benchmark* Network has remained more or less stable. In the last four years, slight increases could be observed in Japan, Russia, UK, Czechia and Spain, with a decline in the latter two in 2017. Italy and even China and especially Germany indicate a more or less profound downwards trend in consumption. The reason in Germany is mainly the ongoing debate about animal welfare, environment and health and to a much lesser extent the influx of refugees and asylum seekers from Muslim countries.

2.2 Trade

The years 2014 to 2016 showed a massive increase of export quantities to China which was also accompanied by a change in the Top 10 export flows (see *agri benchmark* Pig Report 2017).

- In 2014, EU-countries represented 6 of the Top 10 exports flows in 2015, and only one of them went to China (from Germany).
- In 2016, five of the Top 10 export flows went to China, out of which two came from Canada and the US and three from the EU (Figure 6).
- In 2017, the picture changed again, when Chines export demand lessened and a reorientation towards Intra-EU and North American trade took place (Figure 7).
- With the trade dispute between the US and China and the occurrence of African Swine Fever in Europe and China, further trade shifts can be expected.

Figure 6 Top 10 export flows 2016 ('000 t)

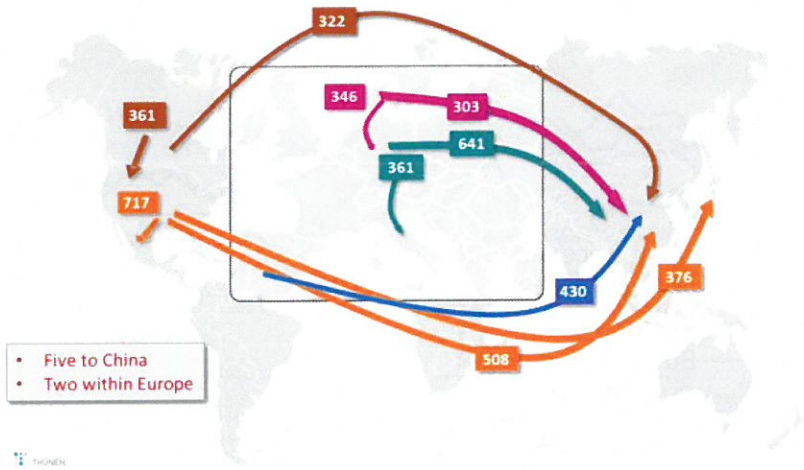


Figure 5 Top 10 export flows 2017 ('000 t)

Note: Trade flows to China include China Mainland, Hong Kong and Macao

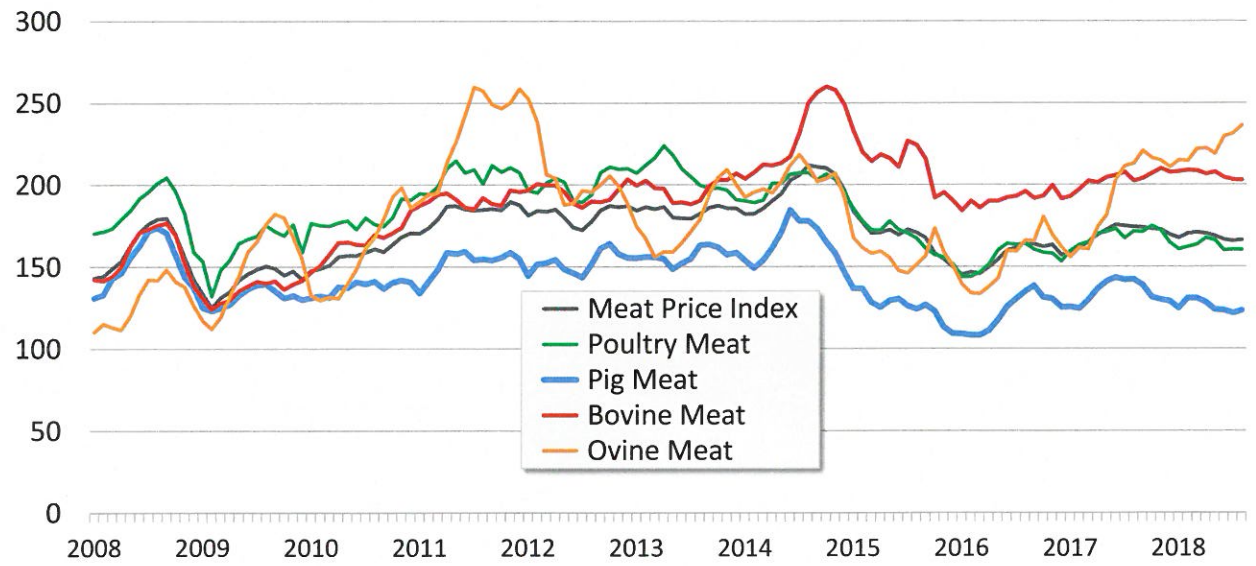
Source for both maps: UNComtrade 07.18

3 Price developments in the countries and major global issues

3.1 Price developments

Figure 6 shows the evolution of global pig meat and other meat prices from Jan 2008 to Aug 2018. After the 'bad' years 2014 and 2015, pig prices recovered in In 2016 and 2017 but remained significantly below the record levels in 2008 and 2014. From September 2017 onwards we could observe another downward trend which basically kept going until August 2018. Reasons are the slowing of the Chinese demand, the US-China 'trade war' and the tariffs on US-pig meat, oversupplies of pig meat in the US and the EU and the occurrence of African Swine fever in Europe and China.

Figure 6 Global pig price developments January 2008 to August 2018

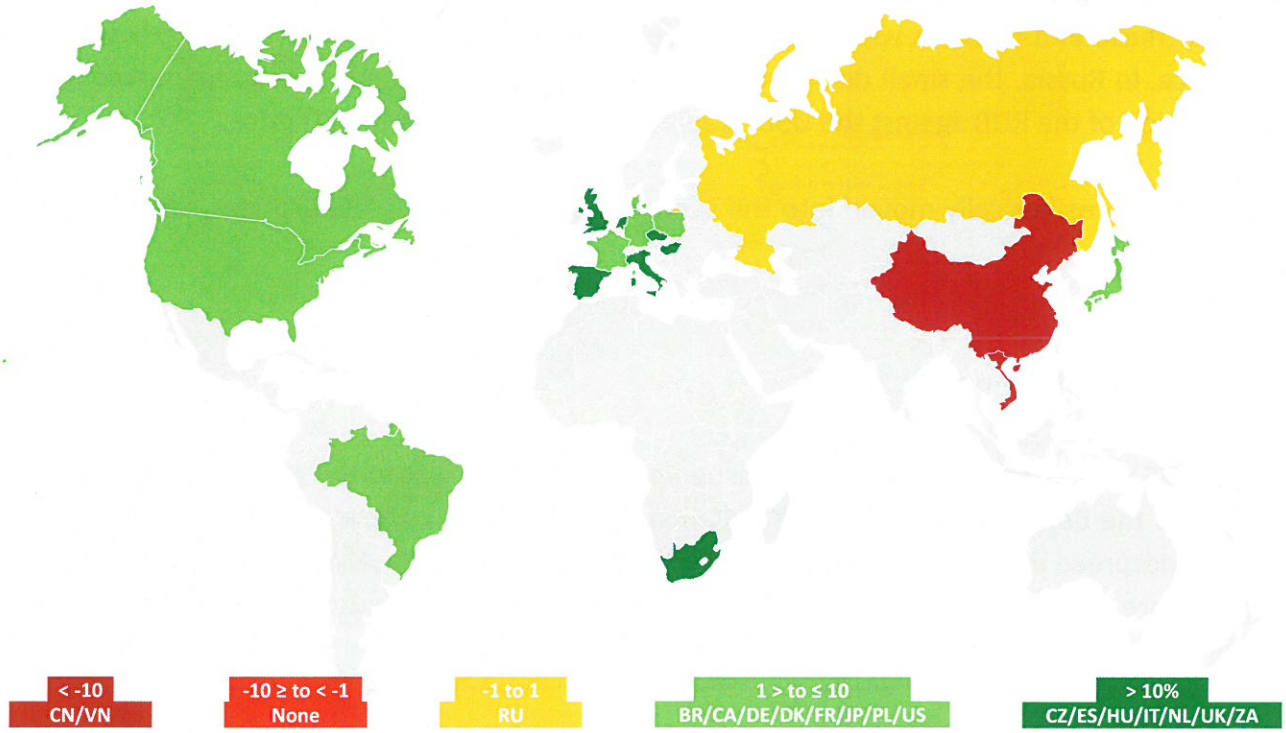


Source: FAO meat price index 09.18

Figure 7 shows the percentage change of pig prices in the *agri benchmark* Pig countries from 2016 to 2017.

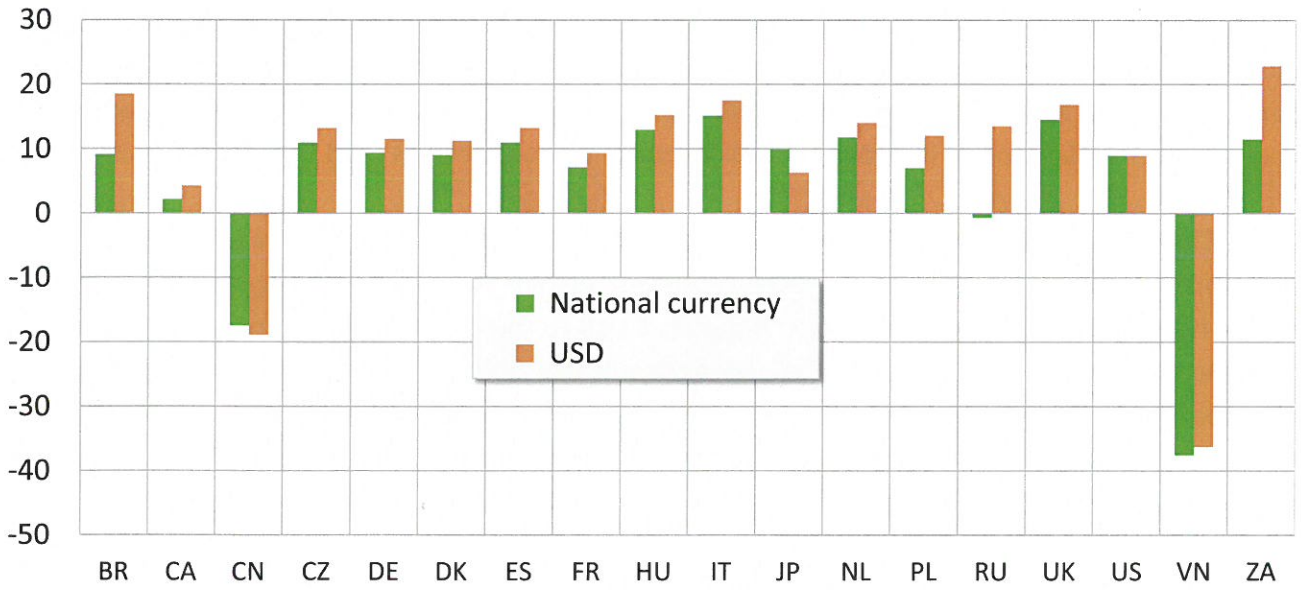
- With the exception of China and Vietnam, pig prices increased more or less in the two years period.
- The highest increases of more than 10 percent took place in some EU-countries and in South Africa. The other countries saw price increases of up to 10 percent.
- Pig prices only decreased in China (-18 percent) and Vietnam (-38 percent)

Figure 7 Percentage change of domestic **pig meat** prices 2017 vs. 2016



Source: *agri benchmark*, national statistics

Figure 8 **Pig meat** price developments in national currency and USD (percent)



Source: *agri benchmark*, national statistics

Figure 8 shows the comparison of the price developments in national currency and the development in USD. In most of the countries, the national currency appreciated against USD. This means that the exchange rate development reinforced the positive national price development and

thus, the USD price change was even higher than the national price change. Exceptions are Vietnam where the appreciation of the Vietnamese Dong (VND) overcompensated the national price decrease and in China where the RMB depreciated, resulting in a further decrease of the USD price. In Russia, the small decrease of the national price was well overcompensated by the appreciation of the RUB against the USD, leading to an increase of the USD price.

The **piglet** prices basically moved into the same direction as the pig meat prices, albeit with different levels.

3.2 ASF occurrence

So far, ASF was considered a **European** issue and a massive threat to the pig industry, in particular due to the dependence on exports to China. In fact, Figure x shows that ASF is already relatively widespread in Poland, the Baltics, Slovenia, Romania, Bulgaria, Ukraine and Russia. Fears of a spread are high in the Western parts of Europe. Denmark has already built a fence to Germany to prevent wild boars crossing the border from Germany.

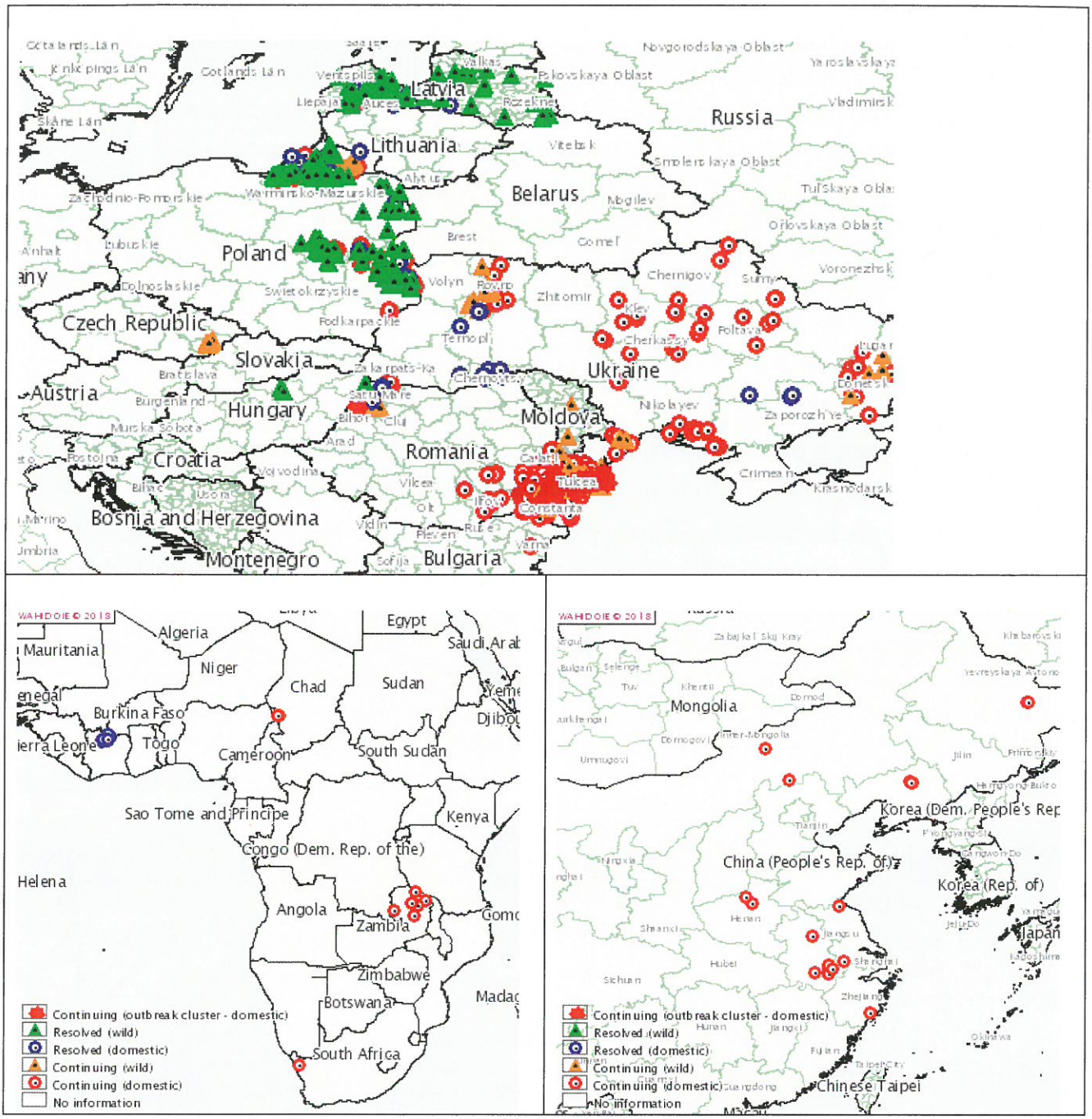
The main fear is that with the occurrence of ASF in countries with major export shares to China (mainly Germany, Spain, Denmark), prices would come under massive pressure as a result of a border shut-down for EU pig meat.

In the South African subcontinent, ASF was reported in **Zambia** and **South Africa**. Dermot Hayes (US partner of *agri benchmark* Pig) estimates the cost of ASF for the **US** pork industry to be USD 8 billion in the first year only. This does not include related losses to the feed industry (soybean and corn), estimated between USD 4 billion and 1 billion, respectively. As a consequence, farmer organisations are planning to improve their biosecurity plans as well as feed tracing and analysis.

Then, **China** was hit by ASF on August 03, 2018, with 8 000 infected pigs in the Liaoning region in the North of China. Further cases were reported further South during August. This outbreak shows how far ASF ha migrated. It also imposes a risk to the Chinese pig sector, should it not be possible to contain the disease to a few locations. If the Chinese pig inventory was significantly affected, it could result in rising domestic and international pig prices. It would probably also have a significant impact on the Chinese soybean imports, most of it is coming from the US and much of it is used for pig feeding.

The most recent new outbreaks were reported from **Belgium** where in two wild boars ASF was detected. This brought the disease much closer to some of the European hot spots of pig production.

Figure 9 African Swine fever cases 01.08.-21.09. 2018



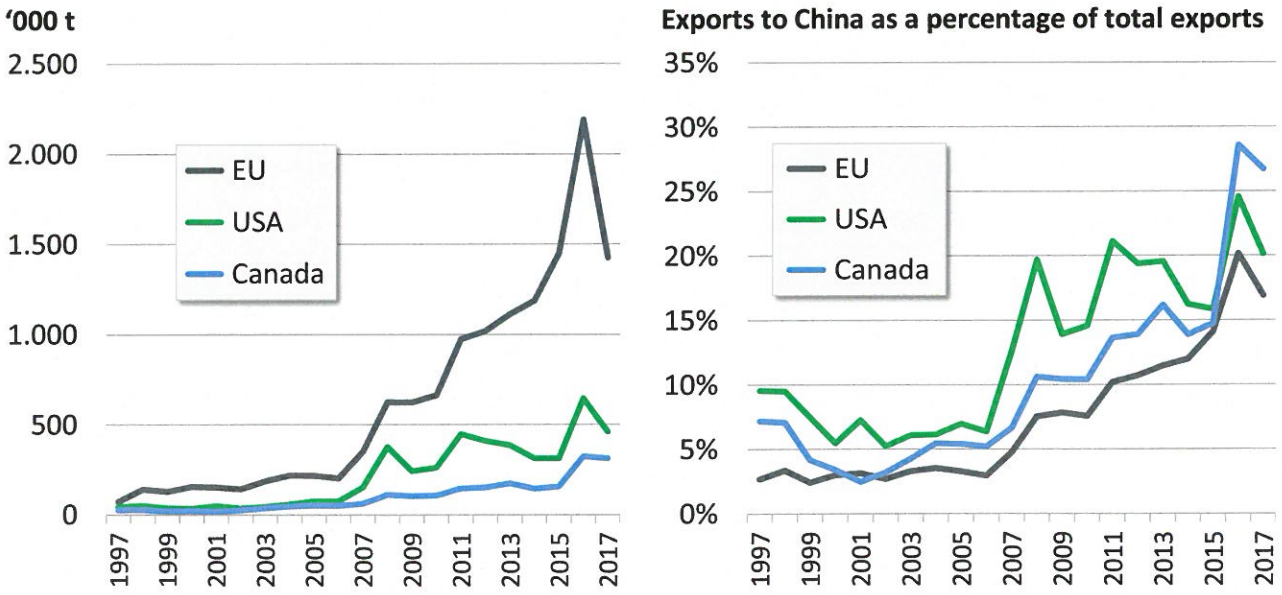
Source: OIE, 21.09.2018

3.2 China and North America and EU

In the last few years, China has become a major export target for EU-countries (with Germany the most important) but also for Canada and the US. Together, they represented almost 90 percent of Chinese pig meat imports. Figure 10 shows the development of the export quantities going to China and the proportion of these exports in the total exports for these regions.

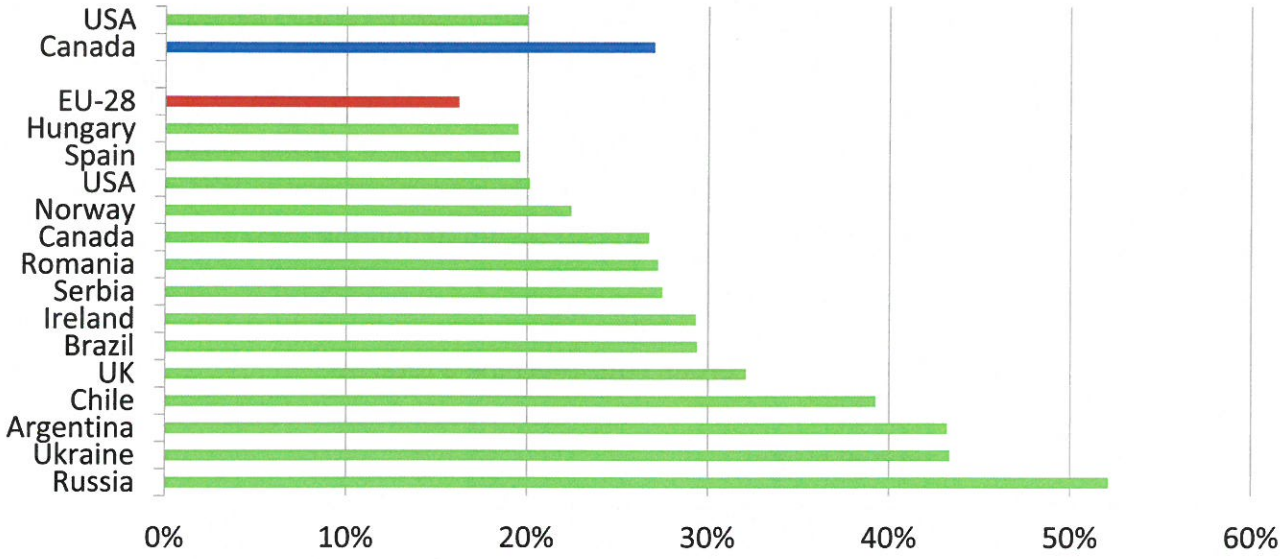
- There has been a more or less steady increase of export quantities from 2007 onwards, in particular from the EU.
- All three regions reached their individual peak in 2016 when between 20 (EU) and 28 percent (Canada) of the total exports went to China.
- In 2017 the export quantities and proportions to China dropped significantly due to the stagnating demand and slightly increasing pig production in China.
- In the meantime it is plausible to say that China, due its importance in production (see Figure 2) and the quantity of its imports, has a most important influence on world pig meat prices.
- While it looks like the three regions mentioned depend on the Chinese market, Figure 11 reveals that there is a number of countries with export shares to China significantly higher than 20 percent. Among them are Russia, Ukraine, Brazil and UK.

Figure 10 Pig exports from Canada, USA and the EU-28 to China



Source: UNComtrade 07.18

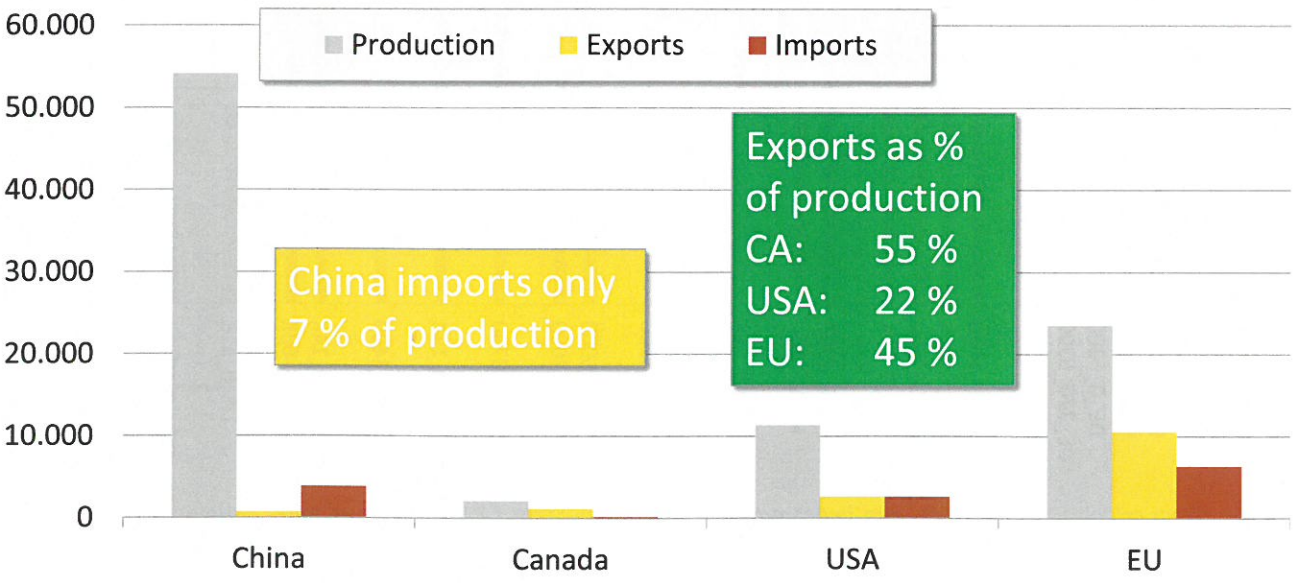
Figure 11 **Proportion of total exports to China by country 2016**



Source: Own calculations based on UNComtrade 07.18

Another way of showing the 'balance of power' is presented in Figure 12 which relates the production and trade figures for the three main import origins to China as well as the Chinese figures. Despite the importance of Chinese imports, they only represent 7 percent of the Chinese production. In contrast, exports represent between 22 (USA) and 55 percent (Canada) of domestic production. This means that China creates with a relatively small proportion of imports a significant impact on global pig meat markets.

Figure 12 Production and trade of pig meat in the EU, Canada, USA and China



Source: UNComtrade 12.17, FAOStat 06.18

3.3 Trade dispute USA-China and tariffs on pork

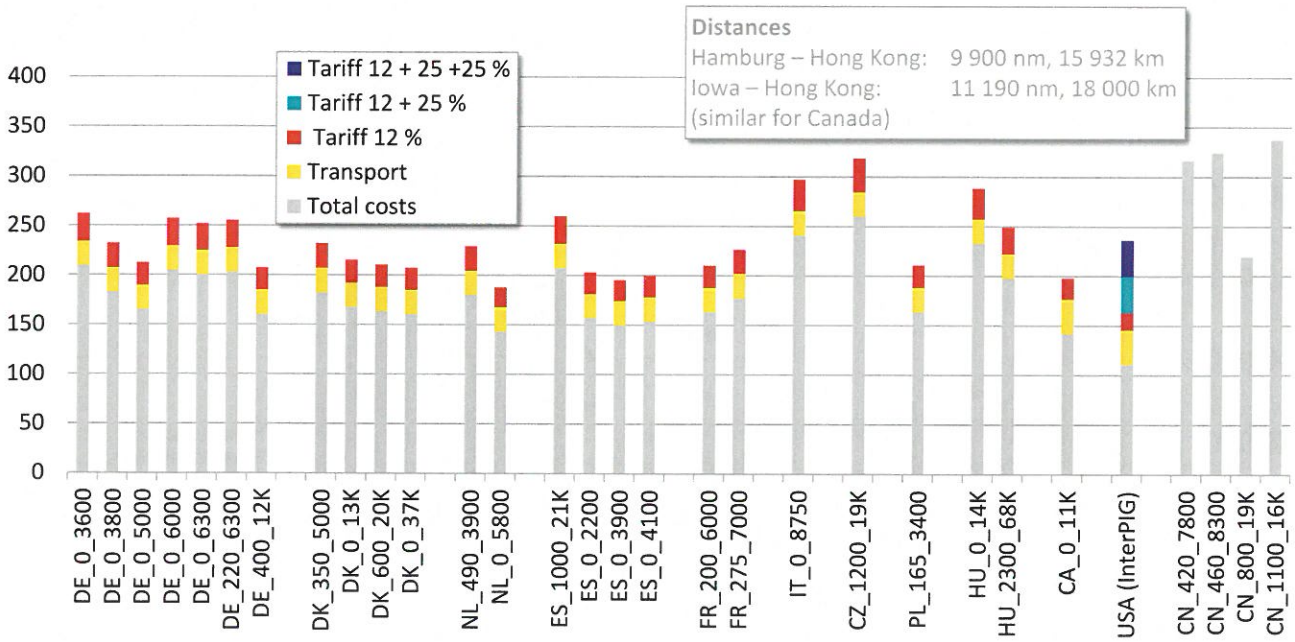
The trade dispute between the US, China and other country is another issue likely to impact global trade of pig meat. Apart from Mexico, Canada and the EU, the US introduced tariffs on selected Chinese goods on 25.06.2018. In retaliation to these measures, China introduced tariffs on various agricultural products, mainly coming from the regions with a strong Trump-electorate. Among them is pig meat. The following escalation of tariff levels took place:

- 12 % was the usual tariff (also for the EU and CA).
- In June it was raised by 25 % to 37 % for all pork meat.
- In July it was raised by 25 % again for certain cuts, reaching a total of 62 % for the following HS-codes:

  0203219 Carcasses or half carcasses of pigs
  0203220 Hams, shoulders and cuts thereof, with bone in import
  0203290 Meat of swine, fresh, chilled or frozen
  0206410 Livers, frozen
  0206490 Other offals, frozen

The latest development took place on 23.08.18 when the US introduced further tariffs against China worth USD 16 billion. xx

Figure 13 Total cost of pig production (2017), transport costs and tariffs (2018)



Source: Own calculations based on *agri benchmark* data and Iowa State / Pork Industry Center Estimated Livestock Returns http://www2.econ.iastate.edu/estimated-returns/

Figure 13 shows the total cost of pig production for the *agri benchmark* farms with pig finishing enterprises for the year 2017. The US-data were obtained from the InterPIG cost of production

data based on the Estimated Livestock Returns by Iowa State University. It further shows an estimation of transport costs from the main originating regions to China (Hong Kong) which is approximately USD 25 (Europe) and USD 35 (North America) per 100 kg of pig meat. Processing costs were not available and should be added to obtain a complete picture. The tariffs described above were then added to the total of the on-farm costs and transport costs.

It can be seen that in terms of costs levels, the introduction of the Chinese tariffs on US pig meat leads to a massive deterioration of the US competitive position compared to their major competitors from Canada and the EU.

4 Key results from the international farm comparisons

In the section below, the most important results from the international comparison of the *agri benchmark* Pig Network are presented. This comparison is updated and extended annually in cooperation with our international partners.

Explanatory notes on the presentation of the results in the following diagrams

1. The farms represent typical regional farms and are surveyed using the standard method developed by *agri benchmark* to define typical farms. Details are available on the *agri benchmark* website: http://www.agribenchmark.org/agri-benchmark/value-and-approach.html
2. The source for all charts is the *agri benchmark* Pig Network result database for the calendar year 2017.
3. The results are presented separately for sow enterprises and pig finishing enterprises. The presentation is based on the farm enterprises, because a) closed systems can be compared with specialised systems and b) farmers in closed systems after rearing have the option to sell their own piglets and buy piglets from other farms instead (principle of opportunity cost). In closed systems, the piglets are therefore 'sold' at market prices from the sow enterprise to the finishing enterprise.
4. Explanation of the names of the *agri benchmark* pig farms on the x-axes:
   Country_Average number of sows per year_Number of finishing pigs sold per year. Examples:
   DE_220_6300 A (closed cycle) German farm with 220 sows and 6,300 finishing pigs sold per year
   DE_350_0 A German farm with 350 sows and no finishing pigs
   DE_0_6000 A German farm with no sows and 6,000 finishing pigs sold per year
5. Reference units for the comparison: in the *sow* enterprise, the reference unit is *100 kg live weight sold*. This includes the piglets as well as the cull sows. Thus, it reflects the complete weight of all animals coming from the enterprise and not only the piglets. In the pig *finishing* enterprise, the reference nit is *100 kg carcass weight sold*.

4.1 Sow enterprise

Figures 14-16 show the total returns, the total costs and the profitability of the sow enterprises in 2017.

- **Return levels** are particularly high in Japan and China and particularly low in Canada and France. The other countries – including Brazil – are on comparable level.
- When compared with 2016, with the exception of China and particularly Vietnam, returns were up significantly. The main reason were the increasing piglet and pig meat prices (cull sows) shown in chapter 3.1 above.
- On the **cost**-side, the variation is higher than on the return-side but the relations between the countries mentioned above are similar.
- Countries/ farms were costs are relatively higher than returns are Czechia, Vietnam and HU_55_0 (small farm). Countries were costs are relatively lower than returns are China, Japan and Russia.
- South African farms showed the most significant decrease of cost when comparing 2017 figures with the previous year 2016. The main reason is the recovery from the drought in 2016 and the subsequent decrease of feed prices.

Figure 14 Total returns of the sow enterprise 2017 (USD per 100 kg live weight)

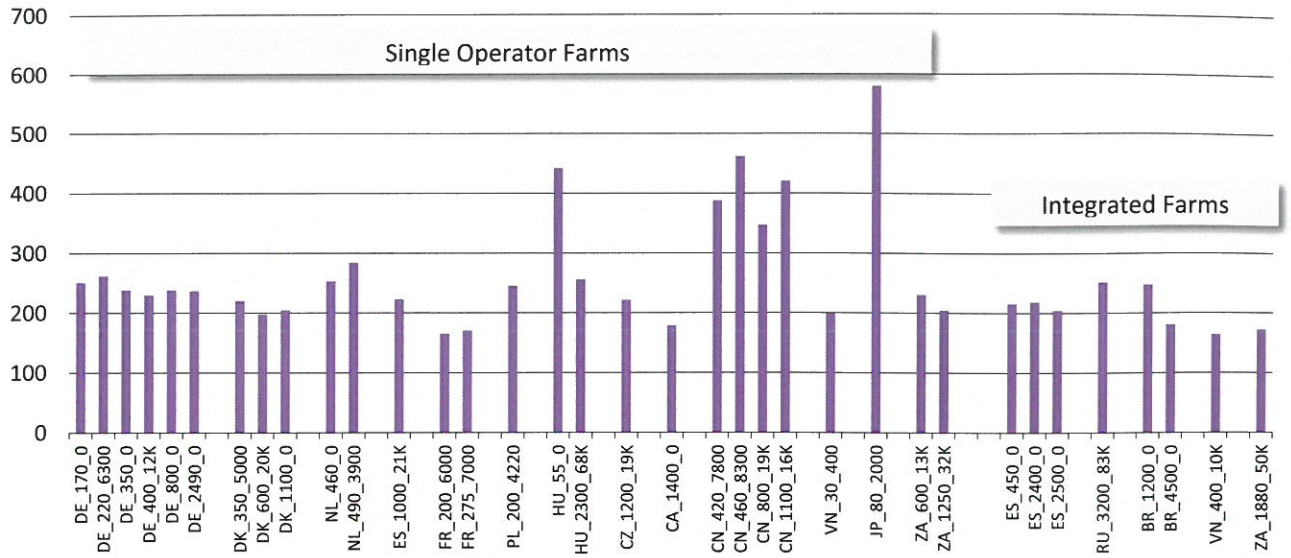
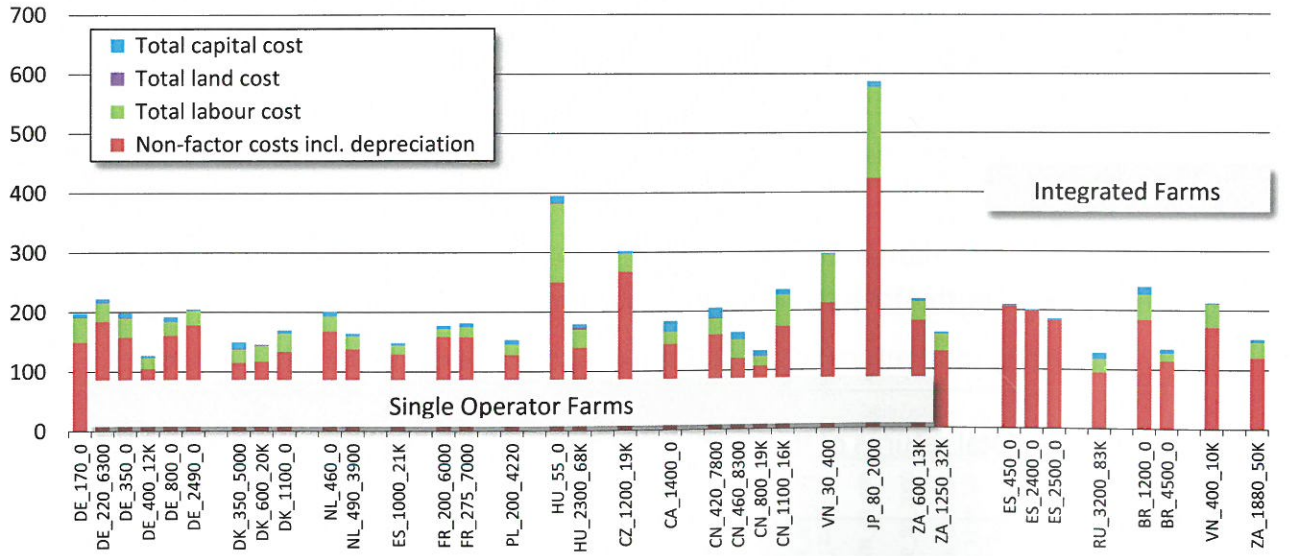


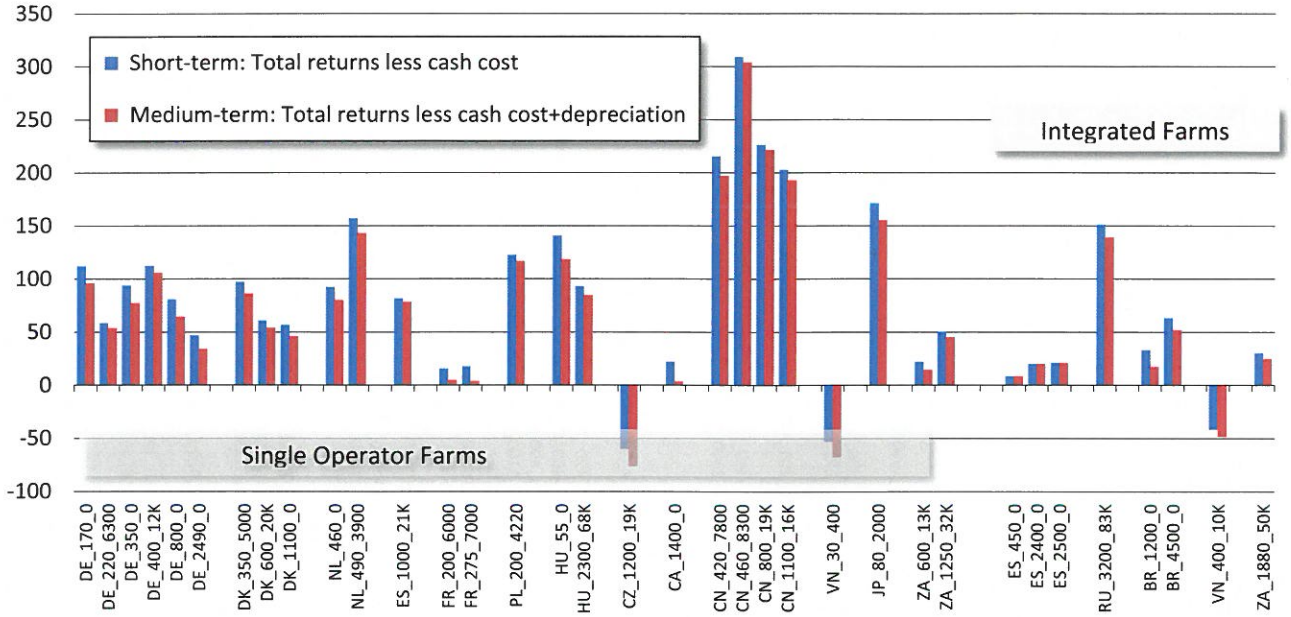
Figure 15 Total cost of the sow enterprise 2017 (USD per 100 kg live weight)



Given the price developments and the cost price relationships described above, the **profit** situation looks as follows:

- All farms except the Czech farm and the Vietnamese farm made a short-term and a mid-term (after depreciation) profit in 2017.
- Compared to the year 2016, profits only decreased in the Vietnamese farms. All other farms show a more or less strong increase of profits. Even the Chinese farms could increase profits because costs decreased more than returns.

Figure 16 Short- and mid-term profitability of the sow enterprise 2017 (USD per 100 kg live weight)



4.2 Pig finishing enterprise

Figures 17-19 show the returns, costs and profits of the pig finishing enterprises for the year 2017.

- Total returns are even more homogeneous than in the sow enterprises. Farms in Italy, China, Japan, Russia and South Africa enjoyed particularly high prices in 2017.
- Compared to 2016, total returns went up in all countries except China and Vietnam.

Figure 17 Total returns of the pig finishing enterprise 2017 (USD per 100 kg CW)

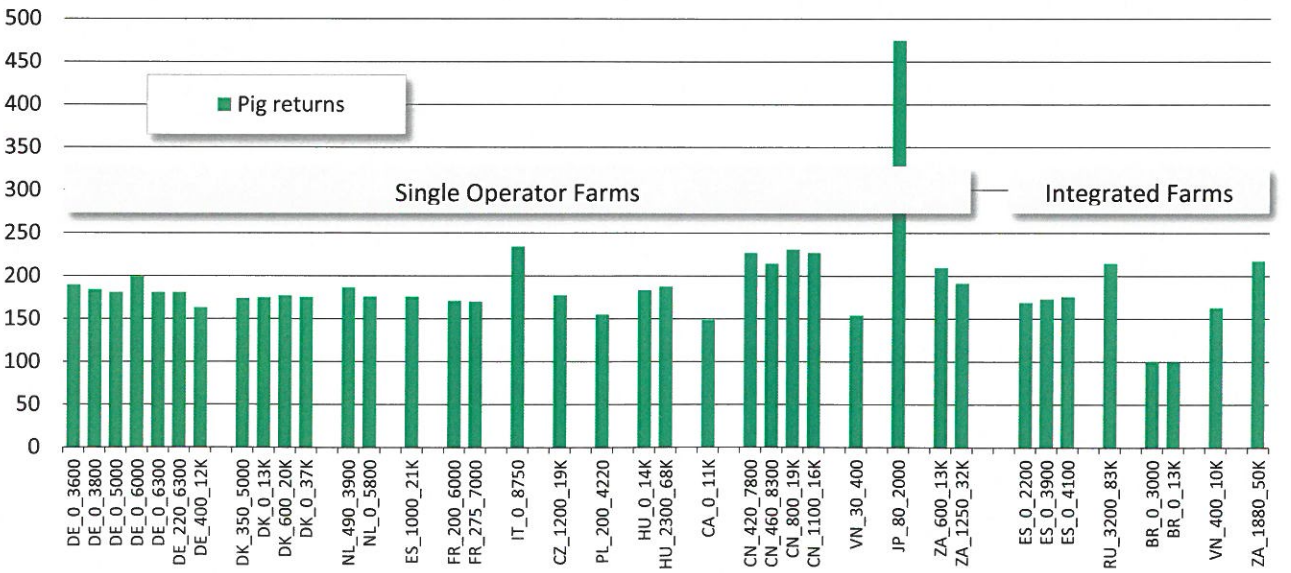


Figure 18 Total costs of the pig finishing enterprise 2017 (USD per 100 kg CW)

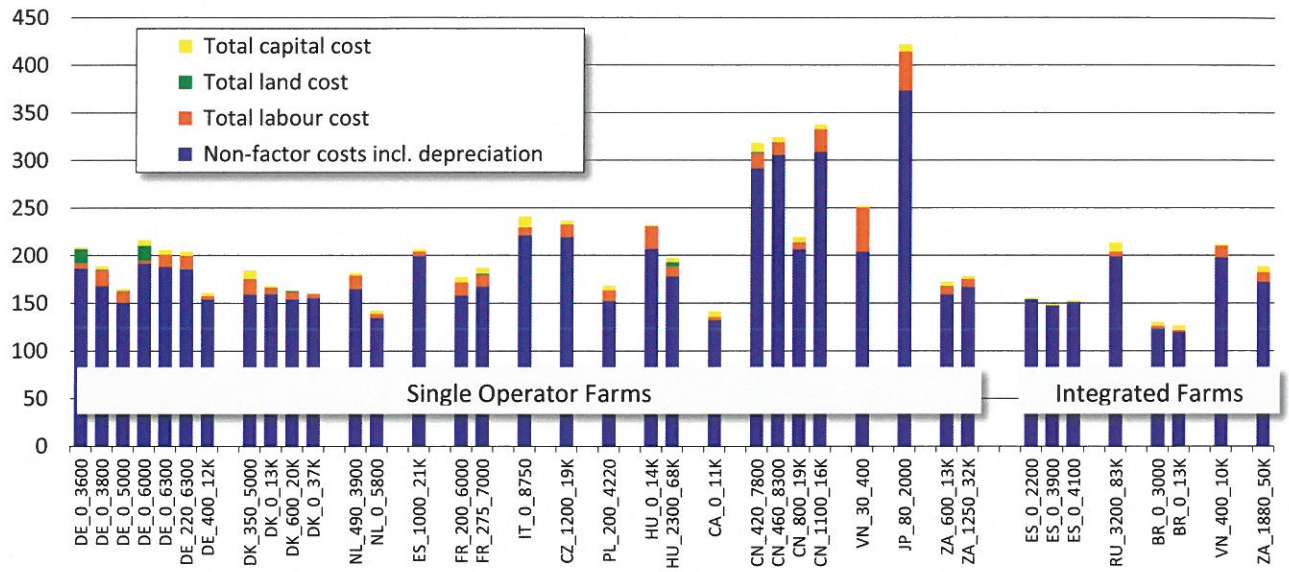
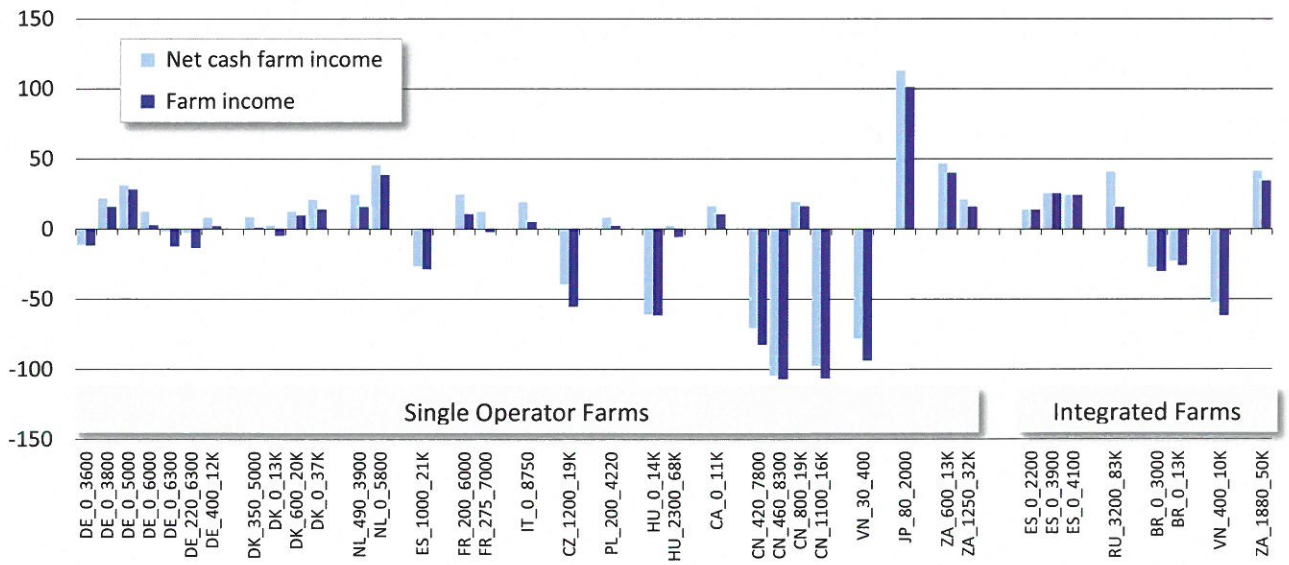


Figure 20 Short- and mid-term profitability of the pig finishing enterprise 2017 (USD per 100 kg CW)



- Like in the sow enterprises, total **costs** show more variation than total returns. Farms in Italy, Czech Republic, China and Japan can be considered relatively high cost producers. Compared with 2016 and similar to the returns, costs went up in most countries except for China and Vietnam.
- The profit situation in the **pig** finishing enterprises is less positive than in the sow enterprises. The main reason is the relatively high piglet price which benefits the sow enterprises. However, the majority of the European as well as the Canadian, Japanese and South African enterprises were profitable in 2017. Compared with 2016, the profit situation improved in half of the farms and worsened in the other half. This applies across and within countries.