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# **Financial realities for farms in the European Union: Relationships between farming and governmental interactions within the Triple Helix concept<sup>1</sup>**

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## **Abstract**

The objective of this study is to analyse the financial realities for the farming sector in European Union countries and their relationships with agricultural investment and public structural subsidies, from a perspective of farming- and governmental relationships as part of the Triple Helix approach. Firstly, the statistical information available within the Farm Accountancy Data Network for the former twenty seven European Union countries, related with the main items of the accounting balance sheet was investigated. Secondly, various financial indicators were calculated to analyse the principal financial constraints in these farms and finally, these findings with the levels of investment and structural support were reported. As a main conclusion, more adjusted structural policies in the European Union will be needed, taking these microeconomic contexts into account.

**Keywords:** Farming sector; Structural subsidies; Accountancy information; European Union; Triple Helix.

**Jel codes:** E22; M41; O52; Q12.

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## **1. Introduction**

Considering the significant differences between the agricultural sectors across European Union countries (as well as within each country across different regions) it is important to analyse the farming contexts, at both macro and microeconomic levels. In some cases it is easier to find statistical data at a macroeconomic level than at microeconomic dimensions. These data available at a microeconomic level provide an interesting basis to support the design of adjusted agricultural policies and for the studies which aim to understand the frameworks at a farming level.

In fact, the data available, for example, in the national and European Union Farm Accountancy Data Network, with statistical information for the agricultural sector, at farm level, opens many opportunities for work in microeconomic contexts, with crucial contributions for the policymakers and for the economic agents related to the sector.

In this context, the objective of the study developed here, is to analyse the financial dimension of the European Union farms, at microeconomic levels, using the data available in the European Union Farm Accountancy Data Network (FADN, 2017) and to compare these realities with the levels of agricultural investment and public structural support. The relationships across agricultural economic units-agricultural policies (farms-government) are parts of a more general concept that englobes the interactions university-economic sector-government known as the Triple Helix approach which was originally attributed to authors such as (Etzkowitz and Leydesdorff, 1995).

The understanding of the microeconomic reality in the European Union is, indeed, important, namely in terms of the relationship between the farms' balance sheet items, the farming investment and the structural support paid by national and European budgets, specifically to find ways of improving the levels of assets and the performance of the farms.

This study will be structured in this introduction and in five subsequent parts. The second part concerns the research in literature covering the topic of this study. The third section covers the data analysis of the balance sheet items relating to the farms of the twenty seven former European Union countries. The fourth is associated with the calculation of the main financial indicators, the fifth is for comparing these findings with the levels of investment and structural subsidies and finally the sixth part addresses the main conclusions.

The financial indicators considered in investigating the financial performance of the European farms were the following (CGD, 2015; de Almeida and Ribeiro, 2015): Liquidity indicators (overall liquidity); Profitability indicators (return on equity); and Debt indicators (financial autonomy and debt to equity ratio).

This is an approach towards these issues which aims to be an alternative contribution, taking into account our knowledge, and is intended as a study which brings input for the improvement in the connections among the financial reality, investment and structural measures, helping public institutions in the design of adjusted policies and private operators in obtaining more dynamism and performance.

## **2. Literature survey**

In consulting international literature, it would seem that studies concerning the financial issues related with the European Union farms, using the statistical information from the Farm Accountancy Data Network (FADN), are not abundant.

The statistical information available in the FADN may be an important basis for pertinent analysis in the European Union agricultural sector, at farm level, namely because the variables considered in this database cover several farming issues, allowing for several

studies in the fields of the farming sector. Considering the structural particularities of this sector, the design of adjusted strategies holds great importance.

However, this information, namely that related with the financial subjects, may, still, be further improved upon, as proposed by the research developed by the authors Pitulice and Gorgan (2012). On the other hand, it will be crucial to develop mechanisms to guarantee the quality of these data collected, as stressed by authors such as, for example, Kourilova and Sedlacek (2014). In fact, some of the microeconomic data obtained from the farms are provided by farmers who voluntarily opted to send this information to the national public institutions, which calls for some attention by the respective databases, namely in terms of sampling and data processing.

A significant part of scientific studies available, for farm financial frameworks using FADN statistical information, were published in conference proceedings indexed to the web of science database. The literature survey performed in this section, and presented below, will take into account the scientific studies available for these issues in this platform.

In fact, analysing the scientific studies archived in this database, it is possible to find some which were developed within the fields of research that will be evidenced in this current study, however with different methodologies and objectives.

The authors, Alekneviciene and Alekneviciute (2011), for example, also used data from the FADN, calculated financial ratios for the European Union farms and studied the impact of the subsidies on these indicators, but with different methodologies, data and considering namely the current subsidies.

Organic farming has been able to assert itself as an alternative to the practices associated, namely with intensive agriculture, specifically because of the environmental and health problems as a consequence of the intensive utilization of synthetic fertilizers

and crop protection products. The agricultural policies from the national and European Union Institutions contemplate several forms of financial support for these alternative farming practices which are compatible with the environment. In this context, Zander, Nieberg and Offermann (2008) analysed the importance of the organic payments for the economic and financial performance in organic farms, for the European Union countries and using data from the FADN.

The fiscal burden for the agricultural sector has its impact upon the farms' dynamics. Some countries, such as Portugal for example, have implemented some reforms in the fiscal policy for agriculture. In any case, considering the specificities of the farming sector and its vulnerability to external shocks, namely those with an impact upon the farms' costs, it is important to analyse the impact of these shocks on the farms performance. With this intention, Soliwoda (2013) used the information available in the Polish FADN to investigate the implications of the fiscal costs in the farms' net results.

The financial sustainability of the farms is another concern for farmers and for public institutions. Janova, Vavrina and Hampel (2012) developed a tool to evaluate potential bankruptcy in the agricultural sector, preventing financial losses, considering the FADN as one of the statistical databases.

The financial crises of 2008 brought additional preoccupations concerning bank loans, having implications upon the financial structures of the farms. In this scenario, evaluating the implications of the European Union agricultural subsidies and policies on the bank loans for farms may be an interesting topic for research (Ciaian, Pokrivcak and Szegenyova, 2012).

Considering the perishability of agricultural products and the vulnerability of the farming activities and production due to external conditions (climate, etc) it is fundamental that the farmers protect their investments through insurance. Enjolras and Sentis (2011)

demonstrate that the financial aspects, in French farms, do not influence the insurance options, also, using FADN data.

The economic literature stresses the importance of the scale of production as an important determinant of performance across several sectors such as manufacturing. Sometimes these questions are forgotten in agriculture. Czakowska and Sass, (2009) assessed the influence of the scale of production on the economic and financial performance of Polish farms oriented towards milk production. In a similar way, Chatellier and Delattre (2003) made a comparative financial analysis for the French farms specialized in milk production. When we talk about organization, specialization and the dimension of the farms, the farm efficiency is another important question in the agricultural sector (Galluzzo, 2016).

Finally, the FADN database was, also, used by Danilowska (2009) to analyse farming debts in the European Union countries, considering financial indicators and by Taragola, Van Lierde and Van Huylenbroeck (2000) for assessing the relationships between the financial dynamics of glasshouse farms in Belgium and their environmental management.

### **2.1. Triple Helix approach in the agricultural sector**

There are not many studies about the Triple Helix concept in farms, taking into account, again, namely the web science database.

The interactions among the research (universities, polytechnics and other research institutions), economic units (farms, industrial enterprises, services units) and public institutions (government and other political institutions) are always important for a dynamic, sustainable development with positive externalities in the socioeconomic and environmental contexts.

These relationships assume a special importance in less developed regions and sectors, as happens, for example, in the interior of Portugal and in the agricultural sector, namely in the smaller and less competitive farms. However, the literature review showed a residual number of studies dedicated, for example, to the agricultural sector, considering the Triple Helix concept. All this is with the exception of some studies related, for example, with the problematics of small farms (Haas, Meixner and Petz, 2016), rubber farms (Puangpronpitag, 2015), less developed countries (Williams and Woodson, 2012), the role of the internet (Cho and Park, 2012; Kim and Park, 2014) and the comparison between different countries (Kim *et al.*, 2012).

### **3. Data analysis of balance sheet items for European Union farms**

The data presented in table 1 (all tables are presented in the annex) were obtained by calculating averages for the balance sheet items over the years 2007-2011, considering the data available in the FADN (2017) for the farms of the twenty seven former European Union countries, before the European debt crisis of 2011. Two periods were considered; 2007-2011 and 2012-2015 to capture the effects of the 2011 European debt crisis.

Table 1 demonstrates, for example, that the total current assets represent more than 50% of the total fixed assets (which shows the proportion of these two items in total assets) in Slovakia, France, Spain, Hungary and Latvia. Ireland and Greece are the countries where the amount of total current assets comparative to the total fixed assets are lower. In turn, the non-breeding livestock represents around 50% of the total current assets in Ireland, Belgium and Malta. In general, it is other circulating capital (advance for crops, holdings of agricultural shares and amounts receivable in the short-term and cash balances in hand or at the bank) that represents the majority of the total current assets.



On the other hand, the land, permanent crops and quotas are the majority of the total fixed assets in countries such as Denmark, the Netherlands, the United Kingdom, Luxembourg, Ireland, Germany, Sweden, Italy, Spain, Cyprus, Malta, Slovenia, Portugal, Greece and Bulgaria. The buildings represent around 50% of the total fixed assets in Slovakia, the Czech Republic, Austria and Romania, machinery also has a substantial weight in Lithuania and the breeding livestock has a greater relevance, within the total fixed assets and comparative to other countries, in Belgium and France

Table 2 shows the percentages, for the several accounting items, among the average values of each country (2007-2011) and the sum of the means for the twenty seven former European Union countries. Considering averages in alternative to annual data has some advantages when we work with statistical information where the sampling may change annually.

These results show that the representative farms from Denmark, the Netherlands, the United Kingdom, Luxembourg, Slovakia, Ireland and the Czech Republic represent together, on average over the period considered, more than 60% of the total European Union (excluding Croatia): total assets; total fixed assets; land, permanent crops and quota. Considering that the data from the FADN are relative to representative farms obtained through weighting methodologies, these results only signify that the farms in these countries are better equipped with total and fixed assets. The same happens when we verify that the farms of these countries incorporate more than 50% in buildings; machinery, total current assets, and net worth, or represent more than 70% in liabilities.

The order of the countries, in decreasing trends, for the total assets the following (table 2): Denmark, Netherlands, United Kingdom, Luxembourg, Slovakia, Ireland, Czech Republic, Germany, Sweden, Belgium, Austria, France, Finland, Italy, Spain, Cyprus, Estonia, Malta, Slovenia, Hungary, Poland, Latvia, Lithuania, Portugal, Greece, Bulgaria

and Romania. Among the countries that adhered to the European Union after 2004, Slovakia and the Czech Republic are countries with high levels of total assets. On the other hand, Portugal and Greece between the twelve former European Union countries have low levels of total assets in their representative farms.

The decreasing order in terms of net worth is not so different from that presented for the total assets and is the following: Netherlands, United Kingdom, Denmark, Luxembourg, Ireland, Slovakia, Germany, Czech Republic, Sweden, Belgium, Austria, Italy, Spain, Finland, France, Cyprus, Slovenia, Malta, Estonia, Poland, Hungary, Portugal, Greece, Lithuania, Latvia, Bulgaria and Romania. In this case it is the Netherlands which is the country with greater financial performance in the representative European Union farms. The countries that adhered in 2007 to the European Union (Bulgaria and Romania) show lower values for the balance sheet.

For the period 2012-2015, figure 1 (annex) reveals that Denmark, Netherlands and United Kingdom are the countries where the farms, on average, have more total assets, total fixed assets and land, permanent crops and quotas. In turn, Luxembourg, Ireland, Slovakia, Germany and Sweden are, also, countries where farms present relevant values for these variables. The buildings, machinery, current assets, liabilities and net worth have, also, more relevant expression in farms of these countries and other member-states such as the Czech Republic, Austria, France or Belgium.

Comparing the data for the two periods, farms from countries such as Germany and Sweden seem to improve slightly in terms of their reality in total assets, as a consequence of changes to some items of the balance sheet.

#### **4. Calculation of financial indicators**

In this section the following financial indicators were calculated (CGD, 2015; de Almeida and Ribeiro, 2015): overall liquidity (current assets/short-term loans), return on equity (net result/net worth), financial autonomy (net worth/(net worth + total liabilities)) and debt to equity ratio (total liabilities/net worth). For the net result, cash flow was used.

The overall liquidity allows for analysis of the farms capacity in solving their compromise of short-term, the desirable would be a value for this financial indicator to be greater than one. The return on equity permits an understanding of the profitability of the financial applications in farms, where the financial autonomy shows how the assets are financed by net worth and/or by liabilities and the debt to equity ratio reveals the relationships among the liabilities and the net worth (a greater ratio signifies high liability farms).

Table 3 was obtained, for the period 2007-2011, through the ratio among the values found for each financial indicator, in the several countries, and the European Union (without Croatia) overall mean. These results show that the farms with greater capacity to answer to short-term compromises are those of the following countries (in decreasing order for the financial indicator overall liquidity): Cyprus (7.23 times above the overall mean), Italy, Spain, Belgium, Slovenia, Greece, Romania, Ireland, Portugal, Finland, Austria, Luxembourg, Malta, Poland, Slovakia, Lithuania, Denmark, Sweden, Bulgaria, Latvia, France, Netherlands, Czech Republic, Hungary, Germany, United Kingdom and Estonia (0.06 times below the overall mean). Farms from Cyprus, Italy and Spain are those with greater capacity to solve compromises of short-run and those from Germany, United Kingdom and Estonia are in a worse situation, within this context.

The countries where the farms have more profitability for financial applications are (in decreasing trend for the values of the financial indicator return on equity): France,

Greece, Portugal, Romania, Latvia, Hungary, Lithuania, Belgium, Italy, Spain, Finland, Poland, Estonia, Malta, Austria, Bulgaria, Germany, Cyprus, Netherlands, Czech Republic, United Kingdom, Denmark, Luxembourg, Sweden, Ireland, Slovenia and Slovakia. France is the country where the farms present higher profitability of the net worth and Slovakia is where the farms have lower profitability from financial applications.

On the other hand, the financial autonomy is greater in Greece, Italy, Slovenia, Cyprus, Spain, Ireland, Romania and Portugal and is lower in Finland, Belgium, Estonia, Sweden, Latvia, Netherlands, France and Denmark.

Finally, the values for the debt to equity ratio show an evolution inverse to that presented previously for the financial autonomy, as expected.

For the period 2012-2015, table 4 reveals that there are not so many differences relative to the period 2007-2011, in terms of financial indicators. In fact, the decreasing order for the overall liquidity is the following: Italy, Cyprus, Greece, Spain, Slovenia, Ireland, Romania, Belgium, Austria, Portugal, Finland, Malta, Poland, Denmark, Lithuania, Sweden, Netherlands, Luxembourg, Hungary, Bulgaria, Czech Republic, Latvia, France, Slovakia, United Kingdom, Germany and Estonia.

The same seems to occur, for example, for the return on equity, where countries such as the Czech Republic, France, Romania, Portugal, Greece, Lithuania, Spain, Belgium, Finland, Poland and Italy present indicators above the European mean and countries such as Sweden, Ireland, Slovenia and Slovakia show the lower ratios.

Finally the decreasing order for financial autonomy (table 4) is: Greece, Italy, Ireland, Romania, Slovenia, Spain, Portugal, Cyprus, Malta, Poland, United Kingdom, Austria, Lithuania, Hungary, Bulgaria, Germany, Luxembourg, Slovakia, Czech Republic, Finland, Belgium, Sweden, Latvia, Estonia, Netherlands, France and Denmark. Also in this

case, for this financial indicator, there are some differences between the two periods, but there are, also, relevant similarities.

## **5. Comparison between balance sheet items, financial indicators, levels of investment and structural support**

Considering the values for investment and for the subsidies on investment presented in tables 5 and 6, respectively, for the periods 2007-2011 and 2012-2015, it is possible to highlight that farms which receive more subsidies on investment are not necessarily always the same as those which receive more investment. This finding needs a deeper analysis and, therefore, due to this and in order to complement the analyses carried out before, the results for the correlation among the several accounting variables and financial indicators are presented in this section.

In fact, for the period 2007-2011, for example, Slovakia, Denmark, Luxembourg, Netherlands, Belgium, United Kingdom, Sweden, Czech Republic, Germany, Finland, France and Austria were the countries with more gross investment. However, in this period, the member-states with more subsidies on investment were Slovakia, Luxembourg, Estonia, Czech Republic, Lithuania, Latvia, Ireland, Belgium, Austria and Slovenia. This seems to reveal that, for example, Denmark and Netherlands make investments without any great support.

In the second period (2012-2015), Luxembourg, Slovakia, Netherlands, Denmark, Czech Republic, Belgium, Germany, United Kingdom, Sweden and France are some of the countries with more gross investment. In turn some of the countries with subsidies on investment are: Luxembourg, Slovakia, Czech Republic, Estonia, Belgium, Lithuania, France, Finland, Slovenia and Austria. As verified for the previous period, for example, Luxembourg, Slovakia, Czech Republic and Belgium seem to be countries where the farms

have great investments and receive significant amounts of financial support for the investments.

To complement and to increase the robustness of the findings presented above, there will follow an analysis of the results obtained through Spearman's rank correlation methodologies and considering the procedures proposed by Stata (2017). These results are presented in tables 7 and 8, respectively, for the two periods considered.

Table 7 shows that there are strong positive and statistically significant correlations between the level of total assets and the total fixed assets (0.985), total current assets, total liabilities (0.793), net worth and the gross investment. The correlation of the total assets with the net investment is positive but relatively weaker (0.514) and negative with the return on equity (-0.659) and with the financial autonomy (-0.410). On the other hand, there are no statistically significant correlations between the total assets and the overall liquidity and subsidies on investment. The negative or not statistically significant correlations between the accounting variables and the financial indicators are confirmed when analysing the coefficients (of correlation with the financial ratios) for the total fixed assets, total current assets, total liabilities and net worth. This negative correlation of these financial indicators is verified, also, with the gross and net investment. This seems to indicate that more equipped (more fixed assets, for example) and more dynamic (more investments) farms are, they in turn have more financial frailties (weaker financial indicators), and vice-versa. Finally, there is a positive and statistically significant correlation among the gross investment and the subsidies on investment (0.415) and no relationship between the net investment and the financial support.

In the second period (table 8) the context referred to before, for the period 2007-2011, is very similar in the relationship between the financial indicators and the accounting variables and between these financial ratios and investment. It is worth stressing, the

positive and significant correlation, in this second period, among the net investment and the subsidies on investment. This seems to indicate some change in the paradigm of investments.

## **6. Conclusions**

Considering the Triple Helix concept, the objective of this study was, firstly, to analyse accounting variables of European Union farms, using microeconomic data from the Farm Accountancy Data Network, for the periods 2007-2011 and 2012-2015 (to try to capture eventual effects from the European debt crisis). It is important to stress that the data from the FADN is for representative farms obtained through weighting methodologies for each European country. The idea was to understand the realities in terms of total assets, fixed assets, current assets and liabilities among the farms of the different twenty seven former European Union countries. Secondly, financial indicators were calculated to analyse the financial realities of these farms and finally relate these variables (financial ratios and accounting items with the investment and the support on investment).

With regard to the accounting variables, in the first period, the data show that, in general, the advances for crops, amounts receivable in the short-term and cash balances in hand or at the bank are what represent the majority of the total current assets in European Union farms. The total current assets represent a great proportion when compared with the fixed assets in farms of countries such as Slovakia, France, Spain, Hungary and Latvia. On the other hand, Denmark, Netherlands, United Kingdom are the countries where the farms have more land and permanent crops (in euros) within fixed assets and Slovakia, Czech Republic, Austria and Romania is where there are more buildings (in euros) inside the non-current assets. Farms in Denmark, Netherlands and United Kingdom invest more in land and permanent crops and farms from Slovakia and Czech Republic seem to invest more in

buildings. The contextual trend verified for the second period does not present many differences relative to that described in the first period. In general, it is worth highlighting the importance of the total assets in farms from countries such as, for example, Denmark, Netherlands and United Kingdom.

Concerning the results for the financial indicators, the capacity to answer to short-term compromises (overall liquidity), in the two periods, is notable in farms of countries like, Cyprus, Italy, Greece and Spain. In turn, the profitability for the financial applications presents greater performance, for example, in farms in France, Greece, Portugal and Romania. The financial autonomy is better in, for instance, Greece, Italy, Slovenia, Cyprus and Spain. These findings reveal that the European Union countries with better financial indicators are not necessarily the same as those which have more assets.

The comparison between the balance sheet items, the financial ratios and the levels of investment and structural support confirms that European farms where there are more assets are not necessarily the same as those where the financial indicators are better. On the other hand, there is a negative or not statistically significant correlation among the financial ratios and the levels of investment. In any case, there is a positive and statistically significant relationship between the level of assets and the investment. Finally, the correlation among the investment and the subsidies on investment is not as strong as could be expected which is worse for the net investment.

These results show that there is some work to do, namely in the design of structural policies, specifically in changing the correlation between financial indicators and farm assets and between the subsidies on investment and the net investment, improving the interactions between the farms and government in a perspective of Triple Helix. In turn, the financial reality for European Union farms is diverse showing that the potentialities for an effective promotion of a sustainable interaction university-economic sector-government



are dependent upon distinct dynamics and performances within the farms.

In future studies it will be important to analyse the differences between the gross investment and the net investment in farms of the European Union countries, namely in identifying the causes for these divergences.

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## Annex

**Table 1.** Balance sheet items of the European Union farms (percentages over the total fixed assets and the total current assets, 2007-2011)

	Land, permanent crops and quotas/Total fixed assets	Buildings/Total fixed assets	Machinery/Total fixed assets	Breeding livestock/Total fixed assets	Total current assets/Total fixed assets	Non-breeding livestock/Total current assets	Stock of agricultural products/Total current assets	Other circulating capital/Total current assets
Denmark	72.52	17.66	8.15	1.68	15.81	21.07	14.07	64.86
Netherlands	73.36	15.19	9.05	2.39	15.32	11.66	16.86	71.48
United Kingdom	83.41	4.28	7.90	4.42	12.50	26.73	15.17	58.10
Luxembourg	51.35	23.42	20.61	4.63	20.87	26.75	6.17	67.08
Slovakia	9.49	55.70	28.03	6.77	74.45	10.29	20.15	69.55
Ireland	87.39	6.46	3.37	2.78	5.05	55.19	8.65	36.17
Czech Republic	12.65	47.01	33.68	6.66	34.52	15.06	14.76	70.18
Germany	68.84	13.28	13.57	4.30	16.99	24.08	5.52	70.39
Sweden	55.14	22.58	17.43	4.84	29.87	12.74	13.61	73.64
Belgium	49.15	26.61	13.14	11.09	15.59	57.77	11.90	30.33
Austria	29.40	48.80	19.27	2.54	28.01	11.01	8.17	80.82
France	26.89	27.79	29.74	15.58	68.25	14.34	30.60	55.06
Finland	48.40	26.49	22.26	2.85	20.87	12.77	18.94	68.29
Italy	75.60	14.00	8.77	1.62	17.84	8.06	9.84	82.10
Spain	81.68	9.03	5.48	3.80	52.45	3.29	1.66	95.05
Cyprus	79.52	8.44	7.61	4.43	17.04	12.42	0.13	87.44
Estonia	24.21	33.91	34.50	7.38	28.92	16.91	31.21	51.88
Malta	50.82	31.37	14.49	3.32	8.09	45.30	0.00	54.69
Slovenia	51.22	32.41	13.61	2.76	6.53	33.99	62.85	3.16
Hungary	38.85	27.26	28.66	5.23	58.04	8.35	17.79	73.86
Poland	46.62	31.19	19.32	2.88	15.23	19.34	37.84	42.83
Latvia	33.05	22.41	36.48	8.07	53.33	9.99	17.23	72.78
Lithuania	26.46	17.38	49.64	6.52	48.11	8.78	20.79	70.42
Portugal	61.95	13.85	16.66	7.54	26.53	14.83	15.57	69.60
Greece	69.61	8.23	17.52	4.64	5.08	32.93	18.11	48.96
Bulgaria	52.30	16.59	24.32	6.80	39.20	10.58	16.72	72.70
Romania	28.54	45.71	18.52	7.23	29.86	14.11	11.60	74.29

**Table 2.** Balance sheet items of the European Union farms (% , 2007-2011)

	Total assets	Total fixed assets	Land, permanent crops and quotas	Buildings	Machinery	Breeding livestock	Total current assets	Non-breeding livestock	Stock of agricultural products	Other circulating capital	Total liabilities	Long and medium-term loans	Short-term loans	Net worth
Denmark	16.80	17.71	21.11	15.06	10.16	7.13	12.66	15.30	11.67	12.20	36.30	41.11	11.79	10.20
Netherlands	13.20	13.98	16.86	10.23	8.91	8.05	9.68	6.48	10.70	10.29	19.27	20.25	14.32	11.15
United Kingdom	8.92	9.68	13.26	1.99	5.38	10.27	5.47	8.39	5.44	4.72	3.53	2.25	10.07	10.74
Luxembourg	7.19	7.27	6.13	8.19	10.54	8.08	6.86	10.52	2.77	6.84	5.34	5.51	4.53	7.82
Slovakia	6.39	4.47	0.70	11.99	8.83	7.28	15.06	8.89	19.88	15.56	3.75	2.08	12.25	7.29
Ireland	5.85	6.80	9.76	2.11	1.61	4.55	1.55	4.91	0.88	0.83	0.56	0.58	0.49	7.64
Czech Republic	5.16	4.68	0.97	10.60	11.10	7.50	7.31	6.31	7.07	7.62	4.69	3.48	10.86	5.32
Germany	5.03	5.25	5.94	3.36	5.02	5.44	4.03	5.57	1.46	4.22	3.66	3.02	6.92	5.50
Sweden	4.47	4.20	3.81	4.57	5.15	4.89	5.67	4.15	5.06	6.21	5.35	5.34	5.37	4.17
Belgium	3.87	4.08	3.30	5.23	3.78	10.89	2.88	9.54	2.24	1.30	4.33	5.16	0.13	3.71
Austria	2.76	2.64	1.27	6.19	3.57	1.61	3.34	2.11	1.79	4.01	1.11	0.97	1.79	3.32
France	2.69	1.95	0.86	2.61	4.09	7.32	6.03	4.96	12.08	4.93	4.12	3.19	8.87	2.21
Finland	2.55	2.58	2.05	3.28	4.03	1.76	2.43	1.78	3.02	2.47	2.79	3.15	0.95	2.47
Italy	2.24	2.33	2.89	1.57	1.44	0.91	1.88	0.87	1.21	2.29	0.09	0.10	0.03	2.97
Spain	2.18	1.74	2.34	0.76	0.67	1.59	4.13	0.78	0.45	5.83	0.20	0.21	0.14	2.84
Cyprus	1.50	1.57	2.05	0.64	0.84	1.67	1.21	0.86	0.01	1.57	0.13	0.15	0.02	1.97
Estonia	1.33	1.26	0.50	2.06	3.07	2.24	1.65	1.60	3.38	1.27	1.57	1.16	3.68	1.25
Malta	1.32	1.50	1.25	2.26	1.53	1.19	0.55	1.42	0.00	0.44	0.20	0.16	0.40	1.71
Slovenia	1.32	1.51	1.27	2.36	1.45	1.00	0.45	0.87	1.84	0.02	0.09	0.10	0.03	1.74
Hungary	0.97	0.75	0.48	0.99	1.52	0.95	1.97	0.94	2.30	2.17	0.89	0.47	3.01	1.00
Poland	0.83	0.88	0.68	1.33	1.20	0.61	0.61	0.67	1.51	0.39	0.26	0.22	0.46	1.03
Latvia	0.74	0.59	0.32	0.64	1.51	1.14	1.42	0.81	1.60	1.54	0.95	0.79	1.73	0.67
Lithuania	0.68	0.56	0.24	0.47	1.97	0.88	1.22	0.62	1.67	1.28	0.39	0.24	1.13	0.78
Portugal	0.68	0.65	0.67	0.44	0.77	1.19	0.79	0.67	0.80	0.81	0.09	0.06	0.25	0.88
Greece	0.64	0.74	0.85	0.29	0.91	0.83	0.17	0.32	0.20	0.12	0.01	0.01	0.03	0.85
Bulgaria	0.44	0.39	0.34	0.31	0.67	0.64	0.69	0.42	0.76	0.75	0.29	0.22	0.68	0.50
Romania	0.23	0.22	0.10	0.47	0.28	0.37	0.29	0.24	0.22	0.32	0.03	0.02	0.07	0.30

**Table 3:** Financial indicators (in ratios relatively to the overall mean, 2007-2011)

	Overall liquidity (Current assets/Short-term loans)	Return on equity (Net result/Net worth)	Financial autonomy (Net worth/(Net worth + Total liabilities))	Debt to equity ratio (Total liabilities/Net worth)
Cyprus	7.23	0.69	1.18	0.09
Italy	6.84	1.13	1.19	0.04
Spain	3.77	1.08	1.18	0.10
Belgium	2.84	1.43	0.86	1.60
Slovenia	1.91	0.29	1.18	0.07
Greece	0.69	2.33	1.20	0.02
Romania	0.52	1.60	1.17	0.13
Ireland	0.40	0.32	1.17	0.10
Portugal	0.40	1.69	1.16	0.15
Finland	0.32	1.07	0.87	1.55
Austria	0.23	0.94	1.08	0.46
Luxembourg	0.19	0.45	0.98	0.94
Malta	0.17	0.97	1.16	0.16
Poland	0.17	1.05	1.11	0.34
Slovakia	0.15	-0.09	1.02	0.71
Lithuania	0.14	1.51	1.03	0.68
Denmark	0.13	0.47	0.55	4.89
Sweden	0.13	0.44	0.84	1.76
Bulgaria	0.13	0.80	1.00	0.81
Latvia	0.10	1.54	0.81	1.94
France	0.09	2.35	0.74	2.56
Netherlands	0.08	0.59	0.76	2.37
Czech Republic	0.08	0.58	0.93	1.21
Hungary	0.08	1.53	0.93	1.21
Germany	0.07	0.72	0.98	0.91
United Kingdom	0.07	0.48	1.08	0.45
Estonia	0.06	1.03	0.84	1.72

**Table 4:** Financial indicators (in ratios relatively to the overall mean, 2012-2015)

	Overall liquidity (Current assets/Short-term loans)	Return on equity (Net result/Net worth)	Financial autonomy (Net worth/(Net worth + Total liabilities))	Debt to equity ratio (Total liabilities/Net worth)
Italy	11.73	1.02	1.21	0.03
Cyprus	5.53	0.82	1.18	0.13
Greece	2.22	1.89	1.22	0.01
Spain	1.41	1.51	1.18	0.11
Slovenia	0.97	0.29	1.18	0.10
Ireland	0.83	0.35	1.19	0.09
Romania	0.63	2.23	1.19	0.10
Belgium	0.52	1.40	0.89	1.39
Austria	0.49	0.52	1.07	0.49
Portugal	0.33	1.99	1.18	0.12
Finland	0.31	1.07	0.89	1.37
Malta	0.31	0.72	1.17	0.14
Poland	0.24	1.06	1.15	0.24
Denmark	0.15	0.60	0.50	5.35
Lithuania	0.14	1.80	1.03	0.68
Sweden	0.13	0.37	0.83	1.75
Netherlands	0.13	0.51	0.80	1.98
Luxembourg	0.12	0.62	0.92	1.18
Hungary	0.12	0.40	1.01	0.75
Bulgaria	0.11	0.66	0.98	0.92
Czech Republic	0.10	2.47	0.90	1.32
Latvia	0.10	0.87	0.83	1.75
France	0.09	2.42	0.73	2.53
Slovakia	0.08	-0.76	0.92	1.21
United Kingdom	0.08	0.43	1.10	0.42
Germany	0.07	0.93	0.96	1.00
Estonia	0.07	0.81	0.82	1.82

**Table 5.** Investment and subsidies on investment in averages over the period 2007-2011 (euros)

	Gross Investment	Net Investment	Subsidies on investments
Slovakia	92539	-14148	14424.8
Denmark	76501	36522	110.8
Luxembourg	74053	23261	14009.2
Netherlands	73262	24659	160.6
Belgium	41376	14171	1926
United Kingdom	39205	14408	1176.4
Sweden	39064	18927	30.8
Czech Republic	38801	7232	4160.2
Germany	32654	6752	386.4
Finland	28197	4508	922.6
France	26920	-2104	1247.4
Austria	21123	6136	1882.2
Estonia	20746	9570	4226.4
Latvia	11890	4657	2483
Lithuania	11008	5771	3388.4
Ireland	8606	1265	2059.2
Slovenia	8266	1205	1290.4
Hungary	7092	648	858.6
Bulgaria	5058	2233	81.6
Poland	3847	-231	217.2
Portugal	3397	-308	561.6
Italy	2539	-4252	196.8
Cyprus	2370	-1254	675.8
Spain	2327	-997	222.8
Malta	1283	-1137	701.4
Greece	588	-2667	60.8
Romania	565	-563	19.4

**Table 6.** Investment and subsidies on investment in averages over the period 2012-2015 (euros)

	Gross Investment	Net Investment	Subsidies on investments
Luxembourg	99395	41013	17135
Slovakia	96344	11778	8540
Netherlands	80672	27018	630
Denmark	57573	14184	852
Czech Republic	52618	17717	4314
Belgium	43909	10787	2277
Germany	43713	12057	611
United Kingdom	39902	8627	765
Sweden	39207	9856	0
France	31900	-537	1384
Estonia	28808	11810	3897
Finland	25619	261	1375
Austria	21865	4809	1151
Latvia	16631	7878	966
Ireland	11061	3749	488
Lithuania	10816	3332	1657
Slovenia	8986	1343	1358
Hungary	8898	2788	797
Bulgaria	8603	3347	481
Portugal	4972	1150	590
Italy	4715	-1683	165
Poland	4305	-413	407
Malta	3855	1128	963
Spain	2993	-1287	138
Cyprus	2110	-1356	371
Greece	1061	-2726	402
Romania	478	-756	9

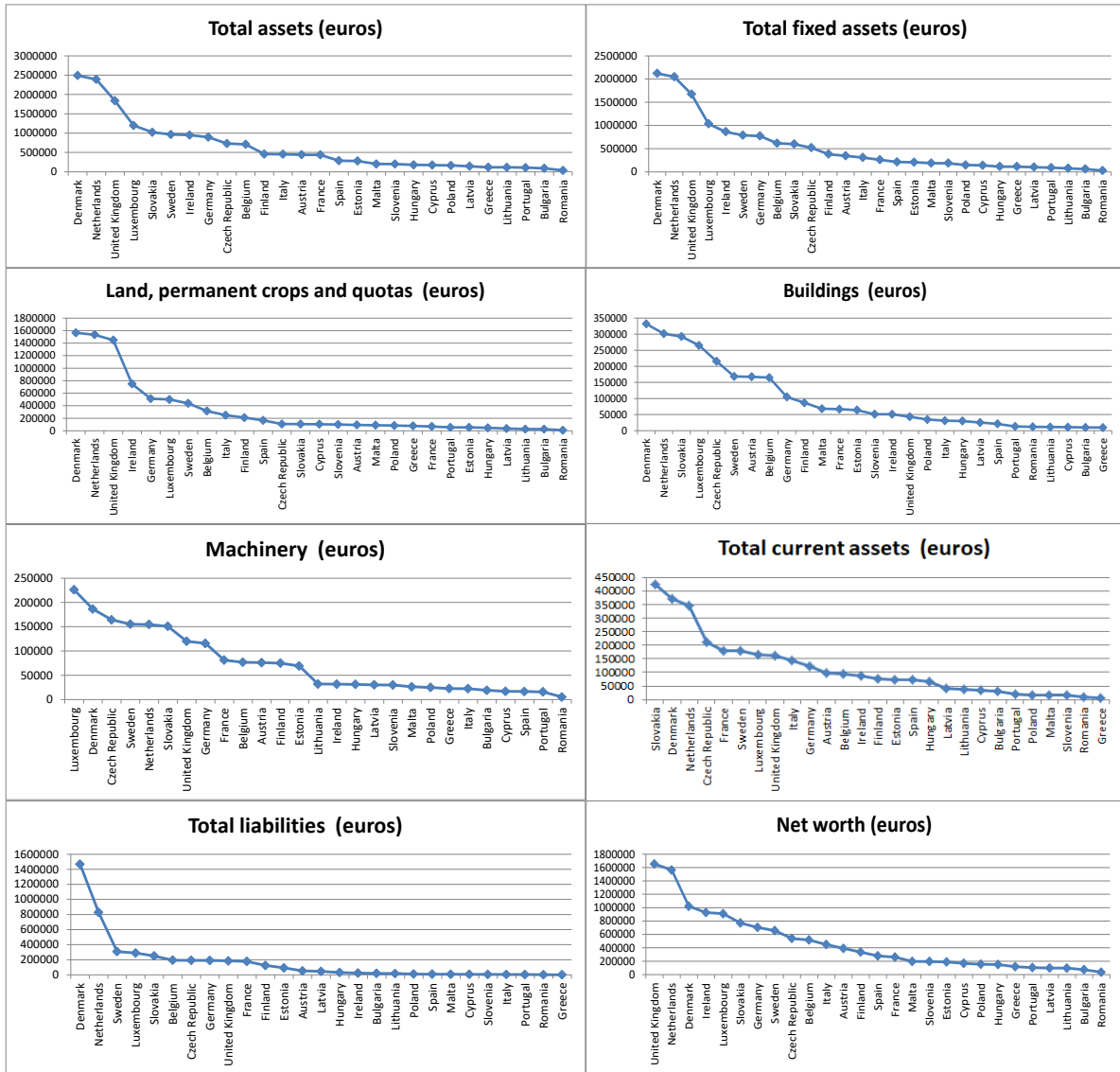
**Table 7.** Spearman's rank correlation matrix (over the period 2007-2011)

	Total assets	Total fixed assets	Total current assets	Total liabilities	Net worth	Gross investment	Net investment	Overall liquidity	Return on equity	Financial autonomy	Debt to equity ratio	Subsidies on investments
Total assets	1.000											
Total fixed assets	0.985* (0.000)	1.000										
Total current assets	0.862* (0.000)	0.798* (0.000)	1.000									
Total liabilities	0.793* (0.000)	0.730* (0.000)	0.875* (0.000)	1.000								
Net worth	0.982* (0.000)	0.992* (0.000)	0.804* (0.000)	0.702* (0.000)	1.000							
Gross investment	0.808* (0.000)	0.752* (0.000)	0.836* (0.000)	0.927* (0.000)	0.736* (0.000)	1.000						
Net investment	0.514* (0.006)	0.507* (0.006)	0.461* (0.015)	0.716* (0.000)	0.475* (0.012)	0.679* (0.000)	1.000					
Overall liquidity	-0.249 (0.210)	-0.178 (0.373)	-0.403* (0.036)	-0.570* (0.001)	-0.155 (0.439)	-0.482* (0.010)	-0.485* (0.010)	1.000				
Return on equity	-0.659* (0.000)	-0.667* (0.000)	-0.423* (0.027)	-0.417* (0.030)	-0.680* (0.000)	-0.528* (0.004)	-0.391* (0.043)	0.119 (0.552)	1.000			
Financial autonomy	-0.410* (0.033)	-0.323 (0.099)	-0.617* (0.000)	-0.850* (0.000)	-0.272 (0.168)	-0.719* (0.000)	-0.628* (0.000)	0.670* (0.000)	0.053 (0.790)	1.000		
Debt to equity ratio	0.410* (0.033)	0.323 (0.099)	0.617* (0.000)	0.850* (0.000)	0.272 (0.168)	0.719* (0.000)	0.628* (0.000)	-0.670* (0.000)	-0.053 (0.790)	-1.000* (0.000)	1.000	
Subsidies on investments	0.263 (0.184)	0.176 (0.378)	0.268 (0.176)	0.283 (0.152)	0.188 (0.347)	0.415* (0.031)	0.131 (0.514)	-0.185 (0.355)	-0.211 (0.288)	-0.190 (0.341)	0.190 (0.341)	1.000



**Table 8.** Spearman's rank correlation matrix (over the period 2012-2015)

	Total assets	Total fixed assets	Total current assets	Total liabilities	Net worth	Gross investment	Net investment	Overall liquidity	Return on equity	Financial autonomy	Debt to equity ratio	Subsidies on investments
Total assets	1.000											
Total fixed assets	0.987* (0.000)	1.000										
Total current assets	0.870* (0.000)	0.823* (0.000)	1.000									
Total liabilities	0.813* (0.000)	0.788* (0.000)	0.859* (0.000)	1.000								
Net worth	0.983* (0.000)	0.985* (0.000)	0.816* (0.000)	0.725* (0.000)	1.000							
Gross investment	0.805* (0.000)	0.773* (0.000)	0.852* (0.000)	0.938* (0.000)	0.735* (0.000)	1.000						
Net investment	0.647* (0.000)	0.628* (0.000)	0.649* (0.000)	0.841* (0.000)	0.590* (0.001)	0.883* (0.000)	1.000					
Overall liquidity	-0.279 (0.157)	-0.224 (0.261)	-0.454* (0.017)	-0.616* (0.000)	-0.197 (0.324)	-0.624* (0.000)	-0.647* (0.000)	1.000				
Return on equity	-0.460* (0.015)	-0.425* (0.026)	-0.268 (0.175)	-0.348 (0.074)	-0.454* (0.017)	-0.329 (0.093)	-0.396* (0.040)	0.160 (0.425)	1.000			
Financial autonomy	-0.446* (0.019)	-0.413* (0.031)	-0.630* (0.000)	-0.835* (0.000)	-0.312 (0.113)	-0.752* (0.000)	-0.665* (0.000)	0.686* (0.000)	0.087 (0.665)	1.000		
Debt to equity ratio	0.446* (0.019)	0.413* (0.031)	0.630* (0.000)	0.835* (0.000)	0.312 (0.113)	0.752* (0.000)	0.665* (0.000)	-0.686* (0.000)	-0.087 (0.665)	-1.000* (0.000)	1.000	
Subsidies on investments	0.280 (0.155)	0.233 (0.240)	0.358 (0.066)	0.477* (0.011)	0.210 (0.293)	0.641* (0.000)	0.544* (0.003)	-0.489* (0.009)	-0.056 (0.778)	-0.522* (0.005)	0.522* (0.005)	1.000



**Figure 1.** Assets, liabilities and net worth for the European Union countries in average over the period 2012-2015