

# SUSTAINABLE AGRICULTURE- POLAND AND PORTUGAL



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## PREFACE

Until very recently the role of agriculture was mainly associated with the production of food and fibers. More recently, agricultural activities have become more diverse and there was an increase in the use of agricultural products or sub-products for energy production, such as the use of biomass for combustion, gasification, pyrolysis, etc. In some cases this allowed the increase of the efficiency and sustainability of this activity and decreased its impact in the environment. Efficiency in the use of primary agricultural resources (soil, water) and agricultural inputs (fertilizers, energy, pesticides) has also been a major concern overtime. Some agricultural resources became scarcer, improvements in agricultural technology can no longer increase yields in many crops, and there is a high level of competitiveness, which requires great levels of efficiency in the use of agricultural inputs in order to achieve higher yields, or the same yields with lower costs and lower environmental impacts.

The current globalization of the economy, apart from reducing geographic seasonality of agricultural products also poses new issues that did not exist a few years ago, for example; nutrient transport between different countries via the global transport of food; relocation of new agricultural pests and diseases; and biosecurity associated with the emergence of new genetically modified species.

Food security is nowadays a major concern for most of the countries in the world. Therefore there is a worldwide need to increase productivity, which in the richest and more developed countries is combined with the promotion of a strong agro-industrial sector, characterized by a high level of technological development and, that way, becoming more productive per unit of used production factor, increasing its sustainability in the medium and long-run.

Currently the agricultural sector has also been assigned with other functions related to the protection, promotion, enjoyment and cohesion of the natural countryside landscape, as well as an activity allowing the fixation of populations and an guarantor of social cohesion and balance.

Nature, landscape, food, fiber, energy, agribusiness, economy, efficiency, food safety, biosecurity, sustainability, value and social cohesion, among others, are some of the functions that we might associate with farming and surely in the next future other new features can be added. Given the above and in order to reflect on the current and future multiple functions of farming, we gathered in this publication thematic visions of Portuguese and Polish experts on different agricultural related activities, most of each were presented in the Workshop "Agriculture Sustainability, Poland-Portugal", that took place in the University of Évora, Portugal, in December 2013. This action tried to develop an integrationist exercise, in a diverse and plural Europe, that at the same time self-builds with exercises such as this. Finally, we also want to thank the work of the scientific reviewers, which allowed improving the quality of the book.

*The editors*



## FOREWORD

Revisiting and possibly revising some of the tenets of economic policies in the past 10 years will probably become an experience of many European countries. Reviving national economies after the crisis of the first decade of 21. Century is not a small feat. Poland and Portugal, among many cultural characteristics which its people have in common, share also the structural-historical nature of their respective societies -they were both predominantly peasant, agrarian economies for most part of the twentieth century. Even when undergoing rapid urbanization and industrialization, both countries not only depend on their agricultural production but also have a substantial developmental potential in the agrarian sector.



Today, in the second decade of the twenty-first century, and having lived through intensive and profound European integration processes, as well as having experienced an economic crisis of the modern era, our two societies are looking with the renewed interest at the issue of agricultural development. Europe, as the union of 28 countries, is entering a new stage of development that most likely will involve some change of previously taken for granted presumptions. Sustainable agricultural development, re-industrialization, re-urbanization, re-allocation of populations to sub-urban and rural areas and re-training will probably be among many major tasks. Establishing the sustainable agricultural development will be, in my opinion, a prominent task. It may blow new life into depopulated areas, it will revitalize small towns and service centers, it will create new social class of educated growers and consumers and, in the end of the day may become a propelling mechanism for not only national economies, but for supra-national regions as well.

The initiative undertaken by scholars and researchers from Évora (Portugal) and Lublin (Poland) with the substantial support from the Embassy of the Republic of Poland in Lisbon brings fruit in the form of this volume. This is but the first chapter of investigations and ruminations about what lies ahead of us. The sustainable development is an answer to many problems of contemporary economies, and a challenge that we have to confront and undertake.

*Prof. Bronisław Misztal*

The Ambassador of the Republic of Poland to Portugal



Sustainable agriculture is a condition for the survival of mankind. If one wants to preserve the soil and water availability and quality so that future generations can be fed, it is an urgent matter that the principles of sustainable agriculture be applied right now and all over the world. Research for sustainability is paramount to optimize the agriculture activity, such that, with due concern to the farmers' wellbeing, the focus is on sustainable production at high levels and not just on immediate productivity. This is not a question of survival against profit. In fact, if we think in the long term, the two are not incompatible and sustainable profit from agricultural activity can only be achieved if we can achieve agriculture sustainability. Poland and Portugal, having quite relevant agricultural sectors, share a common interest in research and development in this area. The University of Évora, since its very restart 40 years ago, has given much attention to research on agriculture sustainability and the dissemination to the farmers of the developed methodologies, at a time when the subject was ignored by most research facilities. Its research center ICAAM is well-known for its activity in that area. The University of Lublin has similar concerns.

Professor Bronisław Misztal, Ambassador of Poland, has the advantage of being both a brilliant academic and an open minded Ambassador with a broad view for the future of the cooperation between our two countries. A high point in his agenda is to foster the cooperation between the academic communities, particularly in matters that can have a profound effect in our societies. When he visited the University of Évora and proposed that we strive for that agenda, starting with joint Colloquia for the mutual knowledge of both countries' reality and research under way, my suggestion was that we start with agricultural sustainability for all the good reasons referred to above. Of course, others are being planned on different subjects but the success of this first experience will certainly help the organization of future events. Besides the exchange of experiences, which is very important for future research development, it is our hope that this activity will also help in the development of joint research projects of common interest, possibly with the participation of other partners as well, and in strengthening the success of the research teams in granting funds to develop such projects.

I am very grateful to the organizers, invited speakers and to all participants for their efforts in making this event a very successful one. I am particularly grateful to the Embassy of the Republic of Poland for the generous support of this event and to the Ambassador, Professor Bronisław Misztal, a good friend of mine and of the University of Évora, for this program of cooperation and for his continuing personal support and efforts.

*Prof. Carlos Braumann*

Rector of the University of Évora at the time

## NOTATION

| Abbreviation/<br>symbol | Description/explanation   |
|-------------------------|---|
| €                       | Euro  |
| AL                      | Agricultural Land   |
| ATV                     | All Terrain Vehicle   |
| AWU                     | annual working unit   |
| <i>C</i>                | <i>carbon afflux from soil and biomass into atmosphere</i>  |
| <i>c.e.c.</i>           | <i>cation exchange capacity</i>   |
| CAP                     | Common Agricultural Policy  |
| CHP                     | Combined Heat and Power (cogeneration)  |
| CRA-W                   | Agricultural Research Centre, Gembloux, Belgium   |
| CU                      | Cereal Unit   |
| CV                      | coefficient of variation  |
| CVT                     | Continuously Variable Transmissions   |
| <i>D</i>                | <i>measure of soil degradation</i>  |
| <i>E</i>                | <i>total energy input</i>   |
| EAR                     | Energy Autonomous Region  |
| EEC                     | European Economic Community   |
| ESU                     | European Size Unit  |
| EU                      | European Union  |
| FEC                     | final energy consumption  |
| GAP                     | Good Agricultural Practice  |
| GDP                     | Gross Domestic Product  |
| GHG                     | greenhouse gas  |
| GIOR                    | Główny Inspektorat Ochrony Roślin i Nasiennictwa (Main Inspectorate of Plant and Seed Protection) |
| GIS                     | Geographic Information System   |
| GJ                      | gigajoule   |
| GPS                     | global positioning system   |
| GVA                     | gross value added   |
| ha                      | Hectare   |
| HP                      | horse power   |
| hrs                     | hours   |
| <i>If</i>               | <i>annual income of an agricultural family (PLN/ha AL)</i>  |
| <i>Imb</i>              | <i>mean monthly income per one worker in the budgetary sphere (PLN)</i>                           |
| IT                      | information technology  |
| kW                      | kilowatt  |
| kWh                     | kilowatt-hour   |
| l                       | liter   |
| LU                      | Large Unit  |

|                |   |
|----------------|---|
| m              | meter   |
| man-h          | man hours   |
| MJ             | megajoule   |
| mln            | million   |
| mm             | millimeter  |
| <i>n</i>       | <i>number of convertible family members employed in a farm</i>  |
| o.m.           | organic matter  |
| OECD           | The Organisation for Economic Co-operation and Development  |
| <i>P</i>       | <i>agronomic productivity</i>   |
| PAAC           | Provincial Agricultural Advisory Centre   |
| PEC            | primary energy consumption  |
| PIMR           | Przemysłowy Instytut Maszyn Rolniczych (Industrial Institute of Agricultural Engineering), Poznań, Poland |
| PJ             | petajoul  |
| PL             | Poland  |
| PLN            | Polish Zloty  |
| PT             | Portugal  |
| <i>Q ha AL</i> | <i>parity area of farm (ha AL)</i>  |
| RPU            | Single Payment Scheme   |
| <i>S</i>       | <i>Sustainability</i>   |
| SA             | Sustainable Agriculture   |
| SCR            | Selective Catalytic Reduction   |
| t              | tonne   |
| <i>t</i>       | <i>time</i>   |
| thous.         | thousand(s)   |
| VMD            | volume median diameter  |
| <i>W</i>       | <i>water quality</i>  |



## **1. THE EVOLUTION OF THE PORTUGUESE AGRICULTURE IN THE CONTEXT OF THE EUROPEAN UNION**

*Carlos A. Falcão Marques*

**Keywords:** *Portugal, agriculture, CAP, reform, impacts*

### **1.1. Introduction**

Portugal joined the European Economic Community (EEC) in 1986, together with Spain. At the time, this enlarged the number of member states to 12. With the fall of the Berlin wall, starting with the Germany unification, and the dismantling of The Soviet Republic Union, the already called European Union (EU) reached out to eastern European countries to grab the political opportunity to put together, progressively, a broader democratic Europe. Poland became an EU member together with a number of these countries in 2004.

Today the EU has 28 member states. Each country's integration process has its own peculiarities due to several factors, including structural characteristics of their economy and policies for different economic sectors and differences to countries with which they will have to compete. But, this is particular important to agriculture where a Common Agricultural Policy (CAP) applies.

The major objective of this chapter is to analyse and briefly describe the evolution of Portuguese agriculture in the context of the European Agriculture. It is not a comprehensive analysis. It is a sketch of its major changes due to major aspects that had influenced in particular the Common Agricultural Policy, and how has evolved with respect to changes in CAP orientation and reforms. This analysis provides an example that might be useful to understand what can be done in the future both in Portugal as in other countries. In some aspects figures about these countries including Poland will be presented to benchmark the analysis.

Besides this introduction, the chapter has five additional sections. In the next section, background on the Portuguese agriculture and policy before accession is provided. Then, in the third, socio-economic structural characteristics of Portuguese agriculture and their evolution for the last four decades are briefly presented. In the fourth section analysis turns read and understand the evolution as major implications of changes in agricultural policy from CAP reforms. In the fifth section we turn to aspects that are the focus of post-2013 CAP reform and

relate them to Portuguese status. Finally, as a conclusion, we look for CAP and the sustainable orientations for Portuguese farmers.

### **1.2. Portuguese agriculture and agricultural policy background**

The evolution of Portuguese agriculture before and after the accession to the European Community is well documented in books, book chapters, reports and studies of the 80's and 90's decades and the beginning of this century referred in the introductory note of Avillez et al. (2004). Marques has been following and studying the evolution of Portuguese agriculture since the mid 80's, in particular to derive the prospects and impact of CAP in the agriculture of the Alentejo region of Portugal.

At the time of the revolution of April, 1974, following a long period of five decades of dictatorship, agriculture was a backward sector. For decades the agricultural sector had been stagnant. Agricultural output was unable to meet other sectors growth and the country needs for food products and the sector was a constraint to development (Marques, 1998).

In addition, the agricultural sector was particularly affected, since the early years of democracy, by the event of an agrarian reform, particularly in the large farms of the South of Portugal, with land property becoming a political and law issue with major consequences for a long period of time (World Bank, 1984).

Policies to overcome the lack of response of production during this period of time, before the accession, were focused on increasing production with factor subsidies and increasing product prices (Truong and Josling, 1983). The Portuguese agriculture before EEC and its long time problems are characterized in detail in "Portuguese Agriculture in Transition" (Pearson, 1987).

In the EEC, at those times, high and stable target prices, institutionally set and maintained through import protection with variable levies, had encouraged production and took levels of the majority of agricultural product to self-sufficiency and, then, surpluses.

Hence, on the brink of Portugal accession to the EEC, Portuguese and EEC agricultural sectors had contrasting structural characteristics, productive and economic behaviors and policy needs. The point was that the EEC and the Portuguese agriculture were in different cycles.

Prices for crops in Portugal were 20 to 40 percent higher than EEC prices. For livestock products the gap was smaller. As a result, negotiations established, for products or systems that needed larger adjustments in prices, a two-stage scheme

of freezing Portuguese prices in the first period in order to allow EEC prices to meet these prices and a second period of seven years adjustment steps to set the same price levels.

Reality would reveal these provisions to be tremendously out of site. Re-negotiations of the second period were necessary and postponed adjustments for more ten years, with decreasing specific payments adopted during that period as prices of EEC decreased and policies moved in the opposite direction. The Single European Market and the start of the Mac Shary reform of CAP in the mid-nineties brought full integration of Portuguese Agriculture with European partners and full adoption and implementation of CAP rules.

As we all know, then, we had CAP route to decoupling. First with compensatory payments based on historical production and potential levels, then with successively more products included. Agenda 2000 and Health check with the single payment scheme moved forward to an income support policy away from market prices and effects. Now, with CAP 2020 we are preparing to address inequality of countries, regions and farmers moving to a single payment per hectare more equitable support among farmers and countries, which means to deal with historical rights and remove product payment differences, as well as to a greener CAP.

### **1.3. Evolution of structural indicators of Portuguese agriculture**

To understand how Portuguese agriculture has evolved during the last thirty years and dealt with these different phases and policy reforms we will look to major structural socio-economic figures through the agricultural censuses (table 1.1). As a starting point of the analysis we used 1968, as benchmark for agriculture before the revolution, and then we looked to 1989, 1999 and 2009 agriculture census. This analysis updates figures presented in previous studies following the evolution of the Portuguese agriculture (Marques, 1999, 2003).

Portuguese agriculture has experienced large and continuous decrease of agricultural producers. From more than eight hundred thousand, farms number decreased to below three hundred thousand. Roughly, since 1968, two out of each three small farms with less than 20 hectares and one out of each pair of farms with less than 100 ha no longer exist. This adjustment trend has been more moderate in the last years. The number of farms with more than 100 hectares has increased, steadily.



The same holds for land. Utilised agricultural area has registered moderate but continuous decrease from 4.1 to 3.5 million hectares. However, substantial change has happened in land use patterns. Permanent pastures substituted arable lands (which were used for temporary crops) at large rates. From 3.3 we are down to 1.2 million hectares utilized as arable land, with less 0.6 million hectares during each last decade. Permanent pasture land area increased 8 times, with more than 0.5 million hectares each last decade. Land used in permanent crops increased, then experienced a slight reduction and, more recently, a stabilization trend.

Table 1.1. Selected structural indicators of Portuguese Agriculture, 1968, 1989, 1999 and 2009

| Farm Structural Indicators                                 | Years |       |       |       |
|--|-------|-------|-------|-------|
|  | 1968  | 1989  | 1999  | 2009  |
| <b>Number (thousand farms or agricultural producers)</b>   | 811.7 | 550.9 | 382.2 | 278.1 |
| <b>Number of farms (thousand) by size</b>                  |       |       |       |       |
| < 5 ha   | 631.6 | 450.4 | 299.3 | 208.4 |
| 20 to 100 ha   | 153.2 | 78.9  | 61.5  | 49.3  |
| > 100 ha   | 22.2  | 16.3  | 15.6  | 14.4  |
| <b>Utilised agricultural area and composition (mln ha)</b> | 4.10  | 3.88  | 3.74  | 3.54  |
| Arable lands   | 3.28  | 2.36  | 1.75  | 1.17  |
| Permanent crops  | 0.60  | 0.78  | 0.71  | 0.69  |
| Permanent pastures   | 0.22  | 0.74  | 1.28  | 1.68  |
| <b>Form of operation (thousand farms)</b>                  |       |       |       |       |
| Owned farms  | 517.5 | 499.4 | 357.0 | 262.5 |
| Rented   | 121.8 | 117.7 | 49.3  | 27.7  |
| Other forms  | 172.3 | 53.0  | 38.5  | 20.9  |
| <b>Legal form (thousand farms)</b>                         | 810.9 | 550.1 | 381.1 | 277.1 |
| Individual producers                                       | 810.3 | 546.1 | 375.9 | 270.5 |
| Firms  | 0.6   | 3.7   | 5.2   | 6.6   |
| <b>Individual producers by age (thousand)</b>              | 811.6 | 546.1 | 375.9 | 270.5 |
| Less than 35 years old                                     | 87.0  | 34.9  | 14.2  | 5.3   |
| 35 to 65 years   | 551.5 | 354.3 | 217.9 | 132.0 |
| More than 65 years   | 173.1 | 156.8 | 143.8 | 133.2 |
| No formal education  | 799.9 | 524.9 | 357.8 | 246.8 |
| High school education                                      | 5.3   | 15.1  | 8.2   | 11.4  |
| Graduate education   | 6.5   | 6.1   | 9.9   | 12.3  |

Source: Instituto Nacional de Estatística, Agricultural Census, 1968, 1989, 1999 and 2009

With respect to land ownership, a steadily decrease of the number of farms rented or operated under other forms has occurred in the last two decades and the relative number of owned operated farms has been increasing.

Individual producers still are the overwhelming majority of legal form of farms. Firm/company total number of farms is increasing in absolute and relative terms but is still a very low proportion of farms.

Structural indicators in terms of age and formal education of individual producers are particularly expressive. Dividing age classes in young, middle and old aged (less than 35, between, 35 and 65, and more than 65), the largest is the third group. Hence, human capital is made of very high and increasing relative proportion of aged producers. On the other hand, there is a low proportion of young producers and decreasing during time, which indicates that young people are still leaving agriculture. In addition, a very high proportion of producers have no formal school training (more than 90%) but high school and university graduates in agriculture have increased in absolute terms in the last two decades.

To understand the economic performance of the agricultural sector over the past the picture given by the Agriculture Economic Accounts is very clear (INE, CEA 1980-2006). Final agricultural production value measured in moving averages of three years has very low annual rate of real growth during the period. Agricultural gross added value to annual growth rate is null or slightly negative during the period, indicating real annual growth of cost of intermediate factors than final production value. Volume and labour productivity are very important to understand changes in Portuguese agriculture. In relation to volume of labour in agriculture, total equivalent annual working units (AWU) decreased from 1.22 to 0.34 million AWU during this period which suggests rates of annual decrease of labour volume of more than 4 percent per year leaving the agriculture. Hired labour force only makes 6 percent of total volume of labour. This reduction in labour volume of agriculture allowed for a large positive annual rate of change of net added value per unit of labour of 4 percent, i.e., a significant increase in labour productivity in agriculture during the period.

More recent economic indicators show that these indicators did not improve in more recent years. Figure 1.1 presents in the dark green line the evolution of Gross Added Value at constant prices from 2000 till 2013. In fact, the evolution since 2006 has even been more unfavourable.

Table 1.2. Selected economic indicators of Portuguese Agriculture, 1980/82 and 2004/06

| Production, income and labour indicators                          | Moving averages of 1980/82 and 2004/06<br>(annual rate of growth) |
|---|---|
| Final production value (at base and constant prices of year 2000) | 0.6   |
| Gross Added Value (at constant prices of year 2000)               | -0.1  |
| Volume of labour (equivalent labour year units ELUs)              | -4.3  |
| Added Value per equivalent labour year unit                       | 4.4   |

Source: Instituto Nacional de Estatística, Contas Económicas da Agricultura (1980-2006)

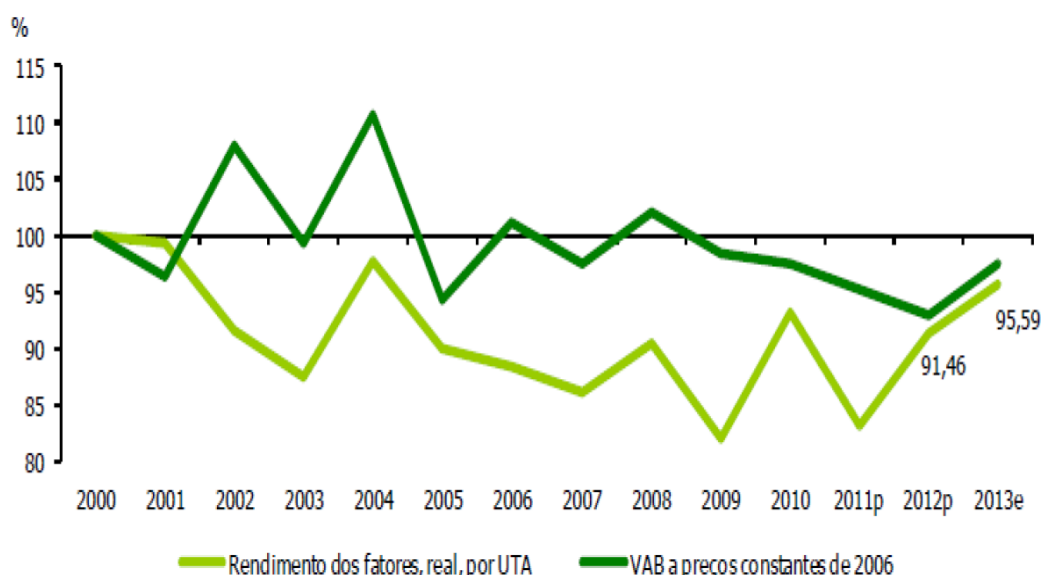


Figure 1.1. Real return of factors per annual working unit (UTA ) and Gross Added Value (VAB) at constant prices 2000- 2013 (2000=100%)

Source: Instituto Nacional de Estatística, Destaque, Contas Económicas da Agricultura, 2013,1ª Estimativa

This recent evolution trend is confirmed in figure 1.2 by the negative evolution (-7.2%) of the return per annual equivalent working unit compared in average terms of 2010/2012 relatively to 2000/2002. This return in Portugal was, at the time, already 27.9 percent below EU 27 average. Finally, this same figure is very useful to benchmark Portuguese values in absolute and relative terms with Polish values.

Return per AWU is 2.5 times higher in Poland than in Portugal and approximately the double of average EU values.

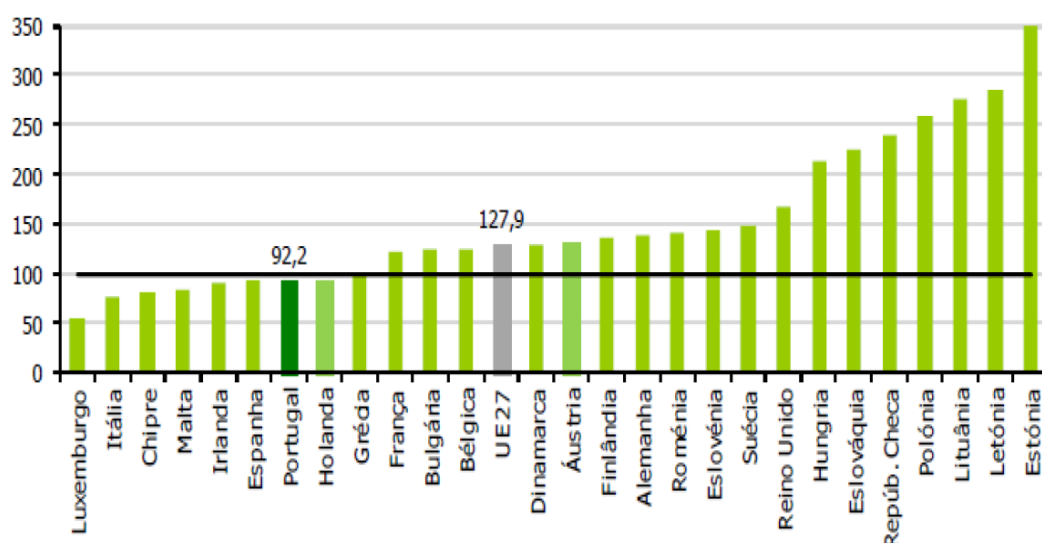


Figure 1.2. Percentage average return to annual working unit 2010/2012 in EU Member states (2000/2002=100%)

Source: Instituto Nacional de Estatística, Destaque, Contas Económicas da Agricultura, 2013, 1ª Estimativa

#### 1.4. Change in Portuguese Agriculture with CAP evolution and reform

In this section we try to relate the performance of Portuguese agriculture in aggregate terms with the evolution of CAP and its implementation in Portugal. Until recently, our view is that the contribution of CAP for the evolution of the sector has been decisive for structural adjustment without increasing total productivity and competitiveness of the sector.

The accession into the EEC and the adoption of CAP had a determinant influence on the evolution of Portuguese agriculture for the last three decades. This period was made of several sub-periods due to major events and changes in agricultural policy environment and CAP reforms. Implementation of CAP and successive reforms to agriculture in Portugal has been the main source of guidance of decisions of farmers and economic operators within the agricultural sector.

The negotiated and agreed strategy prior to membership (before 1986) relied on promoting investments, available from EEC structural funds, in order to prepare

Portuguese farmers to compete with the farmers of other European countries. Modernization of Portuguese agriculture through technological change would increase production and productivity, allowing for lower average costs and compete, in the medium run, with other EEC countries.

Very soon, before the end of the first stage of the transition period (1986-1990), Portuguese authorities realized that this would not be possible for two orders of reasons. Firstly, because other aspects besides production competences had been overlooked, namely marketing tools, institutional and associative know-how and governance, which were also needed. Secondly, because CAP adjustments, namely needed production control policies, including product price reductions, were larger than expected and would not be compatible with initial arrangements.

The renegotiations for the second stage (1991 -1997) tried to gain time and postpone the deadline (specific payments were set till 2003) for full adjustment of farmers of agricultural products involved but the pressure for integration from European Single Market adoption and from Mac Shary CAP reform definition and implementation ended up on negotiating compensations for full and immediate adjustment.

From then on CAP would not be neutral to Portuguese agriculture and farmers. To promote structural adjustment with stable EEC output prices was reasonable. But, to do it, with a policy setting of discouraging production and decreasing prices, and distortions in relative support favoring agricultural products without competitive advantages revealed to be totally inappropriate. A totally different logic substituted the initial objective of increasing productivity. Portugal and EEC needed different agricultural policies. But, in a short run view, to receive funds and maintain farmers' income, Portugal ended up "abandoning", for a long time, its agriculture.

In the first years of implementation of Mac Shary reform (1996) payments were set according to productivity levels of dryland and irrigated land, but it was necessary to maintain production options. This partial decoupling had several negative effects. Firstly, because payments were an important part of income and production levels with much lower prices were not sufficient to pay for total costs. The least the application of inputs the lower the costs of production of farming systems. This discouraged technological improvement and innovation in dryland crop agricultural systems and promoted extensification. Secondly, maintained farmers crop and livestock production orientation directed to non-competitive options. Thirdly, it did not promote the use of structural funds, the adoption of

rural development programs and measures available to competitive and sustainable options.

To support farmer's income, CAP tied production options to historical levels of crops produced and supported. This has had perverse effects in the dynamics of agriculture. Income has been artificially supported through the revenue side with no incentive for change, particularly for larger farms benefitting from high total direct payment compensations. Agricultural enterprises restructured their systems and production equipment in response to measures of agricultural policy (direct payments), but not face the need for the future have to compete in European markets. Available structural funds were misdirected to production systems artificially supported and diverted from sectors and products with potential for competitive advantages. For too long CAP not only maintained and directed resources to stagnant sectors with low degree of innovation and discouraged technological change in those sectors but also hampered cultural diversification and conversion technology. The same applies to the development and effectiveness of implementation and effects of rural development policies and funds, including the agri-environmental measures.

But the response from farmers has continued to be very positive in terms of allocation of resources and production increase in cases of specific subsidies that allowed them more economic return. Two illustrative cases of the capacity and speed of their response are durum wheat and the breeding cow premium attached. The production of durum wheat was strongly increased when this crop, for a number of years in this period, benefited from a specific production premium. The cattle population has increased over the years and the sheep population has declined. The key explanation for this development was the existence of a subsidy, a premium per cow, which in relative terms is very favorable to cattle and has remained connected to production unlike sheep premium that was disconnected from the effective maintenance.

Full decoupling from production took too long and was needed a long time ago. For instance, recent developments suggest a new dynamic on land use and technological change towards modern implementation of permanent crops such as olive and fruit trees. The single payment scheme allowed for land to be shifted from traditional production options to these options maintaining direct payments. Investments in these Mediterranean options, well adapted and with potential competitive advantages can also benefit from structural funds to support farmer's investment. The same re-orientation had happened previously for vineyards. As a

protected crop, with plantation rights, vineyards were previously supported with specific programs for investment and had annual return, during a period of years when domestic market consumption encouraged production, well above average returns.

Decoupling from production supports farmer's income and eliminates part of the negative effects of pricing policy in agriculture, since it promotes rational economic resource allocation among alternative uses. Indeed, without tying payments to production it is possible to make productive and technological adjustments and encourage innovation. It provides guidance for investments in research and development, experimentation, training, clustering of economic activities of the supply chain to overcome major bottlenecks and barriers for sector development and allows for social, environmental and economic rationality of measures of rural development with valuation of their social contribution at proper social and relative prices enabling sustainability of production systems.

However, some aspects of full decoupling and of today's policies still have unfavourable or unequitable effects. Firstly, income support in practice works as a rent, which might be an economic disincentive when it is relatively high for those who depend fundamentally on agriculture. Hence, it might not distort but discourage economic activity and unfavourable effects on rural development, particularly within regions having natural handicaps, where institutional and social-economic effects are even greater. These effects can be widespread if net margins are negative and no options are available as alternatives leading to abandonment.

### **1.5. Major reasons for reform and CAP Post-2013**

As of today, the CAP continues to be a policy that maintains inequality of support among countries, regions and farmers. Since current payments have a base on historical rights, farmers, regions and countries receive support levels differently based on what they used to produce, of crops that were primarily supported by CAP and of values set for each country. For instance, it is known the historical bias of CAP towards supporting primarily non-Mediterranean productions, i.e., the productions of the countries that originally designed CAP. This distorts support among countries and producers.

Figure 1.3 illustrates the large variability of average payment per hectare for different EU member states. The average value is 264 euros per ha but varies from close to 550 to below 100 euros per ha. Portuguese average payment per hectare

is 174 euros per hectare. Hence Portuguese farmers on average receive lower support from CAP than farmers of other EU countries. The same is true to Poland, with payment per hectare close to 200 euros, immediately before Portugal in the lower tail of the distribution.

The same applies among farmers. Payments per hectare also vary a lot depending on agricultural products produced and historical rights. Figure 1.4 presents Portuguese payment support per hectare by crop type. Values vary from more than 750 euros per hectare for rice to less than 50 euros per hectare for flowers and horticulture. Besides rice, horto-industrial crops, milk and temporary crops are also supported above average. Fruits, sheep and vineyards are supported at levels per hectare below average values.

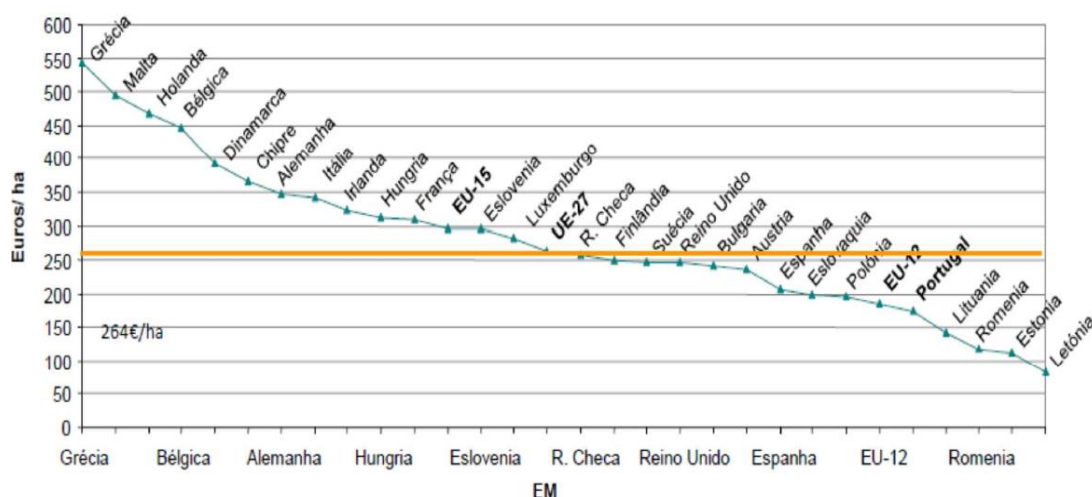


Figure 1.3. Average payment per hectare received per European Union Member state  
Source: Pinto (2011)

This point was a major focus of reform for CAP post-2013. Payments based on historical rights are not rational in terms of agricultural policy. CAP should move towards a single payment per hectare regardless of production. Hence, this variability and the way to deal with it in the implementation of the single payment per hectare until 2020 established under CAP post-2013 is a key agricultural policy point to be addressed in the near-future by Portuguese authorities.



In addition, an important move of PAC post-2013 is to avoid abandonment and support active farmers. This is a form of dealing with one of full decoupling disadvantages without distorting crop orientation. In reality CAP goal is to support activity or work/labour of farmers and not only land. The link of single payment scheme to farmer's activity, despite the eco-conditionality and of other conservation practices (public goods), orientates the policy goals to people and introduces, in an indirect way, the topic of capping total payments.

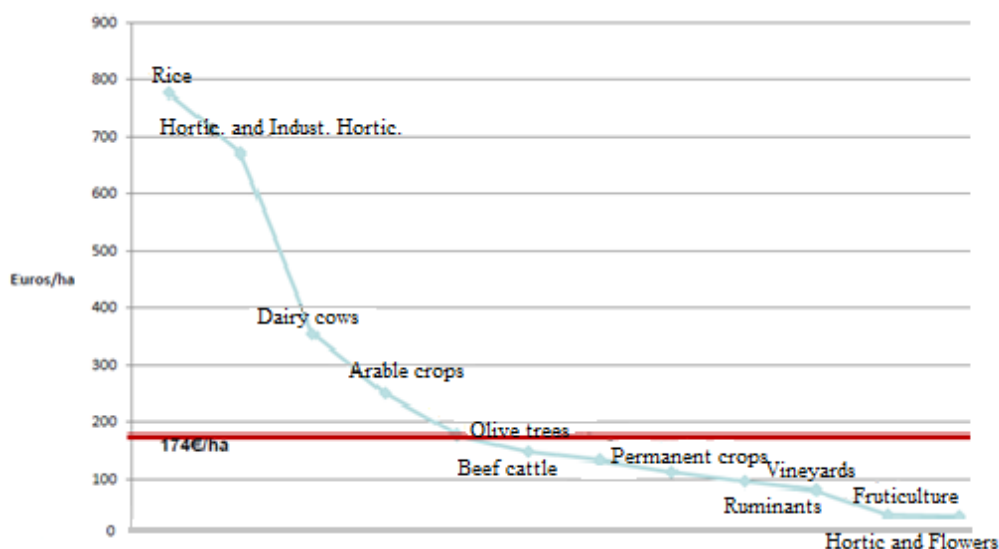


Figure 1.4. Average payment per hectare received per crop type in Portugal  
Source: Pinto (2011)

Finally, it is needed a closer tie of farmers of agricultural systems and practices that deliver public goods with payment levels. This is a way to continue on the road of recognizing the value of public goods and eco-services offered by farmers in order to legitimate CAP due to its territorial and environmental contribution. CAP post-2013 also focuses on this aspect, pushing for a greener CAP, introducing a part of the payment, as a “greening” component.

For the Portuguese agriculture this is also most welcome. In fact, many of the traditional agricultural systems of Portuguese agriculture that have been used to preserve resources and conditions, namely soil, water, forest, biodiversity, landscape, and others, have an additional opportunity to remain sustainable. For instance, recognizing and valuing the environmental contribution of traditional

agricultural systems of exploring the “Montado” of Alentejo region of Portugal (called “Dehesa” in Extremadura and Andaluzia regions of Spain), a mixed system of agri-forest use based on pasture, acorn from oak and cork trees and cork, taking in account other criteria besides the economic value of tradable and marketed resources and products, can contribute to their sustainability.

#### **1.6. The CAP and the sustainable orientations for Portuguese farmers**

CAP goals of viable food production, sustainable management of natural resources and balanced territorial development in Europe provides orientation for agriculture competitiveness and sustainability in the future.

Income support by CAP will continue to support European farmers, agricultural systems and activities, technologies and methods that contribute to rural development and deliver territorial and environmental public goods, including safety and quality of agro-food production.

Given this road for the future and the relevance and influence of CAP income support to Portuguese farmers, sustainability of Portuguese agriculture can be oriented through several guidelines and farming orientations. At least four types with particular characteristics can be thought of.

Structural incentives to investment will allow for agricultural companies and businesses to become more efficient in their production activities and more vertical and horizontal integrated in their supply chain as well as in international groups in order to maintain competitiveness of the European agriculture. Portuguese agri-business companies will benefit from this support and can specialize in competitive production sub-sectors moving along this orientation. Economic and investment groups and farmers suppliers of these groups or of well managed cooperatives will remain profitable, socially viable and environmentally responsible.

This orientation will allow for farmers with average land endowments, and some area under irrigation to remain competitive and be sustainable either by maintaining farming as a unique economic activity or a complement of their income resulting from other economic activities besides agriculture or even in agriculture in other farms. Direct payments may be an important complement to income of these farmers. However, their sustainability is not dependent on those payments.

The second orientation has to do with creating value and it is based on promoting differentiation and valuation of production. This value might have to

do with different aspects, such as specific factors of natural resources and technical knowledge and its use in the systems, technology and production and marketing techniques that are to be promoted and developed. One possibility is to direct production to regional and local differentiated products. Attributes as quality certification, safety, public health, dietetic particularities, origin, local and regional location, methods of production and type of processing that can and should be related to characteristics of the environment, landscape, history, heritage, culture, gastronomy and tourism.

It is a second step to some farmers that may be able to move from the first orientation to this one. This orientation requires continuation of efforts of farmers to become agricultural entrepreneurs and move and integrate activities along the supply chain, including adaptation of field research and of production, processing and packaging technologies, priority to creation, adaptation and adoption of technical and business knowledge and innovation and innovative and entrepreneurial mindset and business capacity to profit from the possibility of adding value through characteristics which render specific features of the product.

A third orientation is focus on farming in order to promote economic feasibility through conversion technologies holdings and resize. This is a specialization based on efficiency and directed to build a land scale and utilization of traditional technologies and resource that has been happening. This type of farming combines the use of natural resources in an extensive form with low endowments of labour. It is based on a development of the family farming model production that needs to be efficient and become more market oriented in order to be sustainable. Training and technological capability is required to ensure efficiency and economic returns. This orientation combines income support of CAP, but is predominantly supported by economic returns from agricultural systems and productions.

This orientation can also be a development of well succeed farmers of the first orientation that besides using irrigation developed also the capability to buy or rent land that is used on crop and predominantly livestock, beef or sheep production, and that depend only from agriculture as economic activity.

The fourth and last orientation will be characteristic of marginal areas with low resources quality that cannot be sustained in an economic criteria basis. In these areas the orientation must be the production in association with the provision of a public service. In this case sufficient income is obtained through market receipts from production and from compensation for ecological services via CAP. In this

orientation farmers use and preserve natural resources which have low productivity capacity at lower cost than society and compensation for farmers is assumed by society as social contribution to the maintenance of the natural resources. Landscape, cultural options, production guidance and technologies can be subject to planning in order to ensure and promote environmental goods.

Sustainable development of Portuguese agriculture and business will be based on agricultural farms that evolve following these orientations according to their technical-economic capacity and resource endowments.

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