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Article

A Metrics Refinement of EU Fruit Production Economic Assessment[†]

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Abstract: The paper applies the farm accountancy data network (FADN) approach to conduct a comparison analysis of the revenue of EU fruit producers. The study constitutes a significant contribution to the requisite development of more accurate metrics and appropriate approaches, which are necessary for assessing the economic success of EU fruit production in the principal sector of EU agriculture. The metrics used to measure the economic success in fruit production include farm net value added (FNVA), farm net income (FNI), annual working unit (AWU) of FNVA, and farm family income (FFI/FWU). An agricultural farm’s overall productivity can be determined by dividing its entire output (production) by the inputs employed in its operations, such as specific expenses and intermediate consumption. The FADN approach, which tracks the increase in agricultural revenue and assesses the effects of European policies on the agricultural sector, improves monitoring and meeting of performance goals. Finding economic, technological, and other aspects that will improve agricultural farms’ businesses and, by extension, agriculture as a whole will require applying an appropriate methodological approach to portray the actual situation and results of these farms.

Keywords: FADN; fruit production; FNVA; FNI; economic assessment metrics; AWU; agricultural sector



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1. Introduction

Higher standards are now expected for the precision and integration of planning (Thrassou et al. 2021) and administration of production operations due to improvements in technology and procedures in the agri–food businesses (Vrontis et al. 2022). Agriculture performance is influenced by diverse features and particular elements that are linked in complementary, competitive, or conditioning connections (Coca et al. 2023). Utilising a ratio that takes organisational procedures and agricultural productivity into account, profitability may be ascertained. Farm resistance of various farm kinds in several European nations was researched by Slijper et al. (2022). They examined broad patterns that demonstrate how farms manage changes, risks, and uncertainty. They also evaluated the attributes that influence a farm’s resilience and capacity for change. Although agricultural efficiency cannot be defined outside of the broad framework of which it is a part, Coca et al. (2020) investigated more complex issues regarding ecological performance, while Andrejovská and Glova (2022) concentrated on food policy, sustainable development, or supply security.

Numerous studies have examined the Agricultural Common Policy (CAP), which serves as the cornerstone of primary system support for agriculture, and the increasing complexity of farming policies (Finger and El Benni 2021; Thrassou et al. 2023). These studies include (Guth and Smędzik-Ambroży 2020; Fiore et al. 2024; and Volkov et al. 2019).

A farm can adapt its production techniques, but conversion requires a significant change in the direction of the business (Darnhofer 2014). Magrini (Magrini 2022) examined the elements of the agricultural sector (land, labour, financial resources, and entrepreneurial activities) using Eurostat data in a study that included 26 EU countries from 2004 to 2018 (15 years). It showed clear patterns of CAP support across three different categories. In comparing the agricultural potential of the USA and the EU and identifying which nation groups would be successful in this sector based on data for 2016, Pawlak et al. (2021) also looked at the most important characteristics that determine competitiveness in agriculture. In order to deal with dynamism and unpredictability, European farmers must manage a range of risks, including the volatility of price (Hardaker et al. 2015), droughts (Parsons et al. 2019), and climate change (Figurek et al. 2024; Reidsma et al. 2007). Reduced yields in warmer regions may result from climate change, although improved manufacturing processes in colder climates are possible (Santos et al. 2020; Galletto et al. 2014).

Knippenberg et al. (2019) were able to capture the dynamic component of adaptability through growth economics and the research on household well-being (Barrett and Constas 2014; Tkacheva et al. 2024; Yanovskaya and Saginova 2020; Thrassou et al. 2022) or yield over time (Chavas et al. 2019) in the agricultural sector. Their methodology expanded upon previous European research that focused mostly on adaptability (Vanschoenwinkel et al. 2019).

The level of complexity of the countries of destination provides crucial information about the kind of competitors that products will encounter in the target market, claim Carbone et al. (2021). Evaluations using broader metrics, such as profitability and value-added, are necessary (Cei et al. 2018). The theoretical linkages between entrepreneurial mindset, organisational innovation, technology innovation, and product innovation were highlighted by Dinesh and Sushil (2022), who focused on strategic creativity in emerging companies.

According to Chiravuri (2018), the foundation of profitability and efficacy in farming is the use of ratios that accurately represent the farms' output and management practices. A farm's sustainability and profitability may be impacted by the amount of land allotted to various types of production (Matakye and Van Der Poll 2021).

Geospatial measures attest to a distinct product quality that is location specific. As a result, customers might pay greater prices, which would make the product unique. López-Bayón et al. (2020) examined the willingness of customers to pay for regional options. Monier-Dilhan et al. (2020) examined the effects of geographical indications (GI) on cost premiums, but their results were inconsistent.

A crucial resource for information regarding the effectiveness of the CAP procedures is the FADN (farm accounting data network), which provides assistance in assessing the viability of producers and monitoring their outcomes (Briamonte et al. 2021; Figurek et al. 2023). A yearly collection of financial and structural data about farms throughout the European Union is intended to be made possible via a series of questionnaires called FADN, which is also used to evaluate the impact of CAP. In order to determine the most significant aspect of farming activities, only farmers who satisfy the necessary commercial scale requirements—roughly 90% of the standard output and 90% of the utilised agricultural area (UAA) reported by Eurostat's Agricultural Structure Surveys (FSS)—are included in FADN assessments in all of the Member States. In the EU, the FADN sample comprised five million farms, or over 85,000 units, or 46 percent of the 10.8 million farms included in the FSS (European Commission 2016). The three domains of thorough data collection that FADN surveys concentrate on are the geographic, economic, and agricultural sectors. Since every Member State uses the same accounting techniques to identify farms, the FADN is the only consistent basis for micro-economic farm statistics.

Giving agricultural producers information to help them make better decisions regarding the activities to be accomplished, the control procedure (which compares the expected

and actual outcomes), and the efficient and economical use of resources is the main goal of the FADN. FADN allows for close monitoring of the economic achievements of producers, who are often involved in the end market but not always directly associated with it.

According to [Andrei et al. \(2020\)](#), net income per hectare and per family labor unit are the most pertinent measures, and FADN can be used to derive both ([Pomarici and Sardone 2020](#)).

[Palash and Bauer \(2017\)](#) pointed out that a farm's profitability may be impacted by the amount of land allocated to different types of output. Using a comparison of various agricultural performance parameters (i.e., work, payments, input–output, the value of the output of the agricultural sector, and revenue from agriculture per AWU), [Zsarnóczai and Zéman \(2019\)](#) assessed the connections between the economic systems of twelve EU Member States.

The composition of farming properties inside the European Union facilitates consistent asset classification. The FADN and integrated farm statistics (IFS) data on the structure, along with a collection of economic characteristics derived from regional mean figures—called standard output coefficients (SOC)—are employed to categorise farms. Based on the standard output (SO) of different farm products, agricultural holdings are categorized based on their farming type (TF) and economic size (ES). To express the SOC, one commonly uses euros per group, e.g., euros per hectare or euros per head.

All EU agricultural holdings' structural, economic, social, and environmental elements are covered by data found in the FADN records. [Kelly et al. \(2018\)](#) provided evidence that FADN is a useful tool for monitoring agricultural productivity. The annual term, trustworthy gathering methods, and historical data are its key benefits. FADN may also include information on a variety of individual holdings, organisations identified as major land decision-makers, and legally recognised businesses that are managed and receive CAP payments. The wealth of information obtained from monitoring the increase in farm revenue or assessing the results of regional or federal agricultural policy can be used to set new objectives.

The mechanism for figuring out how profitable agriculture is still being developed, according to [Ma et al. \(2021\)](#). Policy instruments like assistance have increasing strategic ramifications, as observed by [Martinho \(2019\)](#) and [Alaoui et al. \(2022\)](#). [Mariyono \(2020\)](#), [Malorgio and Marangon \(2021\)](#), [Camanzi and Troiano \(2021\)](#), [Rambe and Khaola \(2021\)](#), and other studies have noted the diversity of EU agriculture with regard to resources and relationships between the different production components ([Zakrzewska and Nowak 2022](#)).

In the vein of the above context and gap, the goal of the paper is to assess the performance of the EU's fruit production while considering the relationships and interactions that have been established between important variables in light of the expenses and other inputs. The farm accountancy data network (FADN) approach is applied to conduct a comparison analysis of the revenue of the EU's fruit producers. The study constitutes a significant contribution to the requisite development of more accurate metrics and appropriate approaches, which are necessary for assessing the economic success of the EU's fruit production in the principal sector of EU agriculture.

Since this industry's inputs and products are valued both individually and collectively, it is feasible to react quickly to changes in the cost of specific raw materials, thereby assisting farmers. The readiness of agricultural producers to increase production and increase their own investment in both material and human resources would be impacted by this type of agricultural policy, which is based on the monitoring of all segments throughout the implementation of business activities and their support. The implementation of an accounting information system guarantees that the aforementioned indicators are up-to-date, impartial, representative, and consistent in their methodology. Consequently, they serve as a dependable foundation for the purpose of planning and managing the agricultural sector's entire development. Planning agricultural producers' future business activities is based on economic variables related to their production activities. Recording production and financial information on farms is the main objective of the agricultural accounting information system. Afterward, interested parties, such as consultants, different

state agencies, farmers, and other organisations and entities involved in agriculture, can receive high-quality information using these data.

2. Methodology

An EU farm holding's potential gross production (total SO) is taken into account when determining its (economic) size. In particular, it is based on how different manufacturing lines contribute to average output overall. The total number of SOs for every line in each of the Union's member states is used to compute the overall standard output. Normative gross output measurement is referred to as standard output. According to its farm typology, which based farm type on primary production processes, the EU utilises this figure to determine the economic magnitude of farms as well as to classify them. An entity's total SO is the sum of its SOCs from several of its business units.

The total production that a certain crop or livestock can produce divided by the cost of that animal unit yields the standard output (SO) for each attribute. The SO is calculated as the average of the local money-based farm output values at the farm-gate price for the comparison time frame. To be considered representative, the sample must mirror the features of the research field. Thus, farms need to meet two requirements in order to be included in the sample: first, they need to undergo field inspections; second, the locations of the farms inside the observed region need to match the locations of all the farms in the area.

The results will be skewed and imprecise if the sample does not fit these two requirements. Because of this, when higher dissonance is being investigated, the sample will be less representative of the area under inquiry. That being said, the method by which the farms are eliminated from the sample guarantees that the distribution of farmers in the data is representative (second condition). To be more specific, this process comprises classifying the agricultural holding in the research region based on three elements: geographic location, economic scale, and agricultural kind. A farm's potential standard output is represented by its economic scale (ES), which is stated in euros. The percentage of an economic product's (or group of products) prevalence on a farm's overall economic size determines the type of farm (Tof).

Both primary and secondary items are produced. The yield of a single harvest is often equal to the year's yield for key agricultural crops. The production from a whole growing season that is averaged over all cultivation phases is used to calculate the "average annual output". In total intermediate consumption for the accounting year, all production-related overheads and total specific expenses (including holding-generated inputs) are included together. Supply expenses for business activities outside of production are included in farm overheads. Amortisation applies to forest plantings, immobile farm buildings and equipment, permanent agricultural plants, and land improvements.

Regardless of whether family members inherit them or originate from outside sources, depreciation refers to the payment for the fixed expenses of production (work, property, and capital). Just the specific expenses and agricultural overheads resulting from output throughout the accounting year are included in the intermediate use total. Certain inputs are needed for seeds and seedlings, fertiliser, protective gear, and other specialist agricultural expenses. Among the capital assets that are depreciated during the accounting year are plantings (calculated biological assets), fixed agricultural equipment and structures, renovated land, tools and machinery, and planted woods. Real properties and money in circulation are not depreciated.

The farm net value added (FNVA) is calculated by deducting the total farm income from the depreciation expenses (Figure 1). This computation is used to account for the fixed components of production-work, land, and capital—regardless of whether they are domestic or foreign. Consequently, farms may be graded based on whether production qualities related to the family or were not included.

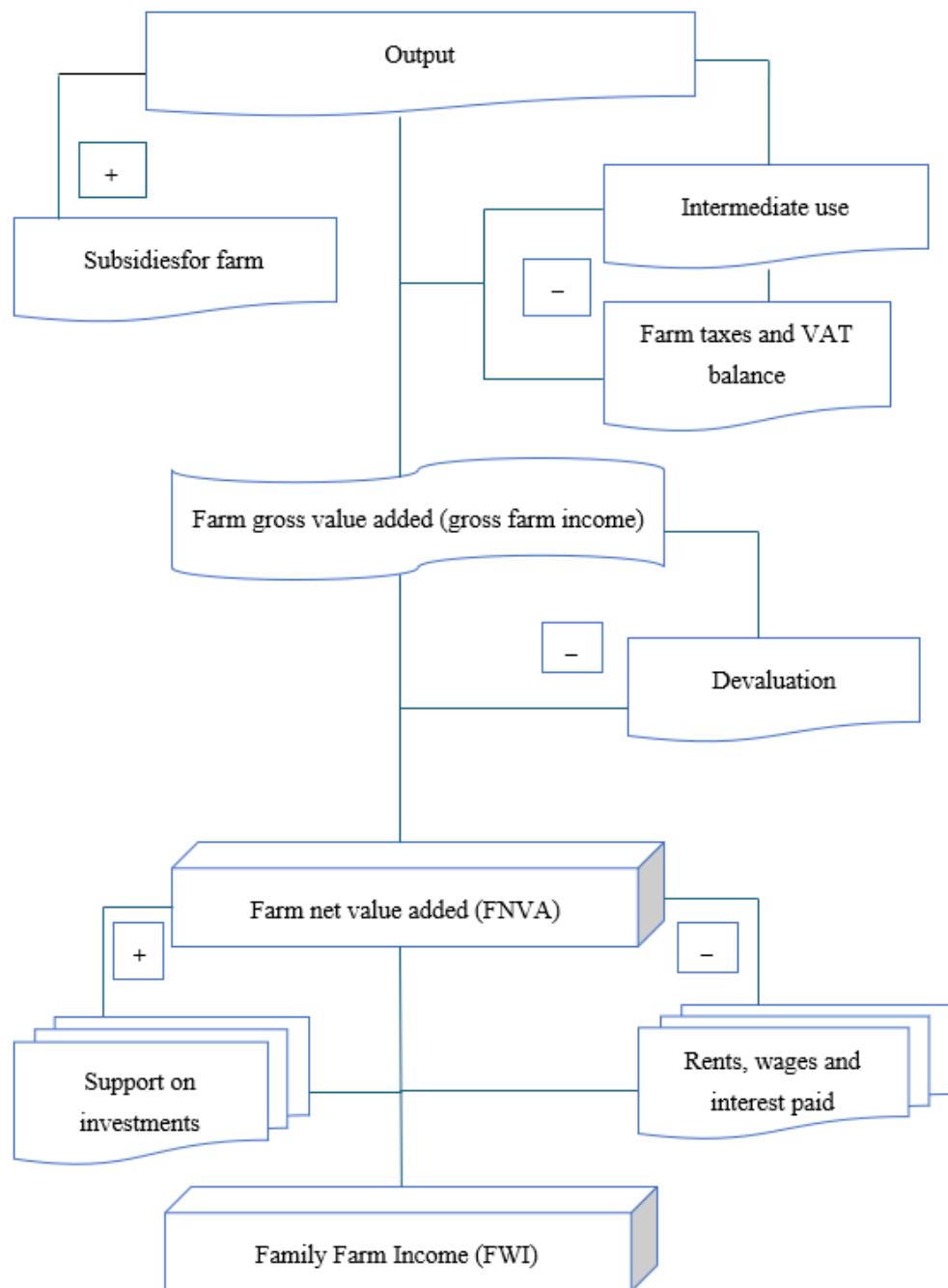


Figure 1. Farm income according to the FADN framework.

Production plus yearly payments for Pillar II and Pillar I, any support, consumption, taxes (apart from income taxes), depreciation, and the balance of the value of the value-added tax (FNVA) are the components that determine FNVA. In order to account for differences in the scale of farms and provide a more realistic picture of labour output in farming, value is determined per annual work unit (AWU). The total of the family's labour wages, capital gains, and land rent is their farm's net income (FNI).

It is computed as the remaining tax and subsidy amounts associated with investments following the subtraction of external production factors from the FNVA. Add the total external elements, the remaining investment-related taxes and grants, and the FNVA to obtain the FNI. A family's farm income (FFI) is calculated based on each labour unit in the home. This revenue calculation takes into account the fact that different family workers need to be paid for different holdings. A family work unit's (FWU) FNI is used to calculate

the value. Included in the computation are only farms with unpaid labour, typically performed by family members.

3. Results and Discussion

Under the constrained competence of FADN, the minimal prerequisite for classifying a farm as commercial is expressed in euros. Each member state can set this figure, and it fluctuates over time due to shifts in the economic worth and composition of farms.

Analyzing the area under orchards, it is evident that the Czech Republic has the highest average per agricultural farm specializing in fruit production, amounting to 25.8 ha per farm (Figure 2). After the Czech Republic, the countries with a significant area under orchards are Belgium and Lithuania, which have 20.9 and 18.7 ha on average per farm, respectively. Denmark and Germany have the same average area under orchards, and it is 17.7 ha per farm specializing in fruit production. With an average of 1.4, 2.3, and 2.8 square meters under orchards per farm, Cyprus, Slovenia, and Greece have the smallest orchard areas.

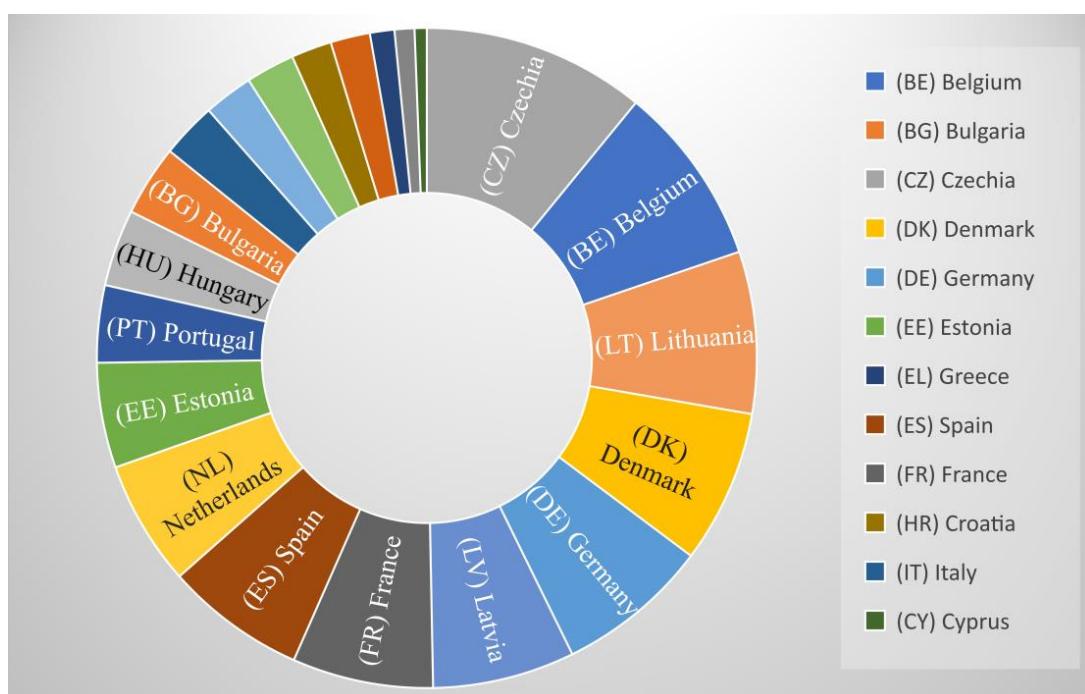


Figure 2. Areas under orchards (ha), EC 2021 (Source: Compiled by the authors based on FADN data).

One of the factors used by the Community typology for agricultural holdings to categorise farm holdings is the economic scale of the farms. The Commission Regulation (EC) No 1242/2008 (867/2009) on 8 December 2008 made major changes to the previous system of farm classification established by the Commission Decision 85/377/EEC on 7 June 1985. According to Regulation (EC) No 1242/2008, an agricultural holding's total SO, expressed in euros, serves as a measure of its economic size (Figure 3). Before, the economic value was determined using the entire farm's Standard Gross Margin (SGM), expressed in European Size Units (ESU), in accordance with the rules set forth by Decision 85/377/EEC.

The premise of both strategies is the same: the total SO, or SGM, of each holding, divided by the number of livestock and crop heads per hectare, establishes the holding's total worth from an economic perspective.

The main differences involving the two techniques are the methods employed for computations (because the SO does not include direct payments or costs) and the units used to calculate how big the farm is financially (measured in euros, not ESUs, as in the SGM classification).

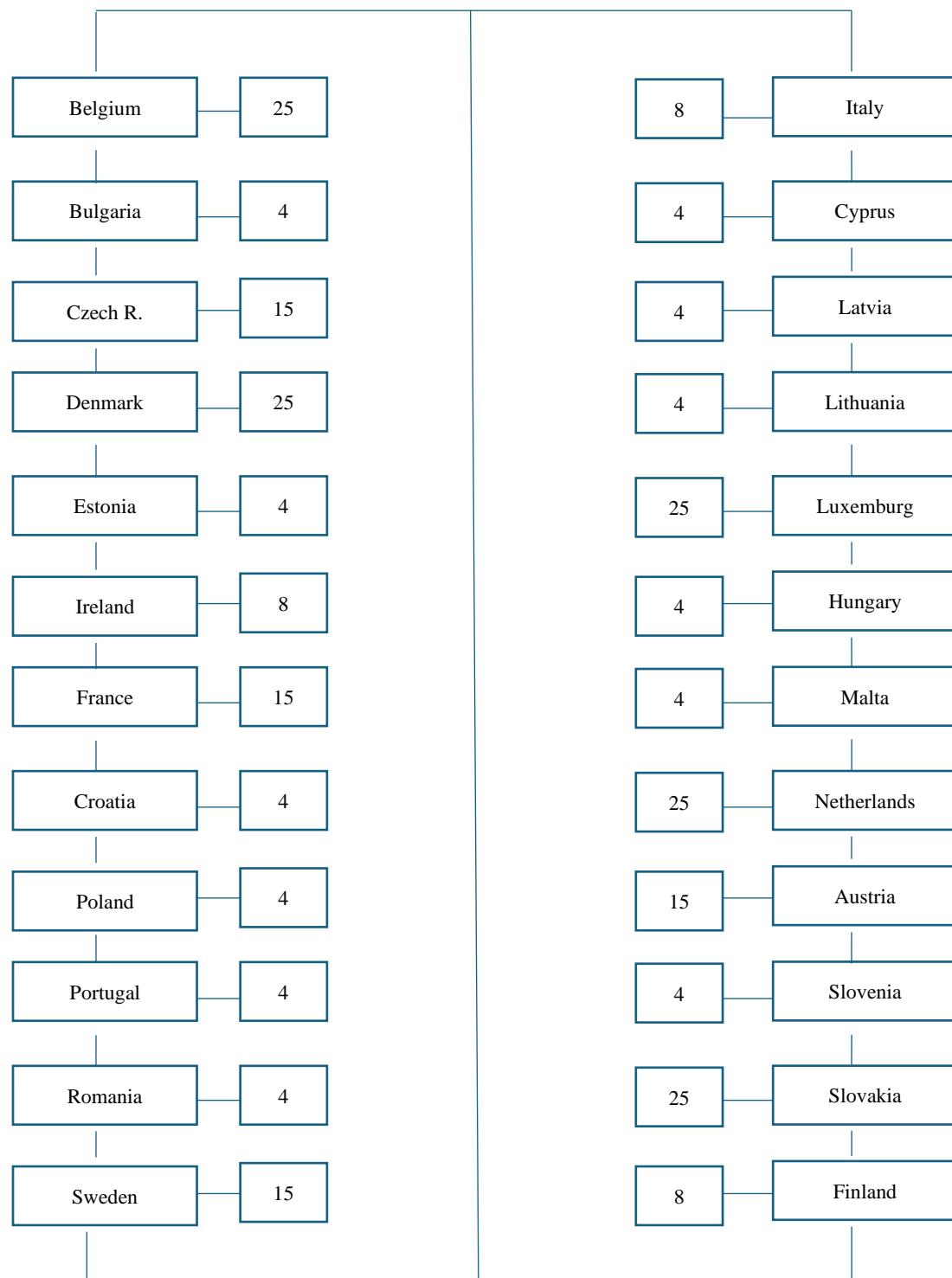


Figure 3. Economic size of the agricultural holdings (in 1000s of euros) applied by the Commission according to Regulation (EC) 1242/2008 from 2020.

Beginning with the 2010 fiscal year, the EU Commission Regulation No. 1242/2008 went into effect. Data from the financial years 2000 to 2009, however, have been adjusted using a novel approach to enable time series examination. In order to facilitate comparisons among data from financial years generated using other approaches, two sets of FADN data—one based on SO and the other based on SGM—will be made accessible for the financial years 2000 to 2009.

A farm whose SO is less than €2000 will not be accepted by FADN. It also won't take a farm where SO is less than €8000 in Austria, the Czech Republic, Denmark, Finland, France, Ireland, or Sweden; less than €25,000 in Belgium, Germany, Luxembourg, the Netherlands, or Slovakia. It is crucial to carefully assess FADN data because farms in these lower-size groups are not typical of all Member States. Of the 22 countries with farms in the €8000–€25,000 range, only 14 states (BG, EE, CY, HU, EL, ES, LV, IT, LT, MT, RO, PL, PT, and SI) have farms in the €2000–€8000 size range.

According to the [European Commission \(2023\)](#), the remaining eight members are Northern Ireland, AT, CZ, DK, FR, IE, FI, and SI. The results cover every member state only when farms have a SO of €25,000 or greater. This is essential for monitoring the relationship between variables and farm size in order to use results to make analyses among Member States at the EU level.

It was discovered that the largest fruit farms, with an economic size of €404,000 per farm in Belgium and €338,000 in the Netherlands, are followed by farms in France (€291,000) and Germany (€241,000). Fruit producers in EU Member States have an average economic size of €57,000 (Figure 4).

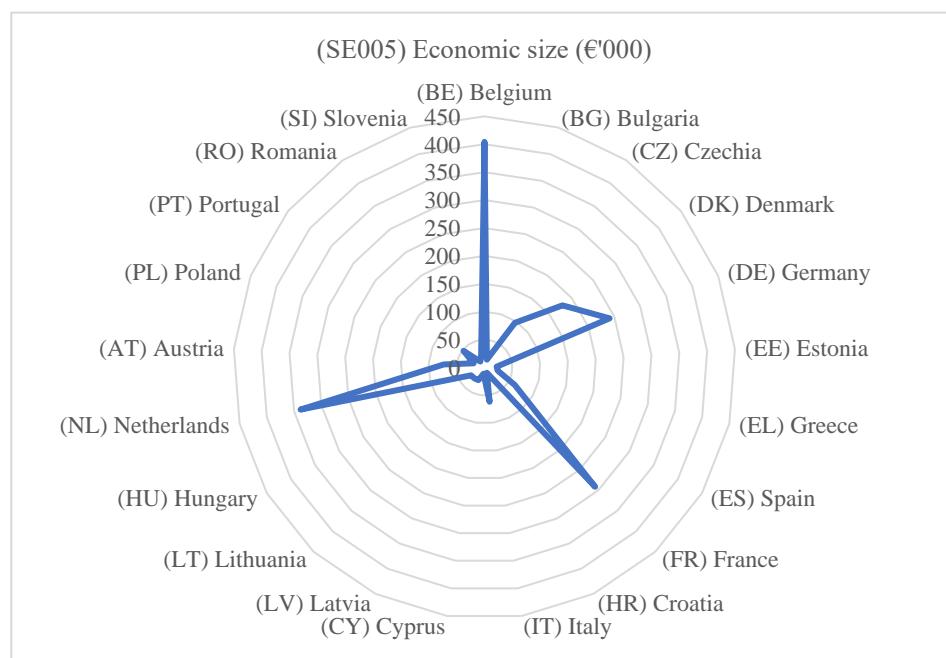


Figure 4. Economic size (in 1000 euros), EC 2021 (Source: Compiled by the authors based on FADN data).

Consequently, when determining the financial level needed to set the admittance threshold calculation for the questionnaire, the standards outlined in the survey norms and instructions must be carefully taken into account. These are farms for business, as is evident, and they might provide the farmers with both a major source of income and enough to maintain their level of production. It should be considered that the farmer's family needs to be sustained, and to accomplish this responsibility, they must make an annual wage comparable to the MS (Member State) median earnings in their location.

Accordingly, farmers classified by the FADN generate a net income of at least half of the average MS income. Therefore, in order to properly identify the economic size that can be used to set the FADN admission threshold measurement, the net revenue achievable from specific levels of average production (economic size) must be estimated.

It is evident from the total output per farm that the farms in Belgium (€725,970 per farm) and the Netherlands (€461,989) attained the highest value (Figure 5). Per farm, the European average is worth €64,371. The countries with the highest fruit production output

per farm are Cyprus, Croatia, Bulgaria, and Poland, with respective yields of €9093, €17,816, €19,896, and €22,751 per farm.

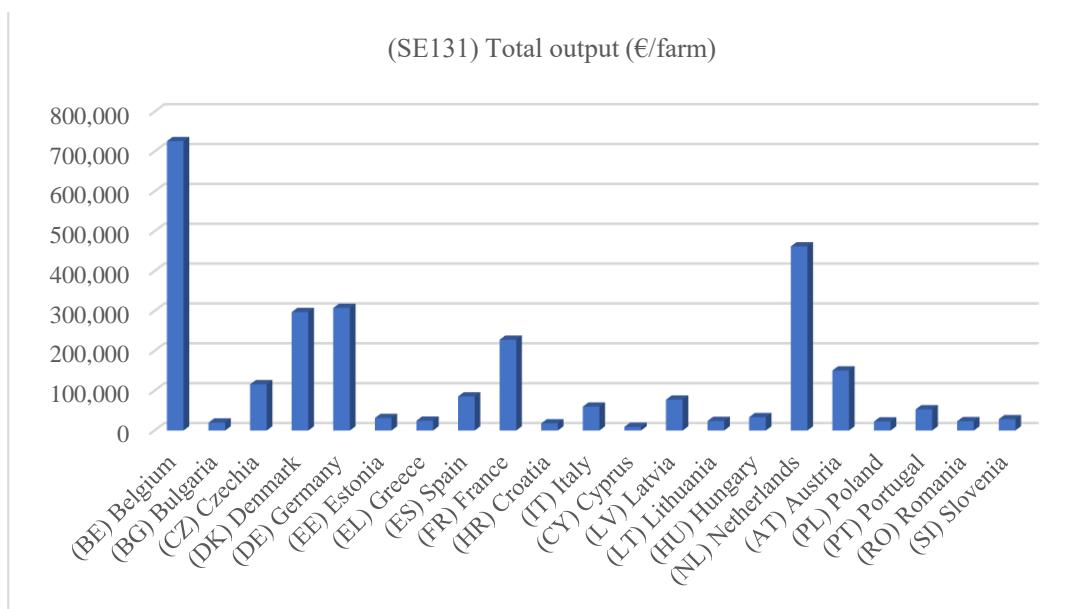


Figure 5. The authors' compilation of fruit production output per farm, EC 2021 (based on FADN data).

The FADN technique defines the overall inputs as the sum of every expenditure, depreciation, farming expenses, and external variables. These are calculated using the holder's farming-related expenses as well as the results of the current accounting year. They also contain the amounts related to "farm use", or they use the farm's products as inputs.

Based on a review of the input components used in EU fruit production, the Netherlands, Belgium, Germany, Denmark, France, and the Czech Republic use the most inputs. There is a distinct input structure for every EU member state (Figure 6).

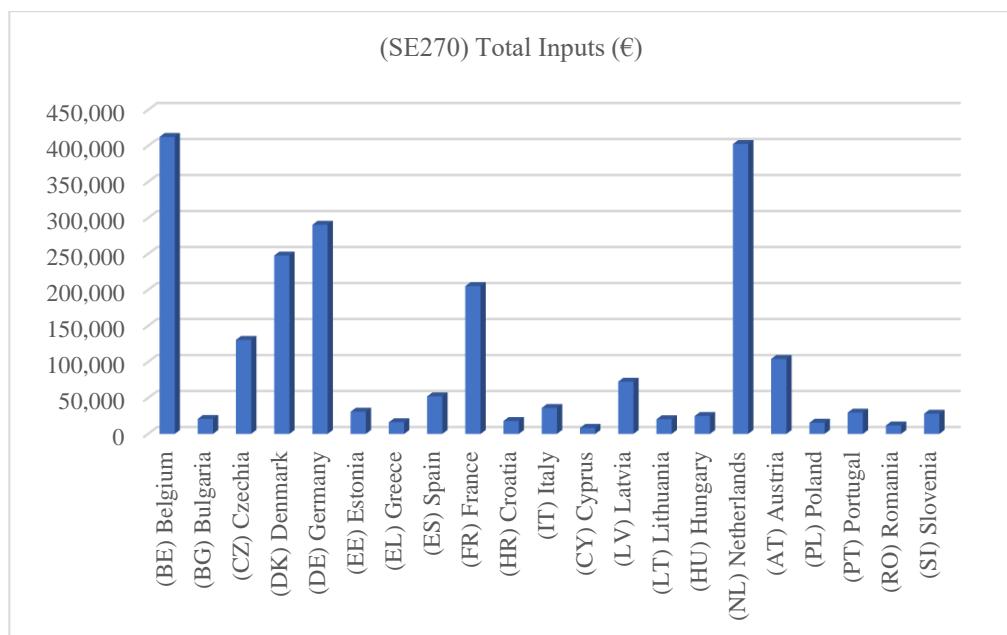


Figure 6. Total inputs (Euro), according to the FADN database, EC 2021 (Authors' calculation according to the FADN database).

Romania recorded the highest output-to-input ratio at 2.01, with Portugal (1.80), Belgium (1.76), Italy (1.66), and Spain (1.64) following (Figure 7). Next is Greece, whose output-to-input ratio is 1.52. Austria and Poland, with their respective ratios of 1.46 and 1.44, are comparable to the EU average of 1.48. Croatia (0.89), Czechia (0.89), and Bulgaria (0.96) have ratios below one.

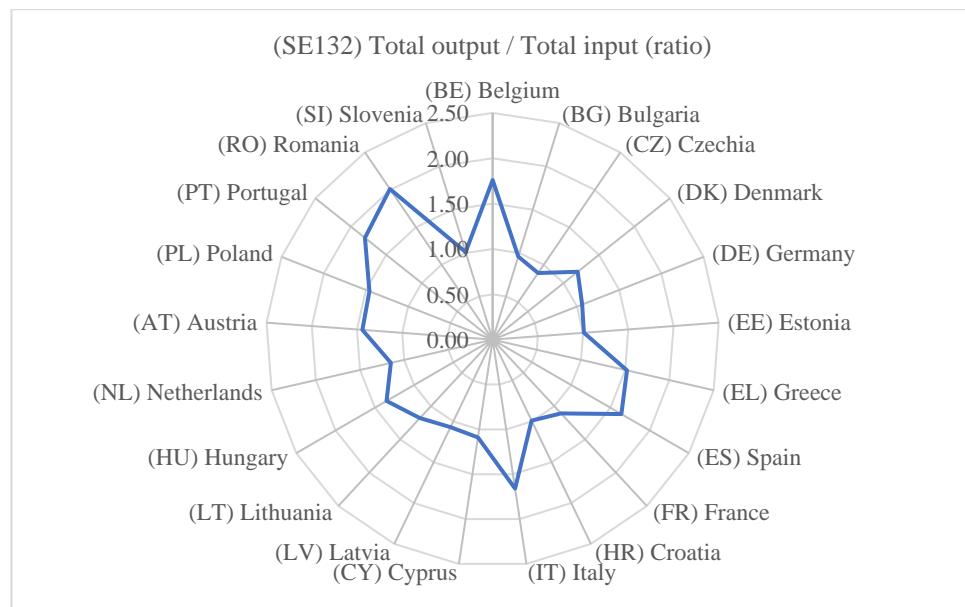


Figure 7. Total output/total input coef., EC 2021 (The authors' computation based on the FADN).

The EU had an average of 1.77 AWU (Figure 8) employed per farm in 2021, according to FADN. There were notable geographical variations in work input, though, with Estonia having 0.65 AWU per agricultural holding and Belgium having 7.14 AWU. Historically, a significant percentage of the agricultural workforce has been family members or unpaid labour. More than half of all labour hours (Figure 9) in the EU were reported to be conducted by family members in the majority of member states (except Belgium, Czechia, Denmark, Germany, Spain, France, Latvia, Hungary, and The Netherlands).

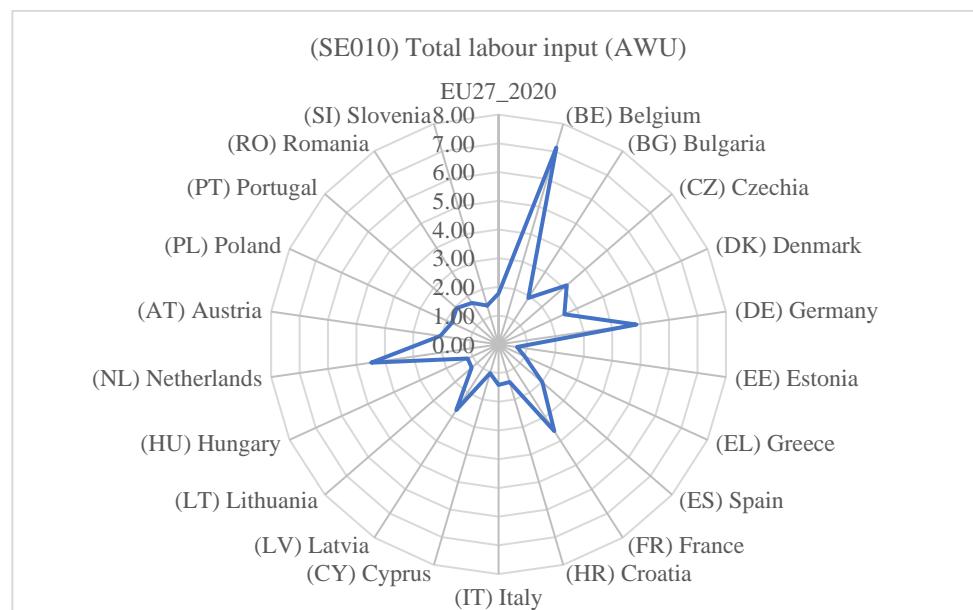


Figure 8. Calculation based on the FADN database for total labour input (AWU) in EC 2021.

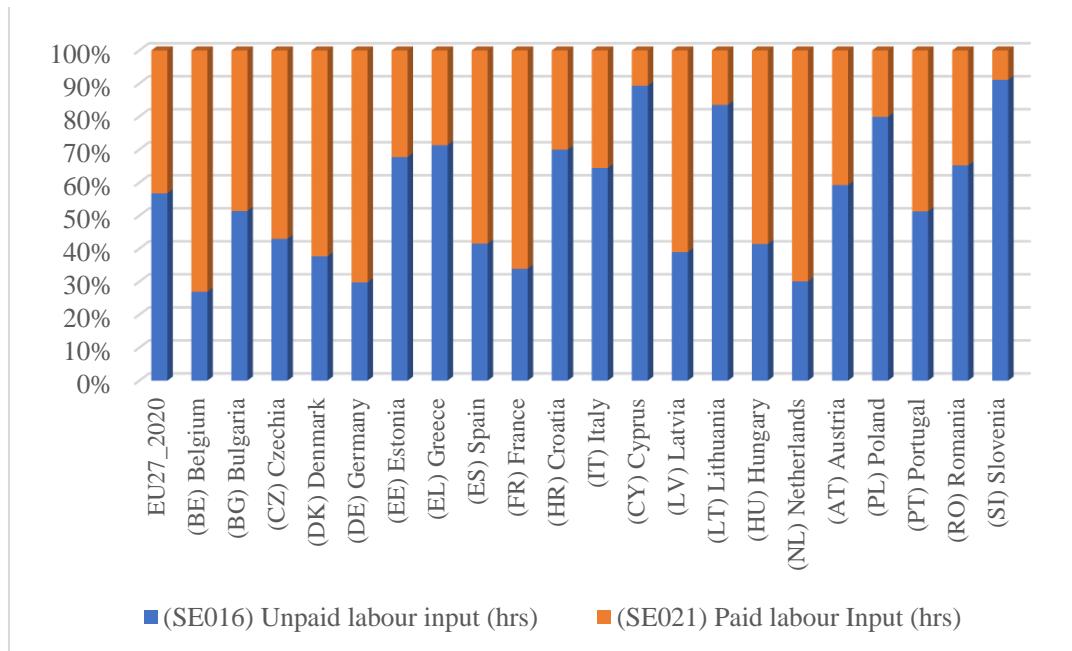


Figure 9. Unpaid and paid labour input, EC 2021 (The authors' computation based on the FADN).

Farm Net Value Added in Fruit Production

Farm net value added (FNVA) per year working unit (AWU), family wealth, and earnings from farming are used to calculate the income from agricultural resources.

The total output value + current subsidies less intermediate consumption and depreciation is used to calculate FNVA/AWU, an indicator of revenue. Although they are domestic to the farm, it represents the amount of revenue that may be utilised to cover all fixed production components (work, property, and funds).

Farm revenue is derived from farming and other related farming operations, as per the FADN approach. Income earned outside the farm is excluded. Revenues minus expenses equals income. Many income metrics enable different assessments to be made. FNVA is the amount paid to the fixed inputs of production, such as labour, capital, and land, independent of their family or not, and because of this, assets can be compared.

In Belgium and the Netherlands, the highest FNVA per farm in 2021 was €458,527,020 and €224,472, respectively. Slovenia, Cyprus, and Croatia had the lowest FNVA per farm, at €9854, €8328, and €3136, respectively.

The simplicity of calculation is the primary advantage of an average FNVA per farm (Figure 10). However, changes in farm size, agricultural methods, or considerable declines in the number of farm labourers are not taken into consideration by this metric. FNVA usually comes on an annual work unit (AWU) basis as a workaround; this serves as a stand-in for worker productivity.

The overall distribution of income variability across the EU remains unchanged when FNVA is stated as an AWU (Figure 11), but the earnings difference between the highest and lowest-income states decreases.

The Member States varied greatly in terms of the average FNVA per AWU (Figure 11) in fruit output. With €64,228 per farm, it peaked in Belgium in 2021. Compared to Cyprus, which has the lowest fruit production FNVA (€2994), this is more than 20 times greater. With respective amounts of €59,032, €50,128, €42,779, €33,164, €30,751, €29,459, and €28,896, Denmark, The Netherlands, Austria, France, Spain, Germany, and Italy belong also among the top nations regarding FNVA/AWU. About €23,620 was the average for the EU.

Since many members of the family work in agriculture, family income per farm (FFI) is a distinct method of measuring revenue from agriculture (Figure 12). Net income per farm should be divided by the number of familial labour units (FWUs) for the purpose

of calculating FFI, which is expressed as an FWU for farmers that use household labour. While it represents the farm operator's ability to use farm business revenues to help pay for personal taxes, savings, and consumption expenses, in other ways, FFI is synonymous with "farmer income". FFI is made up of all of the agricultural inputs that the farm operator possesses, including work, resources, and property, as well as the administrative and manual labour provided by the producer and any additional unpaid workers. However, regardless of who owns them, FNVA evaluates the added value of all fixed elements. It should be emphasised that none of these variables includes a projection for investment asset depreciation based on the conventional income calculation approach (actual capital spending may be delayed or brought forward advanced in the near future).

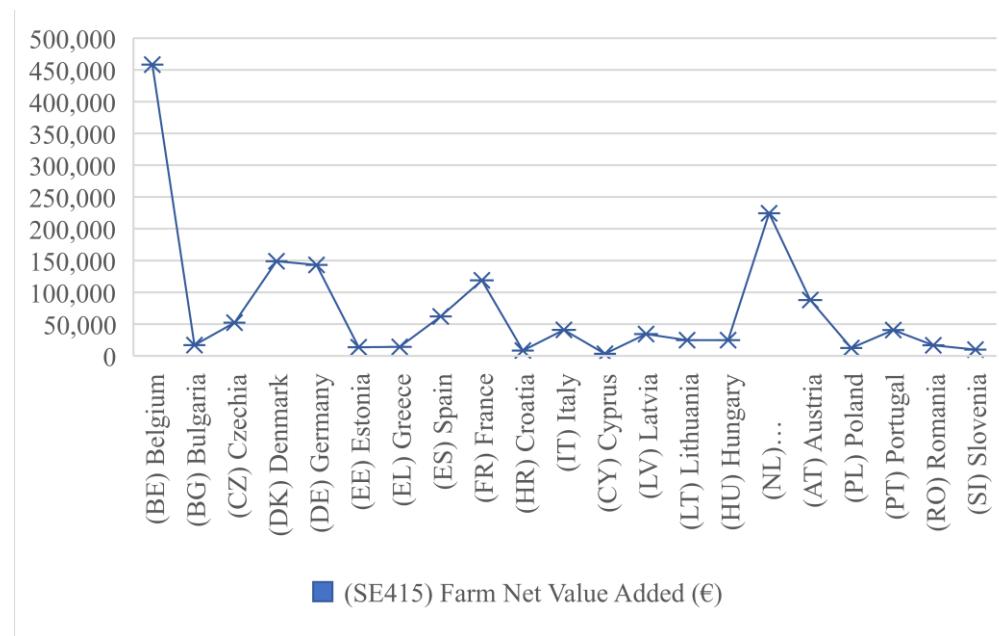


Figure 10. Net Value Added per farm EC 2021 (The authors' computation based on the FADN).

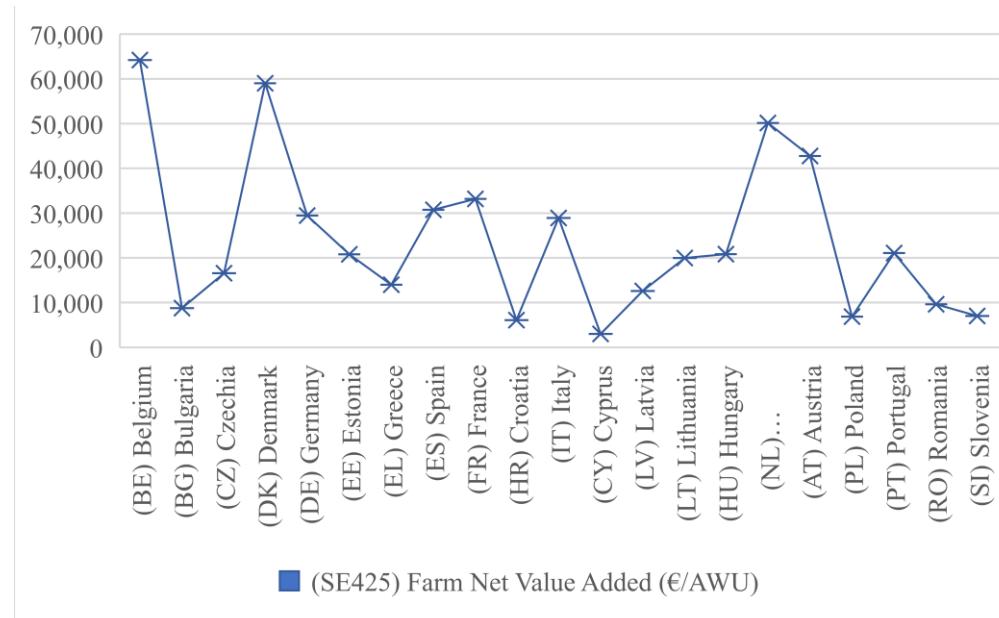


Figure 11. Net Value Added for the Farm per work unit (euro/AWU), 2021 (The authors' computation based on the FADN).

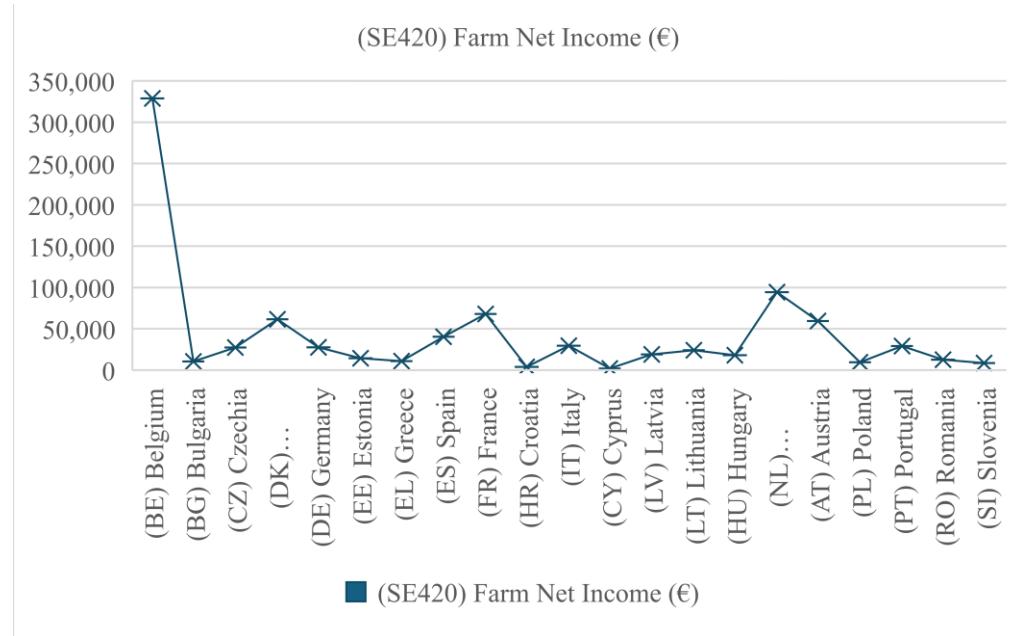


Figure 12. Farm Net Income, EC 2021 (The authors' computation based on the FADN).

In fruit production, the average FFI per FWU (Figure 13) at the EU level was €27,900. Following Belgium (€214,090) in 2021, The Netherlands (€75,117), Denmark (€66,998), France (€53,758), and Austria (€49,194) had the greatest FFI per FWU. Cyprus, Croatia, Slovenia, Poland, Latvia, and Bulgaria had the smallest average incomes for families per FWU (\$2397, €4723; €6596; €6653; €6850; €9343).

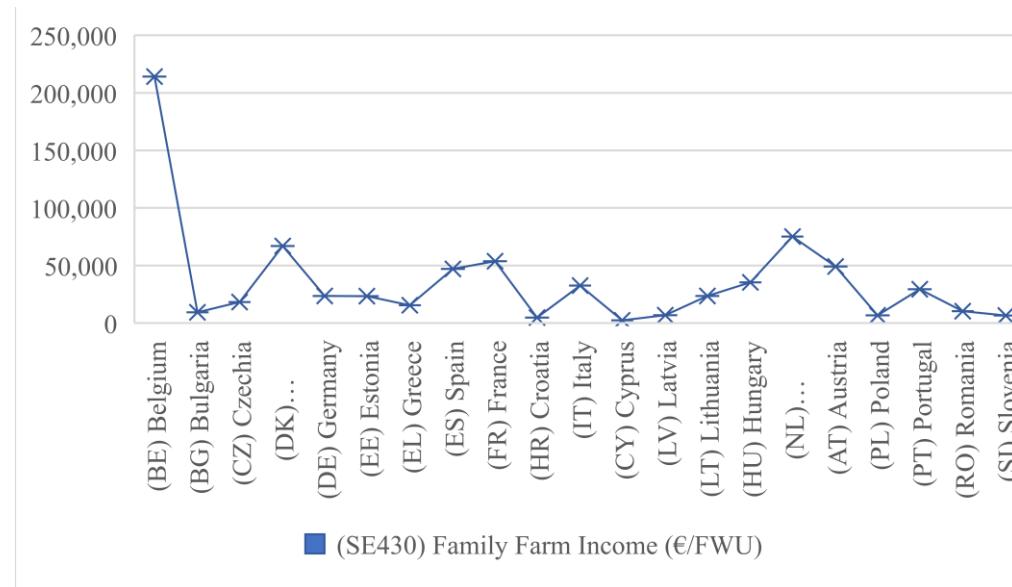


Figure 13. Net Income per farm (FNI) in euros, EC 2021 (The authors' computation based on the FADN).

4. Discussion

Agricultural producers can choose the best production structure and increase the efficiency of both individual production and the farm as a whole by using the accounting information system, which gives them the necessary information (Figure 14). Farmers who manage their production processes will have the chance to participate in the market more significantly and be more adaptable to changing market conditions. The micro-level statistics are compiled and categorised based on several factors, including individual

productions, production branches, farm size and type, region, and other criteria as required. Macro indicators are of primary interest to state authorities such as the Ministry of Agriculture and the National Secretariat for Agriculture, among others. Macroeconomic information on the operations of agricultural holdings enables the computation of trustworthy agro-economic indicators and the adoption of suitable policies in various agricultural-related domains (such as credit, monetary policy, customs, and agriculture) based on the analysis of those indicators.

Under such circumstances, quantifiable indicators regarding the state and performance of agricultural farm activities are available to agricultural policymakers. An effective approach for the growth of the agricultural sector is the use of information and its timely application in the formulation of agrarian policy and its supporting programs, control or monitoring, and their evaluation at the national level.

The primary barriers that may impact the availability of sufficient data quality pertain to the following details:

- The institutional framework for gathering both quantitative and qualitative data on agricultural holdings is poorly coordinated.
- To ensure the quality of data, a significant issue is the lack of technical and logistical assistance for enumerators or people who gather data in the field, along with inadequate supervision.
- Postponement of gathering data.
- Utilising distinct methodologies for data collection by geographical areas.
- Insufficient financial and human resources for system upkeep.
- Agricultural producers are not making the most use of data.
- Manufacturer access to data from outside sources is restricted.
- Poor methodology in the data analysis process. Decision-making cannot be well-founded on an inadequately thorough analysis at the macro and micro levels.

Data on the operations of agricultural farms, both quantitative and qualitative, are extremely beneficial to agricultural producers who have daily insight into invested inputs and realised value of production. Tracking financial inflows and outflows, along with the price of raw materials and completed goods, can help manufacturers reduce their operating expenses. Because of this, they are able to buy raw materials in large quantities at a price below market value and then offer those lower-priced finished goods to clients.

- The Ministry of Agriculture uses aggregated data on the operations of agricultural producers to plan and provide incentive funds for this industry. Furthermore, data on the volume and geographic distribution of particular agricultural output categories are essential for making certain strategic decisions about the import of particular agricultural products from other countries. By taking into account their own capabilities or actual production prospects, macro-level decision-makers may be able to minimise the number of agricultural products imported and, thereby, contribute to the reduction in the trade imbalance internationally.
- Scientific-educational institutions value these data not only for their professional and scientific analysis and cross-national comparison but also for their possible use in teaching. These organisations should keep an eye on the results produced by the system as a whole to support its general operation. Strong scientific data analysis is essential for all stakeholders in this system.
- To guarantee the efficient running of this system, the advisory service's main objective should be the continual education of farm producers. For agricultural producers, this type of support—along with the funding provided by the relevant ministry—is essential because it provides them with guidelines that should improve their comprehension of how to accurately record business activities and, eventually, calculate their own financial results.
- Banks, microcredit organisations, and other organisations are also interested in looking at the results of particular types of agricultural production in order to determine the

profitability of financial investments in this sector and, as a result, create appropriate credit arrangements for agricultural producers.

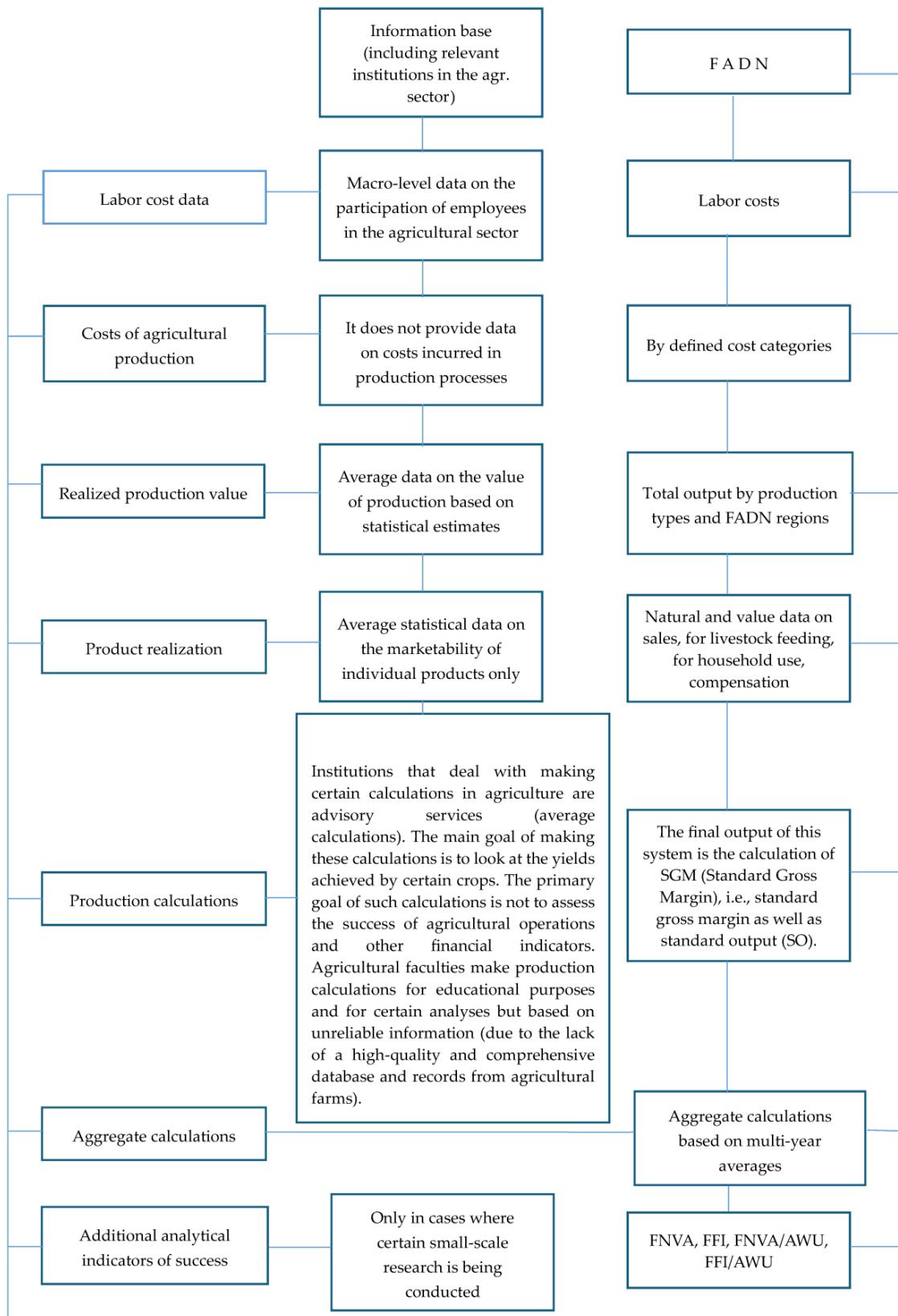


Figure 14. Comparison between the existing information base in the agricultural sector and the FADN methodology.

5. Conclusions and Implications to Theory, Practice and Policy

FADN is responsible for responding appropriately to EU knowledge requests regarding the economic efficiency and revenue-generating capacity of agricultural businesses. Since the FADN investigation is based on an accurate representation of the population, the objective of this research was to pinpoint the main factors that could skew the sample and ascertain the degree to which those factors might affect the FADN population. A farm is classified as “commercial” by FADN if its total revenue is at least half of the average income of the MS where it is positioned.

For every EU Member State, the income with the size of the farm economy matching the survey’s entrance requirements may withdraw was thus calculated. Comparing the MS earnings average to the admission threshold measurement, net of a percentage corresponding to the effect on results, expenditures, and the proportions associated with taxes and fixed expenditures, has proven to be a straightforward estimation approach.

Comprehending the financial circumstances faced by farming families does not lessen the importance of understanding the mechanisms underlying the benefits of agricultural products. In actuality, the indicators of agricultural output are based on notions that are far from clear, even if statisticians in EU Member States seem to accept them more widely than those pertaining to farming families. A number of these are crucial: Neither the aggregate Economic Accounts for Agriculture nor the bigger macroeconomic FADN recognise the agricultural business as a whole as the fundamental unit. With a few small exceptions, it only addresses the agricultural activity that farms engage in; it excludes any other profitable endeavours that the farm could carry out.

Sometimes referred to as income, Net Farm Value Added per work unit is the primary metric used at all levels; nevertheless, it should be distinguished from business revenue and personal or family income. It represents full payment for all “fixed” components of output, such as all labour (whether in-house or hired), all land, and all capital (whether or not the farm worker owns it). Dividing the factor reward by the factor base size makes perfect sense when looking at changes over time.

However, there are both practical and theoretical challenges to taking into consideration changes in a single fixed component, such as labour, as well. In particular nations, statisticians are concerned about the reliability of data on work input, where the majority of modifications are monitored during the time.

Technical developments in farming methods (new varieties, more and better machinery, fertilisers, etc.) have increased production volumes, which is something that individual farmers should embrace. Consequently, the industry’s overall net margin among costs and revenues has decreased, which has led to a decrease in the average compensation for labour and other productive assets in agriculture when compared to other sectors of the economic system. Therefore, a structural shift has occurred (e.g., workforce movement away from farming, smaller farms becoming fewer in number, and larger farms encroaching on their property). This decline in wages for farmers is a normal by-product of supply and demand in the field of economics, and it demonstrates the transition being carried out by the competitive market system.

Farmers may increase the productivity of their farms overall by using the relevant data that FADN gives them to assist people in making the best decisions regarding production strategy. Farmers can increase their market participation and flexibility by effectively managing their methods of production. Area, number of acres, and variety of farms are used to collect and classify the micro-level data.

Comprehending the operations of farms that produce fruit is essential for executing dependent agro-economic variables and, upon their assessment, implementing appropriate policies across many agriculture-related domains (fiscal, customs, credit, agrarian, etc.).

Quantifiable indicators of the conditions and output of farm activities are available to agricultural policymakers in these situations. Utilising these in a timely manner to build agricultural policies and related programmes, to control, that is, to monitor and evaluate them, is a workable strategy for the development of fruit production.

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