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TITOLO TESI:

**AN EMPIRICAL INVESTIGATION OF THE
COMMON AGRICULTURAL POLICY
REFORM PROCESS**

Coordinatore: Ch.mo Prof. PAOLO COLOMBO

Tesi di Dottorato di : FINO CARLO

Matricola: 3911217

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Introduction.

This research is an attempt to carry out an extensive analysis of the evolution of the European Common Agricultural Policy and its relations with the European agricultural sector. The specific focus is on the impacts of the set of reforms that occurred in the last twenty years, starting with the first attempts of reforms of the eighties and culminating with the structural reforms of 1992, 1999 and 2003.¹

Intuitively, the history of the Common Agricultural Policy is a wide topic and a more specific definition of the goal of the present research is necessary. To start narrowing the topic, I will analyse the evolution of the regulations regarding the cereal sector which can be considered emblematic for the CAP overall; in fact, the set of reforms that was first applied to cereal has been extended to other agricultural sectors, following the same logic of switching from a price support policy to a system based on direct payments to farmers, progressively decoupled from production decisions. I will reconstruct the economic and political context that lead to the reform process, highlighting its main drivers. Most of all, I will provide a quantitative analysis of the effects of the two main reforms (Mac Sharry and

¹ Namely, Mac Sharry, Agenda 2000 and Fischler's reforms. Anyway, the empirical tests in part two are carried out only on the first and the latter, assuming Agenda 200 did not introduce nothing revolutionary but rather reinforced already existing instruments, at least for the matter under consideration. The idea is that is Mac Sharry introduced direct payments in place of price support and Fischler's reform decoupled them from production, Agenda 2000 just reinforced the cut in intervention prices already started in 1992.

Fischler) to verify whether they had the expected impacts in terms of reduction of the overall cereal production and a reduction in the greenhouse gas emissions from the agricultural sector. Finally, I will comment on the effectiveness of the reform process; this will be particularly useful since a new proposal of reform for the period post 2013 is being negotiated at the moment, with the main aim of reforming the single payment scheme introduced by the Fischler reform.

The organisation of the present work is in three parts: an historic description of the 'old' CAP and the drivers for the reforms; an empirical analysis of the reform process and a discussion about the current reform proposal for the post 2013 period and its likely effects on farming practices and farmers' income.

In the first part I reconstruct the history of the CAP, its birth and the reasons for its initial articulation as a price support policy. Most importantly, this section is crucial to explain the drivers that lead to the necessity of implementing a structural reform of the CAP. I will identify two sets of drivers of the reform process, in accordance with the existing literature (Cunha, 2012; Baldwin, 2003)²: internal and international. Among the first set, budgetary pressures due to the functioning of the price support mechanism and society's demands for a reduction in the environmental impacts of agriculture and for a higher quality food at reasonable prices were the main political pressures for a reform. Regarding the international

² A. Cunha and A. Swinbank, (2012) "An inside view of the CAP reform process", Oxford University Press.

R. Baldwin and C. Wiplosz, (2003) "The Economics of European Integration", Mac Graw-Hill, 3rd edit.

pressures, starting from the Uruguay round of the GATT in the eighties, food exporting countries (the CRAINS group and the US) called for the introduction of agriculture among the sectors to be progressively liberalised, adding another reason to reform the existing set of policies.

This first part consists in a detailed literature review about the distortions and limits of the ‘old’ CAP and it is instrumental to provide a clear description of the context of the reform process. Its main goal is to show how what I define as “three crises” (budgetary, environmental, trade relations) were the direct consequence of a system that for its very nature created perverse mechanism that determined overproduction, pressures on the environment and downward pressures on international prices with consequent trade distortions. It defines the context that lead to the reform process started, as regards the cereal sector, with the Mac Sharry reform in 1992 and then continued with Agenda 2000 in 1999, the Fischler reform of 2003, the so-called Health Check of 2008 and the reform that has recently been negotiated and that would take place for the period post 2013.

The second part builds on the results drawn in the first part and analyses the effectiveness of the reform process occurred in the last twenty years. In order to do that I run an econometric model using the difference in difference technique to test, in particular, the effects of the two reforms that are almost universally considered to be the turning points of the CAP (please note that I refer to the cereal sector as it can be considered emblematic for the reform process overall): the Mac Sharry reform and the Fischler reform. The reason for this choice is that these two reforms mark two deep discontinuities in the CAP functioning. The Mac Sharry reform replaces the price support system

with direct payments per hectare, decoupling payments from (the level of) production. However, these payments were still coupled to the type of commodity cropped: it was a direct payment per hectare for the land currently cultivated with cereal and therefore they were still partially distortionary on production decisions. In fact, when other sectors were progressively reformed in a similar way,³ the problem of different levels of payment per hectare depending on the type of crop shows clearly how these payment, although able to end the incentive to maximize the level of productions that characterized the old price support mechanism, still created distortions regarding production decisions: the farmer, knowing he would receive different EU payments per hectare depending on the crop cultivated, still did not make production decisions based just on (liberalized) market prices but also looking at the different levels of support per hectare offered by the Agricultural Policy. Hence, also Mac Sharry direct payments were still partially distortionary.⁴

The Fischler reform completed the process, introducing a single payment scheme (SPS) that is considered to be almost fully decoupled (doubts persist, among academics and policy-makers, over the role of the cross compliance

³ This is what happened after Agenda 2000, which extended the principles of Mac Sharry's reforms to other commodities. Being a direct payment per hectare based on the commodity cropped at the moment, we can model it as different premiums for different products. Hence, even if this subsidy was not linked anymore with the level of production, it was still linked with the type of production.

⁴ In the second part of the research I will run an econometric test to see whether farmers started taking production decisions based on international rather than on intervention prices. Here, I can anticipate that, even if the sign on prices is unexpected (possibly suggesting a Cobweb model for production decisions), international prices become significant just after the Fischler reform, as the theory predicted.

requirements)⁵. Both in the “historic”, in the “hybrid” or in the “regional” specifications of the Single Payment Scheme, in fact, production decisions should not be affected anymore by the direct payments since the payments are now either some flat rate per hectare for all the crops in a certain region (regional model) or based on past payments (historic model) but anyway de-linked by the current production decisions. In fact, to anticipate some of the concepts that will be examined in detail in the second part, even in the most conservative scenario (historic) the payments are provided based on the ones received in a base period (2000-2002) and therefore are completely decoupled from the current production decisions. It does not matter what the farmer is producing now on its land. The amount of subsidy he receives on a particular hectare is calculated depending on what he did in the reference period. Hence those payments can be thought as lump sum transfers.

Coming to the methodology, I chose to run a difference in difference model because, allowing for the presence of a control group, it can be used to isolate the impacts of the reforms that occurred in the EU and not in the other countries that constitute the control group. In practice, the presence of both a treatment and a control group allows to control for other variables that might have altered the trends in both groups, therefore isolating the effect of the reform under consideration. The idea is that if a series of regressors with potentially explanatory power are included both for the control and the treatment group and there is still a difference in their trend in concomitance

⁵ The question whether these payments are still partially coupled with production moves from the idea that if, in order to receive the payments, the farmer has to produce something, these subsidies would still contribute boosting production beyond what would be the optimal in a free market scenario.

of the reform, that residual (which would be captured by the coefficient on the interaction term of my model) is the effect of the reform.

As an example suitable to the present case, let's have a quick look at what could happen if we tried to infer whether there was a reduction in emissions in the EU, due to the change in policy, just looking at EU data. In fact, it could be that a reduction in GHG emissions is due to an increase in fertilizer prices that lead producer to decrease input use due to budget constrains; if we just consider EU countries we might end up saying that the reduction in emission is due to the reform (that happened to be contemporary to the increase in fertilisers' prices). The inclusion of a control group aims at avoiding this type of mistake. In fact, in this case the reduction would appear also in the control group. Hence, we would not misinterpret any reduction/increment in the trend of the treatment group as a consequence of the reform: just the residual, the coefficient on the interaction term, would in fact capture the effects of the reforms. Just after having controlled for explanatory variables that could have altered the trends "besides" the effect of the reform (hence not only in the treatment but also in the control group), we can make sure that the difference between treatment and control group, pre and post, is the real reforms' effect.

The tests on production and emissions are then followed by a robustness check that I used to verify whether these two reforms lead farmers to take production decisions on the basis of international rather than administratively set intervention prices. Here, I anticipate that as expected this seems to happen after the implementation of the SPS with the Fischler reform, confirming the idea that Mac Sharry payments were still partially coupled

with the type of production and that Fischler reform succeeded in finalising the process of liberalisation of European agriculture.

The third part completes the research, expanding on the results obtained in the second part. In particular, I will comment on the effectiveness of the reforms occurred to date and on the likely effects of the reform negotiated in 2013. In this context, it is important to consider the actual reform proposals for the post 2013 and in particular the proposals regarding the reform of the single payment scheme. The main goal of this third part is to establish the likely effect of the recent reform both in terms of changes in agricultural practices and in terms of its effects on farmers' income: in particular I will try to establish whether the increased share of first pillar payments that is now conditional on the compliance to agro-environmental practices is the right method to improve farming practices and if it is the most efficient way to achieve this result in terms of pressures on the European budget and effects on farmers' income. Differently from the econometric test run in the second part, the analysis carried out in this final part is mainly preliminary, not based on data but rather on some reasonable predictions of the effects that could be expected from a reform of the direct payments as the one that has recently been approved.

Acknowledgements.

I would like to thank my PhD supervisors, Professors Fausta Pellizzari and Mario A. Maggioni, for the help and the stimulus throughout the research. The definition of the topic and the identification of a specific set of reforms in a particular sector (cereal) was a necessary step to take in order to study an otherwise too wide topic. Moreover, the current format of the research, especially the third part with the analysis of the current reform proposal and some suggestions of potential instruments to adopt, has been decided together and I think it helps clarifying the future perspectives of this fundamental European policy. I also would like to thank my MSc supervisor, professor Ben Lockwood (University of Warwick), for the support received with the empirical part of the research and the elaboration of the reduced form model; moreover, I owe a particular mention to Federica Liberini (PhD at the University of Warwick) who gave me useful insights regarding panel data analysis and the use of STATA. I hope I was able to get the best from their advices and any mistake is a responsibility of the writer. Last but not least, I would like to thank the Economic Department of the Faculty of Social Science, in particular professor Guido Merzoni, for the support received regarding the statistical tools used to carry out the empirical part of the research.

PART I.

THE “OLD” COMMON AGRICULTURAL POLICY: ORIGINS AND EVOLUTION OF THE CAP AS A PRICE SUPPORT POLICY AND THE DRIVERS OF THE REFORM PROCESS.

As anticipated in the introduction, this part of the research is dedicated to an extensive analysis of the so-called old Common Agricultural Policy and it is functional to describe the context that drove to the need of an overall reform.

The outline is the following. First, I will provide an historic reconstruction of the origin of the CAP in the late fifties, highlighting the economic, historical (and also political) reasons that lead to the adoption of a price support policy as the main tool of the new born Common Agricultural Policy.

Then, I will describe the functioning of the ‘old’ CAP in the context of a food importing country, as the European Union happened to be for most of the agricultural commodities in its early years. Since it might not appear automatic that the agricultural sector has to be partially subsidised,⁶ I will take a step back to analyse a standard argument in the agricultural literature, the so-called ‘farm income problem’. This argument is normally used to justify State intervention in the agricultural sector: if the ‘treadmill’

⁶ In fact, the major critique to the CAP by international competitors was to alter international trade and distort the markets.

(Cochrane, 1958)⁷ description of the farm problem is accurate, State intervention might have a justification as long as it is finalised to sustain farm incomes, structurally declining in the aforementioned model; or, at least, the rural exodus process that follows should be managed by some forms of intervention and the minimum level of people to be employed in agriculture should be established considering also social and environmental factors.

Besides the validity of the ‘farm income’ argument, it is important to consider whether a price support policy would be optimal to achieve the goal of sustaining farmers’ income; in this context, it is useful to note Josling’s (1969)⁸ consideration about the limits of a policy that used a single instrument (the price support) to achieve a plural set of goals. Josling’s thesis will be crucial for my critique of the price support mechanism as a tool to achieve different goals such as sustaining farmers’ income and achieve technical progress in the sector and will be used throughout the present research. Indeed, the author considered the price support as inadequate since for its nature it could not have been effective in achieving different goals such as protecting farm incomes and the environment: as an example, in this specific case, Josling highlighted that if price support might have some benefits in terms of income support, its very conception would have been incompatible with the goal of protecting the environment.

⁷ W. Cochrane, (1958) “Farm prices: myths and reality”, Minnesota University Press.

⁸ T. Josling “A formal approach to Agricultural Policy” in “Journal of Agricultural Economics”, Volume 20, Issue 2, pages 175–196, May 1969

Having clarified the origins of the CAP as a price support policy I will then move to describe its functioning when Europe became a food exporting country. This switch from an importing to an exporting country can be considered the beginning of the end of the old CAP and I will briefly analyse some of the attempts taken by the European Commission to reform the policy.

Together with the switch from being a food importer to a food exporter, I will then focus on some internal mechanism that exacerbated the European budgetary problems. I will focus in particular on the so called green money system, the compromise of Luxemburg and the first decisions on common prices as the main additional drivers to the budget crisis that affected the CAP from the 70ies onwards and that were at the basis of the need to attempt an overall reform of the policy.

The content of the reform proposal known as Mansholt plan will be quickly outlined together with the reasons of its failure; moreover, I will present some of the reforms undertaken during the 80ies, mainly not in the cereal sector, to show how they were still ineffective to solve the problems related to a policy based on a price support system.

Finally, it will be shown that the price support system itself, in a context of a progressively more productive agriculture, was the real underlying reason of the three crisis that the European Union was facing regarding its agricultural sector: budgetary, environmental and trade relations.

1.1 The origin of the CAP as a price support policy.

In order to reconstruct the historical origin of the CAP and the reasons for its implementation as a price support policy, the contributions of Zobbe (2000)⁹ and Fearne (1997)¹⁰ are particularly useful. Zobbe's paper, in particular, aims at providing some reasons for the choice of a price support mechanism as the central instrument of what is called the old CAP, focusing on the economic reasons. Fearne's contribution, instead, helps contextualizing the adoption of price support in the historical context of the European Community post II World War. In the following paragraph, I will largely rely on Fearne's reconstruction of the years that preceded the birth of the European Community and the CAP; also, O' Rourke's model will be used to show the reason of the common inheritance of agricultural policies of the first EU members.

⁹ H. Zobbe (2000) "The Economic and Historical Foundation of the Common Agricultural Policy in Europe", Fourth European Historical Economics Society Conference, September 2001. Merton College, Oxford, U.K.

¹⁰ A. Fearne, "The History and Development of the CAP 1945-1990", in C. Ritson and D.R. Harvey, "The Common Agricultural Policy", 1997, CAB international, Wallingford, UK.

The historical roots of the Common Agricultural Policy.

As Fearne states, when examining the factors that determined the shape of the CAP in the early 60ies, it is important to contextualize the analysis in the broader process of European integration, aimed at creating an economic and a political union.

European integration was thought to be a necessary step to guarantee peace on the European continent and economic recovery after the II world war. The signing of the Treaty of Brussels in 1948 can be considered the start of a process that saw European countries negotiating the terms of their participation in a supranational organisation in which they would have to surrender parts of their sovereignty. In 1949 the Council of Europe was created. In this context, the French proposed the creation of an European parliamentary assembly in which decisions would be carried by majority voting, implying a federal conception of the integration process. The differences with the British approach to European integration were soon clear, as the British succeeded in watering down the project conferring no legislative powers to the Assembly and the Council. The Council then set up a special Committee to analyse the prospects for the integration of European agriculture in 1950.

France was particularly keen to create a common agricultural market,¹¹ seeing it as part of a bargaining where Germany would have opened its market to French produce in exchange of the liberalization of the industrial sector that would have favoured Germany, and proposed to create an high authority for agriculture with substantial supranational powers. The idea was to control production, to establish a common market based on the removal of all barriers to agricultural trade within Europe via a price support policy and the use of import levies against non-European products. Contrasts with the UK due the British denial of surrendering substantial parts of sovereignty determined the failure to reach any agreement in the negotiations between 1952 and 1954.

An important step towards European integration was the creation, in 1951, of the European Coal and Steel Community, formed by Benelux countries and France, this time together with Italy and Germany, while Britain did not participate. This plan, designed by Jean Monnet, made clear that due to the difficulties to reach an agreement on a more ambitious political Union, the method of integration followed by the European countries would have been the so called “gradualist integration”, where the political goals had to be reached progressively through a process of economic integration and cooperation. In particular, Monnet thought that aiming at a sort of top-down approach starting with the implementation of a political Union that would have been similar to the construction of a new federal State, European’s integration should have followed a more gradualist approach where each

¹¹ See also W. Grant, “The Common Agricultural Policy”, 1997, The European Union Series, Palgrave MacMillan. Chapter 3 for a detailed description of the CAP as a compromise between France and Germany.

area of cooperation would have been analysed separately, depending on the needs of the members in that particular area.

Aware of the difficulties to reach an agreement on a political union, the Benelux countries outlined a series of proposals aimed at implementing the “gradualist integration” method on a broader scale to create a fully integrated European market. They presented a memorandum that called for an intergovernmental conference which took place in Messina in June 1955 between the Six (Benelux countries plus France, Germany and Italy) but without a disinterested Britain. The aim of the conference was to negotiate a series of treaties that would have established a general common market. The result of that conference was the “Spaak report”, drawn up in 1956, that constituted the basis of the future Treaty of Rome, 1957, which formally founded the European Economic Community (EEC). After the publication of the Spaak report, a steering Committee started working on the different sectors included in the unification process. Britain participated initially but soon left the negotiations, easing the publication of the steering group proposals which included agriculture among the sectors to be integrated in the Common market.

The Spaak report outlined the objectives for the future agricultural policy, contributing to define four of the goals which will be part of the Treaty of Rome a year later:

- stabilization of markets;
- security of supply;
- sustain farm incomes;

- a gradual structural adjustment with an increase in farm productivity and average size.

However, details regarding the policy to be implemented for the agricultural sector were absent since the negotiations were still problematic between the Six countries; moreover, agriculture was not considered a priority during the negotiations on the Treaty that institutes the European Economic Community.

For those reasons, the Treaty of Rome defines the main goal for the agricultural sector without specifying the details about how to implement them. These broad goals are described in the articles (38-49). In particular, art. 39.1 defines the five main objectives of the policy:

(a) to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilization of the factors of production, in particular labour;

(b) thus to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;

(c) to stabilize markets;

(d) to assure the availability of supplies;

(e) to ensure that supplies reach consumers at reasonable prices.

Art. 40 provides some reference to the policy options, mentioning the necessity to form an internal common market and a common trade policy with the external partners. Some instruments as regulated prices, production

aids and other market intervention mechanisms were outlined as potential tools of the future agricultural policy.

Art 43 established the procedure to be followed to reach an agreement on the CAP. The Commission was required to submit proposals to the Council within three years and the Council would implement them with regulations, directives and proposals.

As established by article 43, delegations from each member State, the main farming organizations, the food industry and the Commission met in Stresa, in July 1958, to agree on a more detailed view of the forthcoming CAP. In this contest, a price support policy was advocated by different governments even if the Commission and especially the Commissioner Sicco Mansholt stressed that a price policy combined with a structural policy to increase productivity could determine overproduction and therefore surpluses that might worsen trade relations with EC's trading partners, put pressure on the European budget and endanger the economic sustainability of the policy (Commission, 1958; Commission 1958a)¹². The farming representatives, in particular, endorsed a price support policy as a tool to help the family farm, that should remain the backbone of the European Agricultural sector. The question whether this was the most appropriate tool is not answered here but left for the next chapter, where I specifically question if this was an efficient instrument to reach that goal. Here it is rather important to note that the shared goal of sustaining a type of farm system based on small, family

¹² Commission of the European Communities (1958), "First General Report on the Activities of the Community, Brussels.

Commission of the European Communities (1958a), "Recueil des documents de la conference agricole des etats membres de la communaute economique europeenne a Stresa au 12 Juillet 1958 ", Brussels.

owned business lead to the adoption of a policy based on the instrument of common internal prices higher than the international ones for historical (and at least at the very beginning economic) reasons.

After the Stresa conference the Commission took two years to present its official proposals, that were finally submitted to the Council in June 1960.

The proposals outlined the shape of the CAP as a common market with free circulation of agricultural products with structural, market and external trade common policies. The adoption of a system of common prices was mentioned as possible. Throughout the following year, different drafts detailed a mechanism of common pricing, import levies, intervention buying and export refunds as the main instruments of the CAP. The Commission had to renounce to its idea regarding the autonomous financing of each common market organization (one for each product) with the revenue of its import levies as it was clear that some sectors, like milk, would not have been financially self-sufficient; also, any idea of co-responsibility levies to cover the costs of the policy were withdrawn as member States firmly opposed them due to political pressures from their national farmers' organizations.

The 4th of January 1962 the Council finally adopted a series of regulations that instituted a common market organization for each product based of the aforementioned characteristics: common pricing, import levies, intervention buying and export refunds. The levy system took place on the 1st of July 1962. With these events the CAP was finally instituted.

This brief recap of the birth of the CAP shows how the Six members decided to regulate their agricultural sector implementing a Common market based on the following three elements.

- A price support system aimed at guaranteeing fair prices to both farmers and consumers. Moreover, those prices would have been uniform across the Community (Market unity).
- This administrated prices were to be sustained by a system based on common import levies and, eventually, export restitutions. Trade would be free inside the Community (Community preference).
- The financing of the policy would be responsibility of the Community and the incomes generated from the policy would constitute Community's own resources (Financial solidarity).

To sum up, as Zobbe and Lanfranchi (2008)¹³ state, the Common Agricultural Policy had two main objectives: to sustain farm incomes and to push the overall production in a situation where, after the second world war, agriculture was in crisis and Europe was heavily dependent on imports.

Boosting production was therefore necessary not only from an economic perspective but also from a political one, in order to diminish European's dependence on the international market. These goals had to be fulfilled respecting the requirement of guaranteeing fair prices to the consumers but as it will be clear in the following discussion there was an implicit

¹³ M. Lanfranchi "Dal Trattato di Roma all'Health Check: mezzo secolo di storia di politica Agricola comunitaria". Edizioni Dr. Antonino Sfameni, Messina, 2008.

contradiction in the idea of reaching a plural set of goals with the same instrument (Josling, 1969)¹⁴.

Coming to the explanation of why the CAP assumed the particular shape of a price support policy to achieve its various goals, outlined in art.39, it has to be found both in historical and economic reasons; moreover, each country had its own political interests to safeguard.

In the next paragraph I will present a two-sector model to explain how European countries reacted differently to the so-called “grain invasion” from the new world in the last decades of the nineteenth century. Those reaction shaped their agricultural sectors in a way that was still relevant when the CAP was first negotiated. Hence, the model is useful to explain the political interests behind the CAP negotiations and why the position of the first six European members differed from the ones of the UK, which in fact did not participate to the CAP at its very beginning, and therefore why price support was adopted as the main policy instrument of the CAP.

¹⁴ Quite intuitively, if price support is chosen to sustain farm incomes that would automatically result in consumer losses as the price paid by consumers would be higher than what they would have been in a liberalised scenario. Another clear trade off resulting from the choice of using a price support policy is the one I have highlighted before, between sustaining farmers’ incomes and the need to safeguard the environment with less intensive production systems.

A two sector model to explain the response to the grain invasion of 1880ies

Zobbe (2000) and O' Rourke (1997)¹⁵ help clarifying the historical reasons for a CAP structured as a price support policy, highlighting the links between the structure of the new born CAP with the previous agricultural policies of the members and, also, why Britain's position was simply not compatible with the orientations of the other six countries. The main idea is that the structure of the CAP replicates the agricultural policies of the Six original members of the CEE, whilst countries like the UK had had a different agricultural policy and therefore were not keen to enter the newborn CAP.

The origin of these differences among European countries lies in their different reaction to the "grain invasion" that characterized Europe in the late XIX century when, due to revolutions in the transport system that triggered a decrease in transport cost, suddenly grains from the new world became available on European markets.

O' Rourke (1997) elaborates a simple two sectors, factor-specific model to predict the different reactions of the European countries. The idea is that in countries where industrial interests were stronger (such as the UK) the approach followed was a free trade policy. Instead, in countries where the landowners interest were prevalent and with the majority of the population still employed in agriculture, the approach followed was protectionism. To

¹⁵ Kevin H.O' Rourke "The European grain invasion", in *The Journal of Economic History*, Vol. 57, No. 4 (Dec., 1997), pp. 775-801, Cambridge University press.

explain the theoretical foundation of the model I will report a simple graph analysis from O'Rourke's paper, using the French and the British examples as emblematic of the two different answers to the "grain invasion".

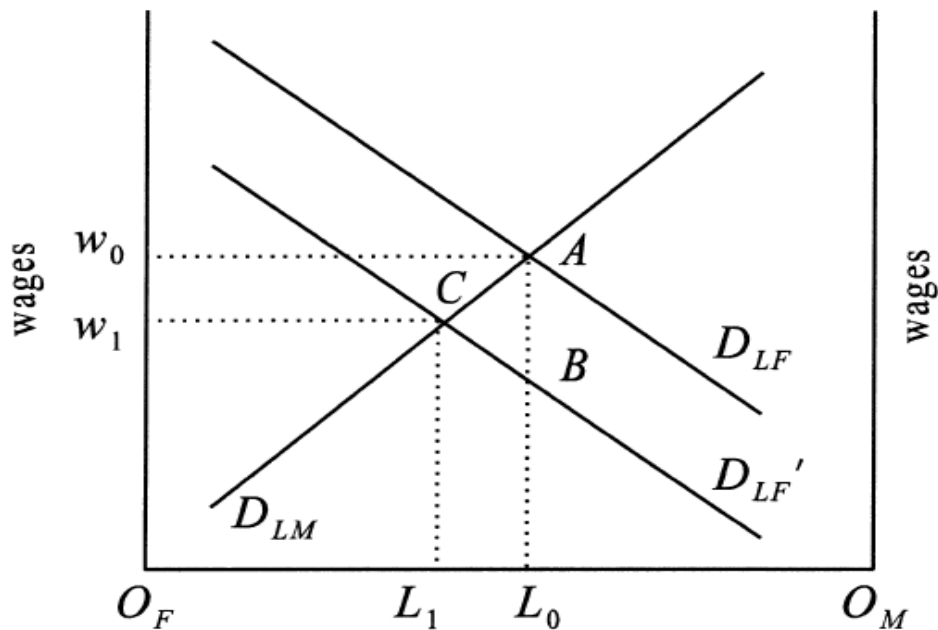


Figure 1. The impact of cheap grain on European agricultural policies (O'Rourke, 1997).

Assume the economy is composed by two sectors: agriculture and industry, where agriculture uses land and labour to produce food and the industrial sector uses capital and labour to produce manufactured goods.

Moreover, while labour is assumed to be perfectly mobile between the two sectors, land and capital are immobile and sector specific. D_{LF} and D_{LM} are the internal labour demands for the agricultural and the industrial sector; the segment O_F-O_M represents the total labour force; A represents the initial market equilibrium, nominal wages equal to w_0 and determine the amount of

workers that will go into the agricultural sector $O_F - L_0$ and into the industrial one $O_M - L_0$.

Note that the assumption of full employment is made for simplicity, we are therefore assuming that all the labour force that exit the agricultural sector finds new employment opportunities in the industrial one.¹⁶

If we allow imports from overseas, the internal price of grains would collapse (a measure of this fall could be the segment A-B) and therefore the internal demand for agricultural labour would shift to $D_{LF'}$. If labour is perfectly mobile, workers would move to the industrial sector (segment $L_0 - L_1$), resulting in a migration from the country side to the cities. That would decrease nominal wages also in the industrial sector, with the new national level of nominal wages decreasing from w_0 to w_1 .¹⁷

It is straightforward to see that capitalists benefit from the liberalization as nominal wages decrease whereas the price of manufactured goods is not affected. Instead, landowners lose since the decrease in their output price is bigger than the reduction in nominal wages; moreover, family farms are

¹⁶ Obviously this is a simplicity assumption and if it held there would not be the gap between agricultural and non-agricultural income that will be shown in the next chapter. However, the importance of this model for the purposes of the present research is that it helps explaining different reaction to cheap grain invasion. In other words, its limitations can be overlooked for the scope of the present analysis.

¹⁷ Note that in this model we assume perfectly mobile labour therefore there is going to be only one nominal wage level for both the agricultural and the non-agricultural sector. This assumption of perfect labour mobility is one of the main arguments used by neoclassical economist to criticize the idea of a structural weakness of agricultural incomes: in their elaboration, lower farm incomes are just the result of a failed readjustment and they would progressively disappear as people move out of agriculture to the industrial sector. Hence, when analysing the "farm problem" we should explain why we could observe agricultural income lagging behind industrial ones also in the medium-long term. In fact, we'll see that asset theory and the idea of a certain level of specificity regarding farm labour is used to explain why the adjustment (through rural exodus) does not fully happen, resulting in lower agricultural incomes.

even more penalized since they normally do not employ labour force and hence they do not benefit from the decrease in nominal wages as landowners would, partially counteracting the negative effect on agricultural prices.

The welfare consequences for labour are not so intuitive: on the one hand nominal wages decrease but the decrease in the price of the agricultural goods is normally bigger, resulting in an increase in real wages if the food expenses account for a high proportion of consumers' budgets; otherwise, they might decline. Moreover, the welfare effect for labour depends also on the dimension of the internal migrations towards the industrial sector; if liberalization happens in a country with a previously large agricultural sector, the dimension of the migration would be consistent and therefore the negative impact on nominal wages will probably outweigh the reduction in the cost of living due to the decrease in agricultural prices, with the overall effect of a decrease in real wages. If, instead, it is a country with an already consistent industrial sector and a smaller agricultural sector, a lower rate of internal migration to the cities would relax the downward effect on nominal wages, which would be smaller than the decrease in agricultural prices with an overall positive effect on real wages.

O' Rourke also predicts that different countries would have opposite policy reactions based on the predictions of the model.

The two countries that better reflect the model's predictions are the UK and France. Whilst the UK, a country with an already strong industrial sector, reacted liberalizing the trade with the New World, France, a country with a still predominant agricultural sector, reacted with protectionism. In fact, also

the predictions about the welfare effects on labour were different between the two countries. To provide an example of the political debate of the time, O'Rourke highlights that in the debate between Disraeli and Pitt the latter was right in claiming that liberalizing trade would have had a positive effect on real wages: in the UK, both capital and labour would have gained from liberalization. In fact, the agricultural sector in the UK was relatively small and part of the internal migration towards the city had already happened with the likely result that the decrease in food prices would be bigger than the downward pressures on nominal wages. Instead, in France, O'Rourke estimates that if trade had been liberalized, real wages would have fallen: not only landowners (and family farms) but also labour would have lost from liberalization, at least at the end of the nineteenth century. As stated before, this was because of the relatively big share of people employed in agriculture: a drop in food prices would have triggered a considerable contraction in agricultural employment with a substantial rural exodus and a resulting fall in nominal wages that would have probably outweigh the drop in food prices.

The case of France fits perfectly with O'Rourke's framework also regarding the internal political debate after the first world war. Industrial interest pushed for a revision of protectionism in agriculture, since a decrease in nominal wages was necessary to stimulate the growth of the industrial sector, but the farm organization claimed that that would result in a decline of the agricultural sector and succeeded in keeping the high tariffs on agricultural goods.

France can then be considered an emblematic example of the situation on the continent, where the strength of farm lobbies averted liberalization and managed to keep price support as the main tool to sustain farm income even if that was probably no longer justified by an overall welfare analysis.

Regarding the agricultural policies of the other five European countries, they were similar to the French one and that explains why after the second world war there was a substantial uniformity between the Six, all based on different degrees of internal price support.

Ackrill (2000)¹⁸ briefly summarizes national agricultural policies before the CAP. West Germany was characterized by severe food shortage after the partition and the loss of Eastern food production and pursued a protectionist policy. The 1955 Agricultural Act confirmed high price support for many agricultural products (and mainly for cereals) as a tool to covering the high cost of small sized family farms that still constituted the backbone of Germany's agricultural sector.¹⁹ Tangermann (1979)²⁰ dates the origin of Germany's backward agricultural sector to Bismarck's tariffs on grain imports in the 1870. In a reconstruction that substantially validates O'Rourke's approach, the author says that the presence of inefficient farm with income problems put pressure on the government that reacted with high prices; that, instead of solving farm income problem, simply inhibited the structural adjustment necessary to increase agriculture's productivity via

¹⁸ R. Ackrill, "The Common Agricultural Policy", UACES, Sheffield Academic Press, 2000.

¹⁹ See table 1 for main agricultural indicators for the European countries before the CAP and, specifically, the data about agriculture's share of total employment. The figure for Germany is 18.5% and 14% in 1955 and 1960.

²⁰ S. Tangermann, (1979), "Germany's position on the CAP: is it all Germany's fault?" in M.Tracy and I.Hodac, "Prospects for Agriculture in the European Economic Community (Cahiers de Bruges N.S. Bruges)

increase in farm average dimension and technical progress. In other words, Tangermann's opinion is that in order to solve the farm income problem and favor internal readjustment the use of a structural policy would have been more efficient to boost competitiveness and regulate the rural exodus (possibly with the use of some level of price policy that should have been progressively substituted by other forms of transfers to producers). However, the interests of farmers were represented by strong farm organizations such as the DBV that insisted upon keeping the price support system and ensuring high prices and the result was that the government was probably the stronger advocate of high price support in the new CAP.²¹

Holland also based its agricultural policy on price support as a tool to boost farm incomes; however, being also a food exporter for some relevant products,²² it had a mixed set of instruments. In these sectors Holland used deficiency payments as the tool to sustain the income of marginal farmers as a price support policy would have reduced the competitiveness of the product and hampered exports. As a food exporter, Holland was expected to benefit from the CAP based on internal free trade with food importing countries, however, its highly competitive agriculture would not have gained from high price support policy in its exporting sectors. If we add to this composite scenario (which made difficult for the government to pursue a specific and coherent position during negotiations) Dutch's lack of political

²¹ L. Lindberg, 1963, "The Political Dynamics of European Economic Integration", Oxford University Press, Oxford, 261 – 283.

²² Ackrill (2000), pag 26, reports that approximately one third of agricultural output (by value) was exported, percentage that includes 25% of crop production, 40% of animal production and more than 50% of national horticultural production.

power, it is not surprising that Holland did not play a significant role in the formation of the CAP.

The Dutch government was anyway the only one who pointed out that high prices would have led to surpluses and problems with trading countries. Fearne clarifies that the main goal of the government was to open European's market to its exports of highly competitive milk products and that in order to reach that goal they were willing to accept the drawbacks of higher prices in sectors like the grains, in which the country relied on cheap imports from third countries. It is also worth mentioning the position of Dutch main farm lobby, who favored the adoption of the CAP but was against protective devices such minimum import prices, quotas, favoring a policy of low prices in the grain sector.

The importance of agriculture for Italian economy is evident from the data in table 1.²³ With 40% of agriculture's share of total employment, there was a strong need to sustain farm income to regulate the structural adjustment out of the agricultural sector, the main issue being the necessity to create alternative employment opportunities. As a food exporter for the Mediterranean products, Italy was expected to benefit from market integration with northern countries, even if it had to suffer from high common prices for northern products.

The structure of Italian agriculture was particularly inefficient, based on small scale family farms with high production costs. Despite that, the tradition of State intervention in the agricultural sector was weaker than in

²³ Pag 26 of the present paper.

other countries. Besides high food prices for durum wheat, most commodities were largely unaffected by protectionist policies. Farm organization were enthusiast about the CAP, seeing the possibility to exploit their advantage in the exports of fruits and vegetables and other Mediterranean commodities. On the other hand, small producers of products with comparative disadvantage with European competitors were more critical about the internal free trade market and claimed for structural programs and aid from the Community. Tangermann (1980) points out that the high proportion of food imports of northern products made the government ask for low prices whilst negotiating for higher prices in fruit and vegetables: this meant that, Italian claims were highly contradictory and it was therefore difficult to have a substantial influence on the overall negotiation process.

Coming to Belgium and Luxemburg, their relative small dimension both in economic and population terms determined a weak bargaining position during the negotiations for the establishment of the CAP. The structure of their national policy was in line with the other European countries, being based largely on the instrument of a price policy.

In Luxemburg, the agricultural sector faced both climatic and soil constrains and price fixing and import protection were the main tools used to safeguard this inefficient sector.

As regards Belgium, the price policy was based on target rather than on fixed prices; in fact, the OEEC (1957)²⁴ reports that these prices had to be “intended as indicators and not as guarantees”. Tracy (1989)²⁵ points out that wheat was the only product effectively supported, with a consequent surplus and with other grains imported at international prices.

Regarding their position during the negotiations, Belgium and Luxemburg found themselves to be close allies to the Germans, seeing in high price support a tool to sustain small family farms’ income regardless the negative effects on consumers.²⁶

To conclude this brief historical summary of national policies pre-CAP, the Six shared the characteristics countries with large agricultural sectors and strong agricultural lobbies. This was probably the main factor behind their similar reaction to the grain invasion, with the choice of price support and import restrictions as a way to protect their national agricultural sectors and avoid a massive and unregulated rural exodus. Moreover, that explains the historical origin of the CAP as a policy based on the pre-existing policies of the members. Countries such as the UK, instead, liberalized their agricultural trade to benefit the predominant industrial sector and used different instruments to sustain farm incomes, such as deficiency payments. This

²⁴ OEEC (1957), “Agricultural Policies in Europe and North America: Second Report of the Ministerial Committee for Agriculture and Food”, Paris, 2007.

²⁵ Tracy M. (1989) *Government and Agriculture in Western Europe 1880-1988*. London, Harvester Wheatsheaf, 3rd edition.

²⁶ The historical reconstruction of the CAP continues in chapter 4 where I explain the negotiation process that lead to the first agreement on prices and the importance of the Luxemburg compromise and the functioning of the green money system as drivers of higher prices. The overall effect was the passage from a food importing to a food exporting country in a context of raising intervention prices and that ultimately lead to the need of a substantial reform, as the Mac Sharry one.

reasoning sheds light on the reasons that lead the UK to leave the negotiations on the CAP since the adoption of a price support policy based on internal prices, higher than the international ones, would have contradicted its traditional policy of free trade and triggered an increase in food prices that was not in the interest of the majority of its population, already working in the industrial sector.

1.2 The functioning of a price support policy in a food importing country and the rationale behind the adoption of a price support policy in Europe.

O'Rourke has clearly demonstrated the reasons for the historical homogeneity of agricultural policies within the Six, and the opposite choice made by England: my interpretation, from a political economy perspective, is that the adoption of a price support policy reflected the prevalence of agricultural interests on the continent whereas the English free trade is the expression of the interests of the industrial lobbies. We can now turn to a more detailed analysis of the economic reasons to adopt a price support policy in the post war scenario, reasons that go beyond this historical inheritance from previous national agricultural policies.

The economic rationale of price support in a food importing country

Zobbe (2000) shows that adopting a price support policy was a perfectly rational choice for the Six members of the new born European Economic Community. That still holds even though from a simple Welfare analysis is clear that a policy based on deficiency payment would have been more efficient given the goal of guaranteeing a certain level of producer surplus.²⁷

In other words, if one of the main objective of European policy makers was to sustain incomes, the use of deficiency payment (such as the ones used in the UK) would have allowed to reach the same goal in a more efficient way.

We will leave a thoroughly description of the so-called “farm income problem” and to the most efficient instruments to tackle this problem to the next paragraph; here it is important to demonstrate why price support policy was economically convenient for the Six from a budget point of view, given the goal of providing a surplus to the producers. To do that I will replicate the simple Welfare analysis developed by Zobbe, noting that this particular analysis holds for an importing country, as the Community as a whole happened to be after the second world war. In fact, the reasoning would be the opposite in the context of a food exporting country, as the Community turned into during the 60ies and the 70ies, depending on which commodity. The latter analysis will be presented in a successive paragraph to show

²⁷ As I will show later, this statement holds even considering that the implementation of a deficiency payment system implies considerable transaction costs. In other words, even if introducing deficiency payments is costly (especially in terms of bureaucratic cost which are absent in the price support framework as no control is needed from a bureaucracy aimed at enforcing the policy prescriptions) I will show that the direct costs of price support for the European budget largely outweighed these transaction costs.

exactly the mechanism that progressively lead to the unsustainability of the price support policy when the Community turned into a food exporter.

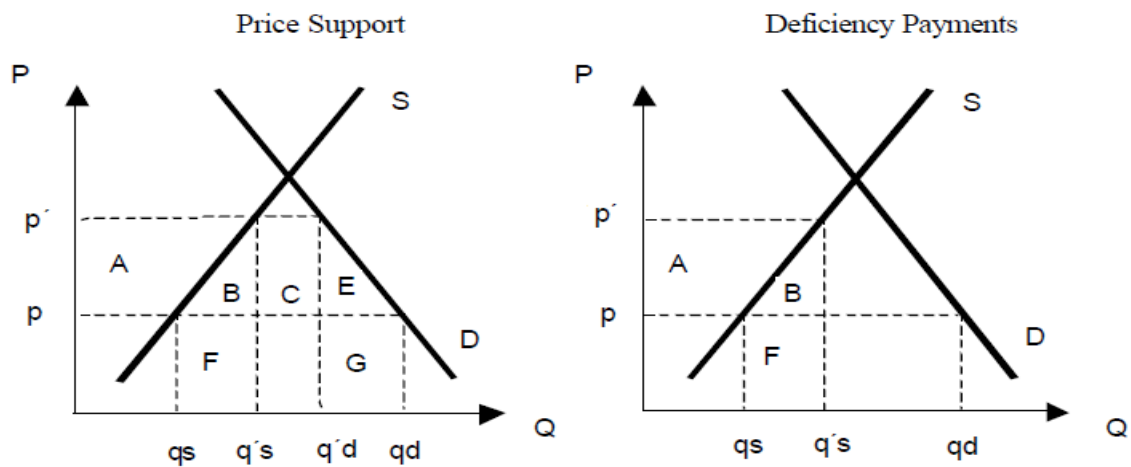


Figure 2. Price support policy vs deficiency payments in a food importing country. (Zobbe, 2000).

As we have seen in the previous paragraph, the goals of the European policy makers were multiple, from sustaining farm income and boosting production to guaranteeing fair prices to the consumers. The two graphs represent demand and supply curves for agricultural products in a simple price/quantity framework. The price support instrument is depicted in the graph on the left; here, the government fixes internal prices to p' , higher than the international ones, p . The positive effect of production is clear as internal production raises from qs to qs' . On the other hand, there is a the negative effect on consumption as the quantity demanded at p' is $q'd$, lower than the quantity that would have been demanded at international prices, qd . Imports decrease and equal the segment $qs' - q'd$, whereas in a free trade scenario they would have been equal to $qs - qd$.

Coming to the Welfare analysis, the policy triggers the following changes in comparison to the free trade scenario. There is a producer gain equal to the area A which is more than compensated by a consumer loss equal to the sum of areas A, B, C and E.

Obviously, a price policy that fixes internal prices higher than the international ones needs some form of import taxes to work; otherwise, producers from outside the EU would export and sell their products into the Community receiving a mark-up equal to the difference between European and international prices; this mechanism would act until international and internal prices are the same, demonstrating the unsustainability of a price support policy without some forms of import controls. In the case of the European Union those controls consisted in variable import levies: after having established the minimum intervention price (p' in the graph), the variable import levy was the difference between the internal prices and the international ones.²⁸ The difference with an import tax (as a percentage of the price of the imported good) or with a fixed tariff is the flexibility of the variable levy, which varied together with international prices with the objective of keeping the internal prices equal to the predetermined level

²⁸ It is important to clarify that we are simplifying the analysis talking about intervention prices as if they were the unique European price, whereas there were three different European prices: target, threshold and intervention prices. I chose to do so since it simplifies the exposition and because my thesis is not centred on the functioning of the old CAP. However, I briefly describe the system of three different prices (Grant, 1997). The target price was the reference price, a sort of minimum price that guarantees satisfactory returns to the producers. Threshold prices are minimum entry prices and are set subtracting transport costs between the place where the commodity is imported and the established target price applied in the place where that particular commodity is in shortest supply. Consequently, the import levy is the difference between threshold and international prices. Finally, the intervention price (which is normally slightly lower than the target price) is the price at which national agencies are committed to buy any excess of production that satisfies the quality standards.

p' .²⁹ The revenue from the variable import levy is the area C. Hence, the net loss of the price support policy in comparison to a free trade scenario is the sum of areas C and E.

The overall result is that consumers bear the costs of a policy that benefit producers and, as long as the country is a food importer, the government. To complete the analysis another positive side effect of the policy is the reduction in imports, which allowed the government to “save” areas F and G in terms of foreign currencies in a context where those currencies needed for imports were scarce.

The Welfare analysis of the deficiency payments as an alternative tool to reach the same goal of sustaining producers income is depicted on the right of figure 2. As for the price support, producers are guaranteed an intervention price that kept internal (producer) prices higher than international ones, with the same producer gain of area A in comparison with the non-intervention scenario. Internal production is boosted in the same measure while consumers benefit from the lower international prices and consumption increases to qd as it would be in the free trade scenario. In fact, probably the biggest difference with the price support policy is that the policy institutes two different prices, one (normally higher) for producers and one for consumers (the international prices); hence the costs of the policy are on taxpayers, who now have to finance direct transfers to farmers via general taxation, and not on the consumers via higher (consumer) prices.

²⁹ Another difference with a fixed import tariff or with a tax on imported products is that when international prices were higher than the internal ones the system no longer needed to operate and was automatically de-activated.

Imports are not taxed and increase to the segment $qd - qs'$, the internal consumer price is p and it is the government that corresponds to the producers the difference between international and internal prices through deficiency payments (equal to the sum of area B and A). The net loss of the policy in comparison with free trade scenario is B.

To sum up, from a purely efficiency perspective and without considering the transaction costs implied by the deficiency payments to simplify the analysis³⁰, deficiency payments should be theoretically preferred to price support by a food importing country which aims at sustaining producers income (the net overall gain over price support equals area E). However, it should be now clear that from the budget's perspective price support was the better solution: the government actually gained from price support. The costs of the policy were borne by consumers and government gained C taxing imports with the variable levy equal to the difference between international and internal prices,³¹ whereas in the deficiency payment scenario the budget would run a deficit of B+A.

This positive effect on the communitarian budget was probably the main reason that lead the Six to the adoption of the price support and it is not surprising if we add to that the historical reasons seen in the previous paragraph. Moreover, taking a closer look to some data regarding the trade

³⁰ As specified in note 26, this omission can be justified on the basis that when I will show the magnitude of the negative effects on the European budget due to the price support, accounting for the transaction costs of direct payments will become a secondary issue. To be clearer, if the comparison between the two system gave a marginal preference of direct payments, then including transaction cost could change our conclusions; however, since I believe that the economic benefit of direct payments will largely outweigh its additional cost when the European countries started to be large exporters, omitting this element from the analysis should not affect our conclusions.

³¹ Precisely between international and threshold prices. See note 26.

balance of the Six in the period from 1955 to 1960, only Holland had a positive net foreign trade over the five years period and every other country would have gained from a purely budgetary perspective.

Finally, this positive impact on the communitarian budget has to be put in the context of a new born Community where States had not decided yet the tools to finance their common policy and the perspective of an expensive deficiency payment policy was clearly averted by the national governments.

	Agriculture s share of GDP, percent		Agriculture s share of total employment, percent		Agriculture s share of total trade, percent (average 1955-59)		Net foreign trade in agricultural products. in 1960 US\$ (average 1955-59)
	1955	1960	1955	1960	Export	Import	
Belgium ³⁾	7.9	7.3	9.3	7.6	5.4	17.2	-386.4
Lux	9.3	7.6	19.4	16.4			
Holland	11.4	10.5	13.2	11.5	33.6	19.6	+310.0
Germany	8.0	6.0	18.5	14.0	2.8	32.9	-2,124.6
France	11.4	9.7	26.9	22.4	14.9	29.2	-836.0
Italy	20.7	15.1	40.0	32.8	22.6	20.6	-114.2
EEC (6)	11.5	9.0	21.2	17.5	15.9	23.9	
UK	4.8	4.0	4.6	4.3	6.5	41.8	-4,013.6
Denmark	18.4	14.4	24.9	21.2	65.7	20.3	+502.2

Table 1. Main agricultural indicators in some key European countries (from Zobbe, 2000).

Table 1 provides some useful data also about UK's position. From a budget point of view, a price support policy would have been profitable also for the British government since the convenience for the budget is defined by being a food importer, which the UK had almost always been; however, Britain

chose deficiency payments and initially left the negotiations to be part of the EEC. More than the result of a government aiming at maximizing overall social Welfare, the reason of that choice probably lies in UK's data of agricultural share of total employment and in the bargaining powers of British industrial and agricultural interests. Going back to O' Rourke's two sector's model, UK already largely experienced the internal migration from countries to cities that follows trade liberalization, with the consequent downward effect on nominal wages and a potential rise in unemployment due to the difficulty to reallocate the excessive labour from agriculture to the industrial sector. In other words the cost of living effect was bigger than the labour demand effect and the overall effect on real wages would have been positive. Moreover, the number of people in the farming sector was smaller enough to run a deficiency payment scheme financed by government's budget, allowing UK to benefit from the overall welfare gains regardless the positive transfers to producers.

The position of the Six was clearly different. In 1955 agriculture's share of total employment was lower than 10% only in Belgium, whereas in countries such as France and Italy the figure was 26.9 and 40%. In this particular context guaranteeing the same producer surplus through deficiency payment would have been unsustainable for the European budget.³² On the other hand, price support transferred that cost indirectly on consumers via higher prices, which turned protection into a benefit for the government budget. On

³² In my opinion, the reluctance of the European countries to introduce deficiency payments from the very beginning has its main cause in the huge costs that this choice would have implied for the budget. In other words, they preferred to spread the costs on consumers via higher food prices and only in a second moment, when the number of people employed in agriculture was substantially smaller, they agreed on a direct payments system such as the one of the Mac Sharry reform.

the top of that, economic growth of the Six members in the 60ies eased the acceptance of higher prices by consumers since the continuous increases in nominal wages increased the purchase power of European consumers regardless the high food prices.

To conclude, while UK had already dealt with the problems of the industrialization process and had a strong interest to keep following a free trade policy to boost its industrial sector, European countries were worried that opening their markets to imports would have triggered a huge farm exodus and potentially unemployment if not regulated; moreover, the option to sustain farm income through more efficient instruments such as deficiency payments was unsustainable for the budget whereas price support had the benefit of being a source of revenue for the budget that could have been paid indirectly via consumers in an context of economic growth.

Obviously, these considerations hold given the nature of the ECC as a food importer. In Chapter 4, I will analyze the functioning of price support in a food exporting country, which the Community soon became, and show how the policy became progressively unsustainable for the same (budgetary) reasons that were initially part of its strengths. Before moving to that, the next chapter briefly describes the main arguments behind the idea of public intervention in the farming sector focusing on what has been called the 'farm income' problem in the literature.

1.3 The farm income problem: optimality of a price support policy to support income

In the previous chapter I have shown the historical and economic reasons for adopting a price support policy as a tool to sustain farm incomes and to regulate the process of internal migration from the agricultural sector to the developing industrial one. The underlying idea is that, in a free market, the family based agricultural sector would have been displaced by cheap imports. That feature might be thought to be specific of European agriculture after the second world war and in some degree it is still today what distinguishes it from the highly productive agricultural sector of the US and other exporting countries, where mechanisation, dimension of holdings and total factor productivity are higher than in Europe regardless the progresses made by European agriculture in the past.³³ However, the idea of a structural weakness of the farming sector in comparison with other sectors of the economy has pervaded agricultural economics literature from its beginning, justifying practices of state intervention to regulate markets and sustain farm income which systematically lagged behind non-agricultural income.

The objective of this paragraph is to provide a description of the so-called farm problem since this is the argument that has been used to justify transfers to producers. As we will see, there is not a unanimous position on the fact that the farm problem is bound to characterize agriculture in any

possible scenario: some authors³⁴ use recent data to assert that the problem has been overcome by the developing of modern highly productive agriculture and by an increase in the flexibility of the labour market, which can now absorb rural exodus into the other sectors of the economy guaranteeing the equivalence between agricultural and non-agricultural income that is predicted by standard neoclassic theory.³⁵ Besides this potentially valid critique to the “farm income” argument, the main objective here is not to provide a final answer regarding the farm income problem but highlighting how this argument has been used to justify State intervention. As regards this, the goal would rather be establishing whether price policy was an effective policy to sustain incomes of marginal farmers; in other words, assuming the validity of the “farm income” problem, was the use of price support appropriate or the CEE should have used alternative instruments to boost incomes of marginal farmers? I will proceed outlining the literature on the farm problem, its critique and evolution. Then, I will move to the actual goal of the chapter, commenting on the efficacy of price support as an income support.

³⁴ B. L. Gardner, (1992), “Changing economic perspective on the farm problem”, in “Journal of Economic Literature”, Vol. XXX (March 1992), pp. 62-101

³⁵ For example we have seen this predicted convergence between agricultural and non agricultural incomes in O’Rourke’s (1997) contribution.

The farm income problem: short and long run factors

In his book, Ackrill (2000) makes a distinction between short run and long run reasons that are normally used to consider the agricultural sector as different from other sectors and justify some degrees of State intervention.

Among the first set, he stresses the short term variability of farm incomes as a distinctive characteristic of the agricultural sector in comparison to any other economic activity. In fact, agriculture is characterized by two unique features: the relative stability (rigidity) of demand regardless price variation due to the very nature of food as a necessity good and, more importantly, the structural uncertainty about the level of aggregate supply, which depends on conditions that are not controllable by the farmer and which might heavily affect production (such as weather conditions and events that can drastically change the final level of aggregate supply).

These two elements are clearly unique and limited to the agricultural sector. In fact, for other types of goods (in practice for every good which is not a necessity good and in some respects for luxury goods) the inelasticity of demand does not hold and it responds quite well to price variations. Moreover, in sectors that do not depend so much on external conditions for the production process there is normally the possibility to predict quite accurately the final level of supply given the amount of inputs used: in other words, supply is easily predictable and can vary to match demand.

What causes instability of agricultural incomes in the short run is the combination of these two characteristic: while demand is fairly stable (very

rigid) at any price, the fluctuations in supply result in very large price (and possibly income) variation.³⁶ This variability in farmers income, depending on factors the farmers cannot control, partially justifies market intervention to stabilize prices at least in the short run. This justification is even amplified by the fact that one of the result of income variability has normally been a more conservative attitude, by the farmers, regarding investment and production decisions in general.

As regards the long run reasons for State intervention, the argument is about structurally declining commodity prices and income. If in the short term problems are limited to an uncertainty of farm prices and incomes, the traditional literature on the farm problem has highlighted that in the long run the real problem is that prices and incomes are bound to decline due to a mechanism known as the “treadmill” (Cochrane, 1958)³⁷. Moreover, the fall in incomes is both in absolute and in relative terms (compared with non-agricultural incomes) giving quite a strong reason for State intervention to counteract this mechanism with some form of subsidy.

³⁶ It would be fairly easy to provide a simple graph analysis that shows how a more rigid demand leads to more pronounced price variations, given the same shock in the level of aggregate supply. More difficult is to prove the consequent effect on incomes because even if it is true that prices are declining, there is still the possibility that the producer increases production in an amount that outweighs the price decrease, with an overall positive effect on income. However, in the short run the possibility to compensate the price decrease with an increase in supply is unlikely so we have this short term uncertainty of incomes as a result of price fluctuations. This reasoning about technical progress and increase in production as a way to avert income fall is crucial to explain the long drivers of incomes decrease: on one hand, only innovators who significantly increase their production manage to keep (or increase) their incomes. However, on the other hand the aggregate effect of a myriad of innovators is that the excess of supply is even greater and hence the price decrease and the downward effect on incomes, in a vicious cycle as the one described by Cochrane in his “treadmill theory”.

³⁷ Cochrane, Willard W. “Farm prices, myth and reality”. Minneapolis: U. of Minnesota Press, 1958.

The absolute fall in income would result from the tendency of supply to rise over time driven by technical progress, whereas demand is static: this automatically leads to downward pressure on prices and to a decrease in absolute incomes, especially for smaller farmers which cannot compensate the price decrease by a substantial increase in output.

The decline in relative incomes compared to other sectors of the economy, instead, is due to the “Engle-effect” which says that food’s share of total expense declines with increasing incomes. This happens for several reasons, the first of which is that with raising incomes people start consuming more non-necessity goods and therefore, even if the absolute expense in food increases, the relative share of food out of total expense decreases. Also, as income rises, it is likely that a growing percentage of the total expense on food goes to the marketing and other non-food margins.

To sum up, not only the absolute level of farm income but, most of all, the relative farm income is bound to decrease in comparison with other sectors as the share of total spending going on farm output falls.

Gardner (1992) provides an extensive review of the literature on the farm problem and especially about the main critiques to the argument; he stresses that the definition of the farm problem is an issue which includes both the problem of the excessive variability and the relative lower level of agricultural in comparison with non-agricultural incomes.. As stated above I will briefly summarize the development of the “treadmill theory” and its limitations without the aim of providing a final answer on the farm problem. My goal is rather to use some basics microeconomic analysis to comment on

the efficiency of a price support policy to sustain incomes assuming the validity of the farm income problem and hence the justification of State intervention in agriculture. In other words, more than validating or not the farm income problem I will try to show that an indiscriminate price support was not the most efficient instrument to sustain marginal farms' income and that the policy ended up favouring large farms.

The first formulation of the farm problem comes from the work of Schulze (1945)³⁸, who defined the double aspect of the farm problem in its short and long term nature and justified State intervention to remedy to the long term downward pressure on incomes.³⁹ Cochrane (1958) formalized the model in a more rigorous partial equilibrium framework adding technical progress: the central assumption is again that in the long run supply grows at a faster rate than demand, provoking a downward pressure on prices. The mechanism turns into a vicious cycle including technical progress. In fact, technical progress can be considered the driving factor of the "treadmill theory" and explains the structural tendency of declining commodity prices.

The mechanism is the following: in a context of declining prices (and pressures on incomes) some farmers invest in technical progress to lower production costs and produce more. These farmers have benefits, at least in the short run, since also with declining prices they can now produce and sell more thanks to lower production costs. The effect on the farmers that do not innovate exacerbates the downward pressure on income as the increase in

³⁸ Schultz, T. W. *Agriculture in an unstable economy*. NY: McCraw Hill, 1945.

³⁹ Schultz provides estimate of agricultural and non agricultural incomes, in the US, for the period between the 1930 to the II world war and concludes farm incomes were equal to a merely 30/40% of the non agricultural incomes.

production by the innovators is likely to reinforce the overall price reduction. Therefore, everyone must innovate to minimize losses lowering production costs and maximizing production. The overall effect is a substantial increase in production that lowers the prices even more, in a vicious cycle where first innovators succeed temporarily to safeguard their incomes, but the overall effect of their investment is an even more pronounced decline in prices (and therefore, most probably, in incomes).

It is obviously possible that some (big) producers succeed in increasing production more than the amount of price decrease, with a consequent raise in their income. However, the standard effect is that the increase in production that follows technical progress is outweighed by the price reduction, with an overall negative effect on incomes: this is, in a nutshell, Cochrane's (1958) treadmill theory, a partial equilibrium model that explains low farm income as the aggregate result of the forces described above.

One of the first critiques to the treadmill theory and especially regarding the prediction of a persistent income gap between agricultural and non-agricultural incomes came with the development of general equilibrium models that insert the agricultural sector into the overall economy, overcoming the limitations of partial equilibrium analysis. With the aim of completing the analysis including links between sectors in the model, they often used the assumption of perfect labour mobility to include the possibility that the excess labour in agriculture could move to other sectors, harmonising wages and more generally incomes between sectors. In fact, with perfect labour mobility we should not experience relative lower wage in agriculture as the excess of labour would leave the sector readjusting

nominal wages between agricultural and non-agricultural sector: even if the “treadmill” is still in place resulting in decreasing food prices, labour would leave the sector re-harmonising nominal wages.

O’Rourke’s simple two-sectors model is a good example of the results obtained including other sectors in the model, predicting that the rural exodus would lead to a decrease in wages in both agricultural and non-agricultural sectors as the readjustment would continue until wages are harmonised. However, as Houthakker (1967)⁴⁰ underlies, if the increase in technical progress and the downward effect on prices is substantial and the outflow of labour is not fast enough, there could be a discrepancy between the two wages. That would mean that the adjustment process is not complete and that there is an excess of labour in the agricultural sector. Johnson (1959)⁴¹ put it simply: “the farm problem is the result of the employment in agriculture that can earn as large a real income as the same labour could earn elsewhere in the economy”.

The question then is: why the readjustment is not complete? Why does labour stay in a sector even if unable to earn an income as large as the one achievable outside agriculture? Why the prediction of income harmonisation between sectors does not seem to hold, at least for some historical cases and periods?

In other words, if the treadmill theory explains the structural downward trend of commodity prices, in order to explain why also incomes are bound

⁴⁰ H. Houthakker. "Economic Policy for the Farm Sector." American Enterprise Institute, Washington, DC, 1967.

⁴¹ D. Gale Johnson, "The Dimensions of the Farm Problem," in Problems and policies of American agriculture. Ed.: EARL O. HEADY. Ames: Iowa State U. Press, 1959, pp. 47-62.

to decrease we have to rely on some other theory that explains why labour is not perfectly mobile between sectors, resulting in over-employment in agriculture and lower incomes in comparison to the other sectors of the economy. Answering this question is even more compelling since data clearly show that the income gap is persistent, or at least has been for some considerable periods.⁴²

As Gardner summarizes, the explanations provided by the theory incorporates thesis like different types of technical progress between sectors, with the one that affects agriculture that would be mainly labour saving and others that try to explain the gap with objective and measurable differences in skills, age and sex between agricultural and non-agricultural workers (Johnson, 1953)⁴³. This kind of neoclassical explanation, in fact, consider the farm income problem mainly as a short run phenomenon due to the presence of some adjustment costs in labour reallocation between sectors and uses the aforementioned differences in skills and other variables as a (weak) explanation of long term effects.

However, probably the most convincing theory to explain persistence of income gaps comes from the asset fixity theory (Johnson, 1958⁴⁴; Hathway,

⁴² Benedict, "Farm policies of the United States: 1790-1950", New York: The Twentieth Century Fund, 1953, adds further evidence to Schulze's estimate of the income gap. He infers that agricultural incomes as remained between 40% and 60% of non agricultural incomes respectively in 1930s and in the years that followed the II world war. As regards the current situation, Gardner (1992) seems to defend the idea that recently also the empirical evidence would be less supportive of the 'farm income' thesis.

⁴³ J. Gale Johnson, "Comparability of Labor Capacities of Farm and Nonfarm Labor," American Economic Review, June 1953, 43(3), pp. 296-313.

⁴⁴ J. Gale Johnson, " An Appraisal of the Data for Farm Families," in An appraisal of the 1950 census income data. NBER studies in Income and Wealth, Vol. 23, Princeton: Princeton U. Press, 1958a, pp. 287- 301.

1964⁴⁵ and Quance, 1972⁴⁶). The claim is that when an investment in an asset has to be made (for example the purchase of a tractor or of additional land) the farmer compares the returns of this investment to the returns he might expect to have investing in some other sector and therefore exiting agriculture. The fact is that since many farmers make the same investment decisions the actual returns of their investment might well be lower than the estimates that lead them to carry out the purchase in the first place. Some of them would probably like to withdraw the investment but that might be difficult as the majority of these factors are sector specific. Also they would be worthy less than when the farmer bought them, again as a result of the aggregate overinvestment. The farmer is then committed to its investment since he cannot use directly the factor he bought in another sector and because he probably would not accept to bear the loss of selling the asset at a (lower) price than the purchase one. We should now explain why farmers took their investment decisions in the first place since we have seen that there is a structural and constant tendency of price decreases and the answer of the asset fixity theory is that temporary increases in prices can lead farmers to overestimate the returns of the investment; in fact, when most of them take the same decision, the aggregate overinvestment boosts supply and, with rigid demand, decreases prices, leaving the farmers with assets that are not as profitable as they thought, are sector specific and cannot be sold if not at a consistent loss.

⁴⁵ Hathaway, D. E. (1964) "Problems of progress in the agricultural economy". Glenview, IL: Scott, Foresman,.

⁴⁶ Quance, L. (1972) "The overproduction trap in U. S. Agriculture". Baltimore: Johns Hopkins U. Press, 1972.

Now that I have analysed in more depth the nature of the farm income problem and its explanation of why also in the long run there could be a gap between agricultural and not agricultural incomes I will move to the main goal of this chapter, which is to verify whether price support is an efficient response to the declining agricultural incomes.⁴⁷ In other words, given the reality of a farm problem affecting the European countries after the second world war, I will try to show if price support was in practice the better tool to counteract this phenomenon.

⁴⁷ As declared at the very beginning, I do not try to verify whether data confirm the predictions of this theory (even if some evidence from other studies has been referenced). In fact, since the farm problem has been used to justify State intervention to sustain farm incomes, that would not be so relevant as anyway the State intervention has occurred. It is instead way more important to check whether price support has been an efficient tool to reach the stated goal of sustaining farm incomes.

Is price support the optimal response to solve farm income problem?

Regarding the Welfare effect of price support, the common claim is that this instrument favoured large producers instead of the small family farms whose incomes were the ones that actually needed to be sustained (Lanfranchi, 2008; Commission Green paper, 1985⁴⁸). Hence a first limit of price support can be found in its uneven distributional effects.

The Green paper of 1985 has analysed the distributional effects of price policy, evaluating its efficacy in achieving the multiple set of goals of the CAP. Written in a context where the Community already became a food exporter and was facing the problem of agricultural surpluses, the report states that price policy has been effective in boosting technical progress and increasing production. The problem of the surpluses itself was the prove of the efficacy of price support in enhancing agricultural productivity.⁴⁹ However, regarding the distributional effects, the Green paper highlighted the failure of the instrument to adequately sustain incomes of marginal farmers. Considering the economic environment and the high rates of unemployment that Europe experienced in the seventies, after the economic boom post II world war, sustaining marginal incomes and therefore managing the farm exodus was an important goal of the CAP. In that

⁴⁸ European Commission, 1985. "Perspectives for the common agricultural policy. Communication of the Commission to the Council and the Parliament".

⁴⁹ For a more detailed analysis of the links between price support and productivity please refer to chapter 1.5 and in particular to the studies of Perin and Fulginiti (1993) Kalaitzandonakes (1994), Van deer Mer and Yamada (1990). Oskam and Stefanou, in Harvey (1997) provide a summary of the literature on the links between price support and technical change.

respect, the paper highlights how a type of support based on the guarantee of a minimum price was scarcely effective in targeting the segment of producers that were really in need of economic help: what happened is that price support was still relatively too low to be effective in sustaining income of marginal farmers, whereas was big enough to create an incentive for bigger producers to invest in technical progress and, consequently, increase production substantially.

To have an idea of the disproportion between funds received by different types of producers, another report of the European Commission (EC, 1994)⁵⁰ provides an estimate of the subdivision of European money between commercial and family farms, calculating that approximately 80% of total CAP spending was going to the 20% bigger farms, whereas the remaining 80% of small sized family farms received just 20% of CAP spending.

Understanding why a mechanism like price support ended up favouring large farms is quite straightforward and Kean and Lucey (1997)⁵¹ provide an exhaustive list of the factors that determine this disproportion. I will quickly outline four factors and I will dedicate more space to the reason that I believe is predominant among the others, helping the explanation with a simple graph analysis developed by Baldwin (2002).

The two authors⁵² identify the following five reasons for the disproportion in European support between large and small producers. First of all they claim

⁵⁰ European Commission (1994) "EC Agricultural Policy for the 21st Century".

⁵¹ Kean and Lucey (1997) "The CAP and the Farmer" in Harvey, "The Common Agricultural Policy", 1997.

⁵² For further details have a look at "Farm Employment and Economic adjustment in OECD countries", OECD, Paris (1994).

that support policies have normally regarded commodities produced by large farms, for example cereals and dairy and milk products. This assertion is self-evident and the fact that commodities like most of vegetables and fruits, normally produced by small scale business, received virtually no support from the Commission explains part of the protests of small farmers towards a policy that has instead financed large landowners.⁵³

Another reason is that since supply is normally more elastic for big producers they normally can increase production more easily in response to publicly provided incentives as higher commodity prices. The fact that large producers have a higher elasticity of supply is fairly intuitive as they probably have resources (in terms of funds to increase input use) ready to use to maximize production. The reasoning is that, assured they will enjoy high prices by the Commission, large producers actually maximize the benefits increasing production substantially whereas small family business could be income constrained and unable to increase production by the same proportion.

A third reason, similar to the one just mentioned, is that large farms have normally more funds to expand their dimension buying or renting new land in response to price increases whereas small producers are more inelastic.

⁵³ Regarding this is widely known the controversy regarding the fact that very big landowners such as the English Royal family have historically received a huge amount of support from the CAP. The debate has continued after Mac Sharry and Fischler reforms because, as we will see in due time, also with the new system based on direct payments the criteria used to calculate direct payments have not been to target smaller and poorer producers (even if with the new instrument it would have been easier to target a specific group of producers).

The fourth reason is related to the fact that types of subsidies such as price support tend to be incorporated into land values; as it will be analysed later talking about direct payments, almost every type of direct or indirect subsidy tends to be subject of this limit. As regards price support, the mechanism is that the higher price paid for cereals tended to be captured into land prices with the result that the real beneficiaries of such policy were predominantly large land owners. If we think about small and large owners, in fact, it is straightforward that, even if the benefit in terms of value of their asset was proportional (depending on how intervention price was higher than international prices a certain hectare would have had an increase in value both for small and large producers), large owners saw the value of their asset increase substantially more in absolute value; if we consider that together with the third reason mentioned above, it is easy to see how this “rent effect” tends to be greater and favour larger farmers. Moreover, another aspect of this tendency of subsidies to end up in rents is that the actual farmer might not be anymore the real beneficiary of the price support. Thinking about a situation where a small farmer rents land from a landowner that has exited the sector, the person that would benefit from price support would not be the farmer but the unproductive landowner, besides how the subsidy is allocated legally (in fact, even is assigned to the farmer the landowner would probably be able to extract an additional rent and “capture” the value of the subsidy).

Given that the goal of the policy was to support agricultural incomes, this fact is itself a symptom of the misconception of the policy and the negative effects could be even worse if the renting part is a small farmer that does that to increase his revenues.

Coming to the main limit of price support in sustaining the income of marginal farmers, Keane and Lucey state that “given significant economies of scale, support levels based on median costs have provided bigger margins to larger producers”. In other words, since the price support cannot target specifically a certain type of producer but guarantees that the commodities will be bought at a minimum (intervention) price, producers with the lower production costs will benefit more. Moreover, since the level of price support is normally fixed looking at the cost of production of the median farmer in order to guarantee him a fair profit, it is clear that for the very marginal farmers this price might be anyway too low, in some cases barely enough to cover production costs.

In order to clarify better the reasoning I will reproduce a graph from Baldwin (2002) that shows clearly how the total spending by the Commission ends up in the hands of big commercial farms.

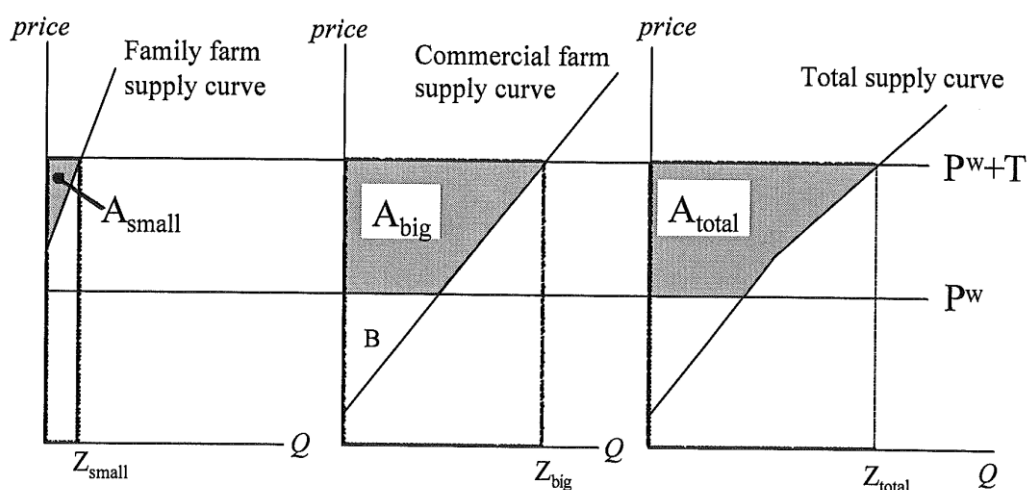


Figure 3. Effect of price support on family and commercial farm (Baldwin, 2002).

The graph replicates quite clearly the situation of European agriculture for the period considered. It shows how the concerns of policy makers and farm organisations were probably justified since a large number of family farms would have been expelled from the market if international prices were to be applied. It also suggests that price support helped slowing down the rural exodus making production viable for a large part of marginal farmers.⁵⁴

In fact, in the graph Baldwin depicts the situation where without intervention from the Commission, just the big commercial firms would have marginal costs that would be low enough to make production profitable also at international prices. For simplicity we assume that all marginal farmers would exit production, whereas with price intervention also the small family farms would be able to make a profit. Anyway, the interesting feature of this graph is in the quadrant on the right, where the aggregate supply curve is constructed as the horizontal sum of individual supply curves. The area A_{tot} represents the total amount of money paid by intervention agencies to fill the difference between international and intervention prices. As we can see it is divided between A_{big} and A_{small} and it is clear that the vast majority of the expense goes to bigger farms, providing an intuitive graph explanation of the data provided by the Commission on the disproportion between small and big farms.

⁵⁴ Obviously, rural exodus and farm adjustment in terms of expansion and modernization of the holdings occur anyway, as it is clear by data regarding the number of people employed in agriculture (see, for instance, Keane and Lucy Table 1 in their contribution in Harvey, 1997). The point here is that without some kind of support the exodus would have been too fast with consequent problems in terms of unemployment (and possibly environmental losses), as thoroughly discussed in the chapters before.

At this point is possible to draw a final judgment on the role of price support in the so-called “old CAP”. It can be concluded that it was first chosen for historical and budgetary reasons, at least until the Community remained a food importer. Regarding the reason behind the very existence of State intervention I have outlined the literature on the farm problem even though a detailed analysis on its enduring validity is omitted. I used, instead, that argument to see whether a specific intervention tool such as price support has been effective in sustaining the incomes of marginal farmers and the answer has been at least partially negative since the bigger recipients of European agricultural expense were large commercial farms. In fact, the use of direct payments would have been preferable, specifically because they could have been used to target a specific segment of farmers depending on their level of income, hence avoiding to favour production units already highly competitive at market prices. However, it is important to note that at the very beginning price support was a policy that created revenue for the European budget and this crude fact might explain why the use of (more or less) targeted direct payments was left aside. Price support allowed the Community to spread the cost of the policy on consumers via high food prices and that was somewhat acceptable in a situation of economic growth and improving standard of living. Direct payments, instead, should have been financed by the taxpayer, and therefore they were very expensive for the European budget, especially in a situation where the number of farmers that would have been eligible for the payments was still representing, for some countries, the relative majority of the working population. This type of support would have become more and more economically viable as soon as

the number of people employed in agriculture shrank, meaning a decreased pressure on the European budget.

In the first chapter of the second part I will go back to the topic of which support would be optimal to achieve the multiple set of goals that characterized the CAP, showing that some of the proposals of reform were based on the idea that only using structural policy (maybe together with some forms of targeted direct payments) it would be possible to solve the problem of marginal farmers at its roots.⁵⁵

⁵⁵ In particular, the Commission's report under Commissioner Mansholt (1968) and Mansholt's speech were the first documents where the Community realized the problems associated with price support, namely the incentive to overproduce to maximize profits and the perverse distributional effects of such an instrument.

1.4 The functioning of a price support policy in a food exporting country

In chapter 1.2 I have shown the historical and economic reasons for the adoption of price support as the central instrument of the “old CAP”, whereas in the last chapter the classic justification of State intervention has been outlined, together with the limitations of price support in safeguarding incomes of marginal farmers.

In this chapter I will go back to the history of the CAP outlined in chapter 1.1, describing the Community shift from being a food importer to a food exporter. The consequences for the European budget are clear and will be analysed quickly, together with a quick mention of the literature about the links between price support and farm productivity. Most importantly, I will also describe how the very mechanism of price fixing and the “green money” system concurred in worsening the pressures on the European budget, demonstrating that the ‘old CAP’ had to be reformed to avoid a vicious cycle that have led to its total unsustainability from a pure budgetary perspective. I will proceed with a detailed analysis of the latter points since it is a precondition to understand why the Community quickly became a food exporter and soon suffered from a high budget deficit to sustain the CAP.

Price fixing and the effect of the Luxemburg compromise

In chapter 1.1 the historical reconstruction terminated with the decisions took in the early months of 1962, which constitute the official birth of the CAP (Fearne, 1997) based on the principles of market unity, financial solidarity and Community preference. However, a number of fundamental issues were still to be agreed in order to make the policy effectively operating, first of all an agreement on the level of common prices. As regards this matter, the conflict was between countries with relatively low and high production costs, which claimed for, respectively lower and higher levels of price support.

Germany in particular embraced the position of guaranteeing high intervention prices for cereals to defend its highly inefficient farm sector. For other countries (such as France) with relatively lower production costs, high prices meant that probably production would have exceeded demand, with the consequence that export restitution became necessary (or crop destruction) to avoid the extra production to be sold on the national (or European) market with the effect of lowering the same intervention prices that were agreed by the Commission. Obviously these export restitution had a cost and, in a situation where the financing of the CAP budget still had to be agreed, countries like France feared that the burden of the export restitution might fall almost entirely on the national budgets, determining a more careful position of price fixing. That was the content of the bargaining in the years between 1962 and 1964.

Ackrill (2000)⁵⁶ clearly explains that the solution of the issues regarding price fixing and the financing of the policy were strictly correlated. Regarding the negotiations of price levels, France threatened to withdraw from the Community if the Germans still refused to accept a reduction in the intervention price for cereals.⁵⁷ In the last months of 1964 an agreement was reached thanks to the decision of the German Minister of economic affairs⁵⁸ to agree price reductions between 11 and 13% in comparison to the pre-CAP levels.

Coming to the issue regarding policy financing we have seen that France, who would have likely become a food exporter with too high prices, was particularly concerned about reaching an agreement on how to finance the policy before “own resources” would guarantee the autonomous functioning of the Community.⁵⁹ The Commission proposal of 1965 was strongly opposed by the French not only because it increased substantially the level of French contribution to the European budget, but especially because it granted to the European Parliament the power to directly manage the revenues of import levies. In other words France wanted to reach an

⁵⁶ Ackrill (2000), op. Cit. Pag 35.

⁵⁷ For further details, Neville-Rolfe, 1984, *“The Politics of Agriculture in the European Community”*, London, Policy Studies Institute.

⁵⁸ Kurt Schmücker, Federal Minister of Economics. October 17, 1963 – November 30, 1966.

⁵⁹ Up until 1970 the only two sources of revenue of the European Community were the eventual revenues from the import levy of the CAP (as long as the Community remained a food importer overall) and a series of national contributions to the European budget. However, revenues from import levies were still managed by national governments (even if a large part of them was to be given to the Community) and this was part of the French opposition to the Commission proposal of 1965. In 1970 it was introduced an automatic contribution based on a percentage of the national revenue coming from indirect taxation (IVA in Italy) whereas in 1987 it was instituted also a contribution based on a percentage on the Gross National Product of the members.

agreement on common financing since it was clear that with high prices it would have experienced the need of conspicuous export restitution; moreover, De Gaulle was trying to limit French national contributions during the transitory period and to avoid any surrender of sovereignty directly to the European Parliament. After six months during which the French Foreign Minister deserted the Council of Minister Meetings an agreement was reached at the Council of Luxembourg in January 1966. The amount of countries contribution were agreed until 1970 but probably the most important decision taken was that in the future every decision that involved financial aspects (“whenever national interests are at stake”) should have been taken by unanimous agreement and not by majority voting.

I have spent some time describing these decisions about common prices and the rules of voting in the Council because, as it will be clear immediately, they had a huge impact on the issue I analyse in this chapter: how the Community became a food exporter and how price support turned into a liability for the European budget.

Hubbard (1997)⁶⁰ explains that since the price for cereal was fixed at a disproportionately high level it triggered a sort of chain reaction regarding the determination of the prices of the other commodities. Clearly, guaranteeing high extra-remuneration for a certain commodity while keeping intervention prices for the others at a relatively low level was not a viable option because that would have deeply influenced production decisions in favour of cereals, with the risk of massive overproduction and

⁶⁰ L. Hubbard and J. Lingard “The CAP and the Developing world”, 1997, in Harvey, op. cit.

underproduction of the other, less subsidised commodities.⁶¹ Hence the tendency to fix intervention prices well above international prices for a long list of commodities and the extension of some kind of State intervention also to products that were not safeguarded by national authorities before the CAP.

Coming to the consequences of the Luxemburg compromise, it is quite clear that after that precedent, every time new prices had to be fixed each State could have claimed that the decision involved “vital national interests” and that unanimity was necessary. The (predictable) result is that each country tried to defend their specific products with a bargaining that was more likely to reach an equilibrium on high rather than on low prices. Moreover, after 1970 the financing of the CAP with “European” resources and the final abolition of internal barriers to trade also countries such as the Netherlands that initially opposed high prices slightly changed their position. The reason is that contrary to a situation where eventual surpluses had to be financed by national budgets and where high prices would have affected considerably the competitiveness of the products of the exporting countries, the possibility to export on the European market at those high prices turned into an opportunity for some producers, especially considering that for the

⁶¹ I would like to anticipate here that, anyway, the policy favored cereal productions in general and in particular wheat. In fact, when the empirical test on the efficacy of decoupling will be carried out in the second part it will appear that there has been a shift away from cereal production. Therefore, if Mac Sharry’s reform triggered a reduction in production levels due to the change of the support mechanism from price support to direct payments, Fischler reform triggered a further reduction in cereal production due to the fact that those payments were still partially coupled with the type of production, reflecting the historical community preference for cereals (and, in particular, for wheat).

remaining produce it was now the European budget that would have borne the cost of export restitution.

To sum up, we can conclude that the first decision on high cereal prices and the Luxemburg compromise determined a tendency to even higher prices with the effect of worsening even more the problem of surpluses, as it will be clear by the graph analysis that follows. Before that, I will describe also a third element that concurred to this onward pressure on intervention price, namely the so-called green money system that followed the crisis and the collapse of the gold standard and characterised the CAP until the system based on flexible exchange rates⁶² was replaced, the 1st of January of 1999 by a system of fixed exchange rates in preparation of the Euro.

⁶² In 1972 European countries negotiated the start of the so-called "Snake in the tunnel", a system that linked together the six European currencies allowing some band of oscillations. This system was replaced in 1979 with the better structured European Monetary System (EMS), which had anyway the same rationale behind its structure: fixing exchange rates at a certain level but allowing currencies to float within limits.

The “green money system” and its consequences on price setting.

As Ritson and Swinbank (1997)⁶³ highlight, the “green money system” has been one of the most omitted aspects of the Common Agricultural Policy because of its complexity, which often made it difficult to understand also for the very policy makers involved in CAP negotiations at the European level. The reason to open a parenthesis on this topic is to show how it contributed to the upward effects on prices that eventually lead to the simple unsustainability of the old CAP based on price support.

Starting with the historical reconstruction, after the common decision on the level of prices for some main commodities, the principle of market unity came under treat due to the end, in 1971, of the system based on fixed exchange rates with respect to the dollar known as the system if Bretton Woods. The start of the crisis was already evident in 1969, when global economic turmoil put under pressure the very idea of fixed exchange rates. In Europe, the German Marc was revaluated against the dollar while the French franc devalued; the final end of the system occurred in 1971 and European countries negotiated in 1972 a flexible exchange system that allowed currencies to float (within limits) freely depending on market conditions.

In order to provide a straightforward explanation of how the end of fixed exchange rate triggered the aforementioned upward effect on prices, it has to be noted that European Commodity prices were fixed in a common unit of

⁶³ C. Ritson and A. Swinbank, “Europe’s Green Money”, In Harvey, 1997.

account, a fictional common currency (that has been the ECU since 1979) and that before was a pure fictional currency calculated as a weighted average of the currencies of the member States.

The question is: what happened when some countries re-valued or devalued with respect to the reference currency? A practical example will help clarifying the matter. Let's use the Dollar as a reference currency to avoid the complication that the ECU itself was a composition of the currencies of the members of the European Community.

Assume that the wheat common price is fixed to 100 \$ and that the "agricultural conversion rate" is 0.5 for the Marc and 10 for the Lira. A ton of wheat will cost 50 Marc in Germany and 1000 Lire in Italy, satisfying the principle of common prices, which will be 100\$ in both countries using the same unit of account.

Let's now analyse the situation of a currency revaluation or devaluation starting from the case of a currency revaluation, as it happened for the Marc in 1969.⁶⁴

First of all we have to specify that the Commission made clear that it would have not allowed the agricultural conversion rate to fluctuate together with the flexible exchange rate as one of the objectives of the policy was to

⁶⁴ The opposite case, currency devaluation, is not analyzed here as it is solved in an easier way readjusting (increasing) the agricultural conversion rate for the country that experienced a devaluation. Moreover, that does not lead to the same indirect upward pressure on common prices as the actual increase in (nominal) prices happens just in the devaluating country and it is overdue to avoid an actual decrease in real prices. The case is therefore different from the one of revaluating country where to keep nominal prices constant in the revaluating country (in effect increasing real prices) the readjustment actually lead to a nominal (and real) price increase in all the other European partners.

guarantee price stability. Hence, the agricultural conversion rate was not automatically adjusted to the fluctuations of the exchange rates, creating a discrepancy between “green money” and the actual market value of different currencies on the market.. Going back to the Marc revaluation, assume that the exchange rate between Marc and Lira is $1 \text{ DM} = 20 \text{ L}$ so that the following identity held before Marc revaluation $1 \text{ DM} = 2 \$ = 20 \text{ L}$.⁶⁵ Now, suppose that the Marc appreciates so that the following equality holds $1 \text{ DM} = 2.5 \$ = 25 \text{ L}$.

If the Community wanted to keep the common price of one ton of wheat equal to 100 \$ they should revise the agricultural conversion rate of the Marc to 0.4 and paid just 40 Marc a ton of wheat to the German farmer. The important thing to note is that in this case of currency appreciation, to keep prices stable the Community should impose a (nominal) price decrease in the country with the strong currency through a reduction of the agricultural conversion rate (even if real prices would be still the same as the purchase power of 40 Marc is now equivalent to 1000 Lire and equal to the common unit of account, 100 \$). The problem is that it was almost impossible to impose such a revaluation of the agricultural conversion rates to the “strong country” as that would imply a nominal price reduction totally opposed by farm organisations. In fact, it was normally the case that the appreciating country managed to keep its price to the original amount, 50 Marc.

This is exactly the moment were common pricing ends. What is happening is that 1 ton of wheat is not worthy the same amount of money in the European

⁶⁵ Remember that the Dollar is used here for simplicity as a substitute of the European

countries as it is worthy 50 Marc in Germany and 1000 Lira in Italy in a situation where 50 Marc are equal to 1200 Lira on the currencies market.

The logical consequence is that Italian producers would have the incentive to export their product in Germany, get 50 Marc for a ton and then convert them into Lira to get an extra 200 Lira in comparison to the intervention price they would be paid if selling on the national market. Not only, the incentive would be even more perverse since Italian importers would import food from outside the community paying it 1000 L per ton and then selling it to Germany for the extra profit. This mechanism would then continue until wheat price in Germany is equal to the international market (this result is due to the no arbitrage condition),⁶⁶ in a perverse mechanism where the higher price paid in Germany indirectly triggers an increase in the international prices of wheat at the expense of the European taxpayer (or consumer, depending if the Community as a whole is a food importing or a food exporting country and, hence, has a trade balance in active or passive).

⁶⁶ In brief, the “no arbitrage condition” tells that the rule of one price will hold for different markets if trade is free between them. In this case, the condition helps predict what would have happened if prices were fixed at 50 Marc in Germany and 1000 Lira in Italy in a situation where the exchange rates were actually 50 Marc = 1200 Lira. Italy would have exported its products into Germany to get the equivalent of 1200 Lira. Not only, since free trade was established between Italy and Germany, Italy would have imported food from the rest of the world up until the situation where international prices equaled 1200 Lira minus the value of the import levy between the Community and the rest of the world unless the variable import levy was revised even upwards.

The main learning is that it was not possible to have different prices between countries if free trade was established between them. In fact, MCAs were soon imposed between European countries vanishing the principle of common market. In order to remove them avoiding the aforementioned problem an increase of the agricultural conversion rate for the weaker countries was necessary (together with an increase of the variable import levies towards extra EU countries). Hence, the upwards pressures on prices and the worsening of the external relations with the main trading partners.

The initial remedy adopted by the Community was to impose internal Monetary Compensatory Amounts (MCAs), in this case an import levy of 200 Lire for any export of wheat from Italy and the other countries with weaker currency into Germany. However, it is clear that the introduction of an MCA defines the end of internal common pricing as, in order to prevent the loophole described before, the MCA allows to keep different prices between countries with strong and weak currencies.

At this point the only thing that has to be shown is how the result of the mechanism is a upward pressure on common prices.

We have seen that a Marc revaluation should be matched by an internal price reduction but that this does not happen for the opposition of the internal lobbies. The result is the end of common prices and the introduction of MCAs to prevent European partners to benefit from higher German prices exporting their product there to extract a mark-up and, moreover, importing food from the rest of the world. However, MCAs were not well seen by the Community as they represented the end of the idea of common pricing. Therefore, what actually happened in those cases is that the Commission, instead of reducing the agricultural conversion rate for the country that devalued, increased the conversion rate for the other countries so that this incentive to do arbitrage in the German market would be eliminated and the principle of common pricing maintained. In other words, the conversion rates were altered to increase the nominal price of the commodity in the country with the weaker currency (Italy in our case, up to 1200 Lire for the previous example) in order to eliminate the price differential and the potential arbitrage between the two countries.

Hence, the final result is that the revaluation of one country triggered an indirect but almost automatic overall increase in support price, worsening even more the budget situation and the associated problems in terms of pressures on the environment and tensions with trade partners.

This particular implication of the price support mechanism has often been ignored due to its complexity but has to be taken into account to show the all set of indirect cost that the instrument implied. Moreover, it shows how also price support determined considerable transaction costs especially in terms of search and information costs to determine the amount of MCA needed between different countries and in terms of policing and enforcement costs. Coming back to our comparison of price support and deficiency payments, it becomes then clear that both alternatives implied their own transaction cost, reducing the validity of the argument that saw price support to have a substantial advantage over deficiency payments due to the absence of transaction costs.

The effects of price support on technical progress.

I have shown that three concurring elements determined a constant upward pressure on intervention prices. In this paragraph I will briefly mention the literature regarding the links between price support and agricultural productivity to show how high prices boosted technological progress,⁶⁷ increased production and made the Community as a whole become a food exporter.⁶⁸

Generally speaking, high prices create extra mark up the beneficiaries of the policy and especially for certain, large, producers, as I have shown in chapter 1.3 in the distributional analysis of who really profits from price support. The question is whether such extra profits are reinvested by farmers to improve competitiveness (Perin and Fulginiti, 1993)⁶⁹ or if the guarantee of high profits disincentive producers to invest in the technology needed to boost competitiveness (Kalaitzandonakes, 1994)⁷⁰: if there is evidence that those extra profits are reinvested in new and more productive capital it will be clear that price support was a kind of vicious cycle tending to structural, and growing, overproduction. Moreover this would also be an indirect confirm of the treadmill theory developed by Cochrane.

Perin and Fulginiti (1993) find significant empirical evidence regarding the link between price level and productivity in their dataset composed of

⁶⁷ At least for the big producers that managed to extract huge mark ups from high prices.

⁶⁸ At those (high) intervention prices.

⁶⁹ Lilyan E. Fulginiti and Richard K. Perrin "Prices and productivity in Agriculture", in The Review of Economics and Statistics, Vol. 75, No. 3 (Aug., 1993), pp. 471-482.

⁷⁰ Nicholas G. Kalaitzandonakes "Price Protection and Productivity Growth" American Journal of Agricultural Economics. n° 76 (November 1994): 722-732

developing countries. In particular, they estimate that if the agricultural sector of these countries had not been highly taxed, substantial increases in farm productivity would have occurred.⁷¹ The two authors estimate an increase of 1% in total factor productivity from an increase of 10% in output price. Their analysis is limited to developing countries but it could be easily extended to the European Community, especially for the period considered, where the agricultural sector was still relatively inefficient. The authors do not provide a theoretical justification of the links between prices and competitiveness however I think that it would be common sense to say that especially the big farmers that largely benefited from the policy decided to reinvest the profits to boost competitiveness and maximize production since they knew the Commission was committed to buy any overproduction. Hence, they did not fear that the increase in production could have a downward effect on prices, or at least lower them below the intervention prices and therefore fully utilized the extra-profits to boost technical progress and production with the overall aim of maximizing incomes in the long term. Cochrane and Ryan (1976)⁷² provide basically this type of argument to defend their thesis about a positive correlation between the level of government intervention and productivity growth.

Coming to Kalaitzandonakes (1994), his study on the effects of price support in the beef/sheep sector in New Zealand for the years 1975 to 1985 found

⁷¹ It has to be noted that there is normally a positive correlation between the level of economic development of a country and the level of subsidy of the agricultural sector. In some developing country, on the basis of export substitution theories that aimed at improving the performance of the industrial sector, agriculture has normally been taxed. Hence, the price paid to farmers was lower than the international one.

⁷² From kalaitzandonakes., cit.

that protectionism produced negative effects on total factor productivity: high(er) prices slew down technical progress. The author, however, specifies that his findings are not to be considered valid universally and that they might be instead complementary to the ones of Fulginiti and Perin.

In fact, the author stresses that the situation in New Zealand was the opposite of the one of the developing countries studied by Fulginiti and Perin both regarding the original level of prices (extremely high) and the level of technical progress already achieved by the agricultural sector, which had been largely modernized already in New Zealand before the protectionism, and high prices, came into action.

Possibly, the theory that better unifies the two discordant empirical studies mentioned before is the one developed by Van Deer Mer and Yamada (1990)⁷³.

The two authors claim that the effect of prices on productivity is ambiguous and depends on the level of prices.⁷⁴ More precisely, the relationship between prices and technical change follows the pattern of an inverse U shaped curve. When prices are too low technical change is hampered because the expectations of future profits are low and there is no incentive to invest in more efficient capital or other inputs. On the other hand, when prices are too high the situation is the same as farmers know that at those disproportionate prices they would have a considerable profit besides their

⁷³ Van Der Meer, C.L.J. and Yamada, S. (1990) "Japanese Agriculture: a comparative Economic Analysis", London, Routledge.

⁷⁴ And, in some respect, on the starting level of the technical progress achieved by a certain country so that high prices in underdeveloped countries would boost competitiveness even more rather than in a country with an already modern agricultural sector.

investment decisions; hence, also too high prices hamper new investments and affect negatively technical change.

It is easy to identify the first hypothesis as the one that corresponds to Fulginiti and Perin findings and the second one as the one corresponding to Kalaitzandonakes results of beef and sheep regime in New Zealand. The question then is where the European Commodity fits in this approach, namely, which of the two effects is prevalent.

Van Der Meer and Yamada seem to suggest that there is theoretically a price level where productivity change is at its maximum and that this was exactly the situation that characterized European agriculture during the years of the “old CAP”.⁷⁵ In other words, in this framework it seems that European price decisions had significantly boosted competitiveness since intervention prices have been quite consistently around this optimal price level at least for the first decade of the CAP.

Having seen some of the main theories about the link between price and productivity change, it has to be said that direct empirical evidence for the European countries is not available and that the consideration of Van Der Meer and Yamada, even if suggestive, is not (yet) supported by data.

What can be said for sure though is that the CAP has had the following consequences for the European agricultural sector (Oskin and Stefanou, 1997):

- Increase in production due to price certainty as producers knew that every overproduction would have been purchased by the Community and

⁷⁵ See Oskam and Stefanou, “The CAP and technological change in Harvey (1997), pag 205.

hence tried to maximize production up to the point where marginal cost equaled the new (higher) prices.

- High prices triggered increase in input consumption and that is likely to have created technological change: more money were spent in the input industry and that might have induced the development of new and more efficient inputs, triggering endogenous technical change.
- National authorities have invested in structural policy to help farmers benefit from high prices.
- There has been a link between price policy and structural policy in the recent years.

Especially the factor related to the stability of market price has been highlighted by some authors (De Gorter et al 1992)⁷⁶. In particular, the fact that the Commission was committed to buy any overproduction might have encouraged farmers to invest in new capital and inputs since the concern that their investment would have boosted too much supply with possible downwards effects on price was now removed.

Coming to a conclusion about the theories that are used to model the relationship between prices and productivity we can state that besides their somewhat conflicting content, a simple consideration of the data of European trade balance shows that, progressively for each commodity, the Community moved from a food importer to an exporter.

⁷⁶ De Gorter, H., Nielson, D.J., and Rausser, G.C. (1992) "Productive and Predatory public policies: research expenditures and producer subsidies in agriculture", in "American Journal of Agricultural Economics", n°74, pag 27 – 37.

This is to say that besides which could be the better explanation of the progresses of European Agriculture, in the space of few years the six managed to increase production substantially, becoming a food exporter and facing a new set of problems which I will describe in the following paragraphs.

The shift from food importer to food exporter and consequences for the budget.

We can have a look at the following data to have a hint of how the CAP expense literally exploded after common prices were fixed and the price support policy was fully operating.

Esercizio	UE 6			
	1961-63	1964-66	1967-69	1970-72
FEOGA Garanzia	-	170	6.004	11.317
Azioni strutturali, di cui:	60	73	397	531
FEOGA Orientamento	-	-	155	265
FESR	-	-	0	0
FSE	-	-	81	266
Fondo di coesione	-	-	-	-
SFOP	-	-	-	-
Ricerca	-	-	243	311
Azioni esterne	-	-	5	105
Amministrazione	221	291	470	646
Aiuto pre-adesione	-	-	-	-
Rimborsi e varie	-	4	4	454
Totale bilancio generale	281	537	7.123	13.364
FES	322	649	612	662
CECA*	160	209	217	223
Euratom**	348	760	257	-
TOTALE	1.112	2.156	8.209	14.249

Table 2. Evolution of CAP expense in its first decade.⁷⁷

Similar data are found in Fearne (1997) and testify that after only ten years the CAP was already financially onerous for the European budget.

The explosion of the CAP budget is the direct consequence of the Community becoming a food exporter and hereafter I will describe the

⁷⁷ Francesca Bignami (2007), Associazione Alessandro Bortola, collezione tesi on-line, n°18, Luglio 2007.

mechanism that progressively lead to this situation and its graphic representation. The aim is to show how price support progressively became a vicious cycle where high prices favored increases in supply that determined the explosion of the budget.

A simple graph analysis from Baldwin (2002) will help understanding the matter.

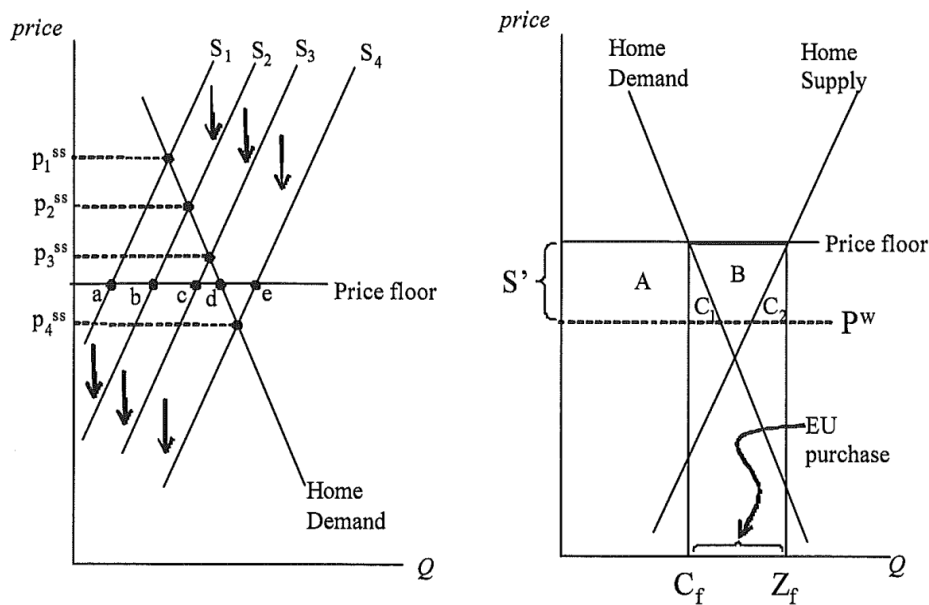


Figure 4. The overproduction mechanism and implications for the European budget.

(Baldwin, 2002).

In the graph on the left are represented the progressive shifts in home supply that, following the approach of Van Der Mer and Yamada (1990), were triggered by high EU intervention prices. Every shift down to the right represents an aggregate shift in supply that follows some improvements in the production technology, via mechanization or increase in input use. What

has to be noted, looking at international prices, P_w , in the graph on the right, is that international prices were constantly lower than European prices.

This means that if trade was liberalized immediately (look at aggregate supply S_1) European farmers would have been easily displaced by cheap imports. The variable levy protected the agricultural sector from cheap imports and the consequent high prices boosted competitiveness: hence the shift to S_2 , S_3 and so on.

Up until the situation where internal prices were higher than international ones, the system of intervention prices (plus variable levy equal to the difference between international prices and the intervention price guaranteed by intervention agencies) was sustainable from a budget perspective. Not only, as seen in chapter 1.2, with the Community as a food importer, the system actually determined a surplus for the European budget. However, as table 2 shows, this situation lasted for a very limited amount of time as progressively the Community became a food exporter (at those, high, intervention prices) and the budget exploded.

In this new scenario, revenues of variable import levies were simultaneously replaced by the liabilities of export restitution and the mechanism is clearly depicted in the right graph of figure 4. Assume that after substantial shift in supply the aggregate supply curve is the one labeled as S_4 in the graph of the left. Equilibrium (internal) price is P_4 , lower than the intervention price labeled “price floor” in the graph. International prices are assumed to be higher than P_4 and lower than intervention price. Anyway, the analysis does not change also in the (probably more realistic) situation with international

prices still lower than both P_4 and intervention prices.⁷⁸ What happens now is that in order to keep internal prices equal to the intervention prices, intervention agencies would either have to purchase the excess production and destroy it or to correspond to European exporters a subsidy (export restitution) to sell the product in excess ($C_f - Z_f$) on the international market at international prices. From a budget perspective the optimal choice is the second and the actual expense to sustain would equal the sum of areas (C, B_1, B_2) instead of the big rectangle with base $C_f - Z_f$ and height “price floor”.

It is now clear the vicious cycle in which the Community found herself already at the end of the sixties. The artificially high intervention price kept favoring investment in new capital and inputs, therefore triggering new shift in supply. Imagine a further shift in supply to S_5 (not in the graph) caused by the relative certainty, by the farmers, that they would have sold any overproduction at least at the guaranteed intervention prices. Both the distance $C_f - Z_f$ and the difference between internal (P_5 , again not in the graph) and intervention price would have increased and hence the liability for the European budget which is nothing more than the area composed by this two measures. In other words, guaranteeing high intervention price was simply not sustainable anymore for the budget after this shift from a food importer to a food exporter and, moreover, the price support system itself

⁷⁸ Actually, from a budget perspective that case is even worse as the difference between intervention price and International price, that has to be paid by the intervention agencies with the export restitution, would be bigger. Moreover, the amount of internal production that would have to be displaced on the international market would be bigger as well.

was likely responsible of this further shifts in supply that exacerbated the problem even more.

To sum up, already by the end of the sixties it was clear that keeping the policy in its current form was not sustainable in the medium-long run. The aforementioned reasoning on the tendency of intervention prices to raise over time, the theories about the link between price support and technical progress and the reality of a constant increase of the internal production and the data about the explosion of the agricultural budget lead us to consider what I have here defined as the “second phase” of the CAP, namely the start of the attempts to reform the “old” system based on price support.

In the second part of this thesis I will start analyzing the first proposals and attempts to reform the policy and, most of all, I will provide an extensive econometric test for the effectiveness of the two reforms that characterized the last twenty years of CAP. However, before proceeding with the summary of the reform proposals that started with the so called “Mansholt plan” and with the empirical tests I will recap the substance of the crisis of the old CAP, which I think affects three distinct aspects: budgetary, environmental and of trade relations.

1.5 The “three crisis” and the necessity of a structural reform of the CAP.

In the previous chapter I have shown how price support, probably boosting technical progress following Van Der Meer and Yamada’s suggestion, progressively lead to the economic unsustainability of the CAP after the Community became a food exporter.

The budget crisis was not the only problem of the “old” CAP and in this chapter I will briefly summarize two other aspects that, together with the budget reasons, called for a comprehensive reform of the policy: environmental problems associated with the functioning of the “old CAP” and pressures from trading partners, especially during the ongoing negotiations of the Uruguay round of the GATT (1986-1994).

Starting with the international pressures for a CAP reform it should be straightforward that the main implication of a protectionist policy was, for the food exporters country, the impossibility to fully gain from their competitive advantage. From figure 2 in chapter 1.2 it is clear that until the Community was a food importing country, imports were substantially reduced by the fact that European producers were guaranteed a high intervention price. However, the situation got even more troublesome when the Community shifted to a food exporter.

To analyze that it is useful to have a look at the graph on the right of figure 4, with the following advice: imagine that the international price were actually lower than the internal price determined by the intersection of European home demand and supply. That modification actually helps understanding better the reality of European agriculture for a large number of commodities; in other words, European countries were exporting just because of the administratively set intervention prices. At those high prices, instead, supply exceeded demand and the practice of export restitution (or food destruction) was needed to avoid the overproduction flooding European market, with the result that internal price would have decreased to the internal equilibrium level. Moreover, if international prices were still lower than that internal equilibrium, that means that abolishing the high intervention prices, the Community not only would have stopped exporting but would have gone back to be a food importer. Hence, the price support mechanism was completely altering the reasons of exchange between the Community.

Moreover, Community's trading partners and in general the food exporting countries were not only complaining about the reduced imports but also about the downward effect on international prices that the practice of export restitutions implied.

The following graph will help clarifying the matter.

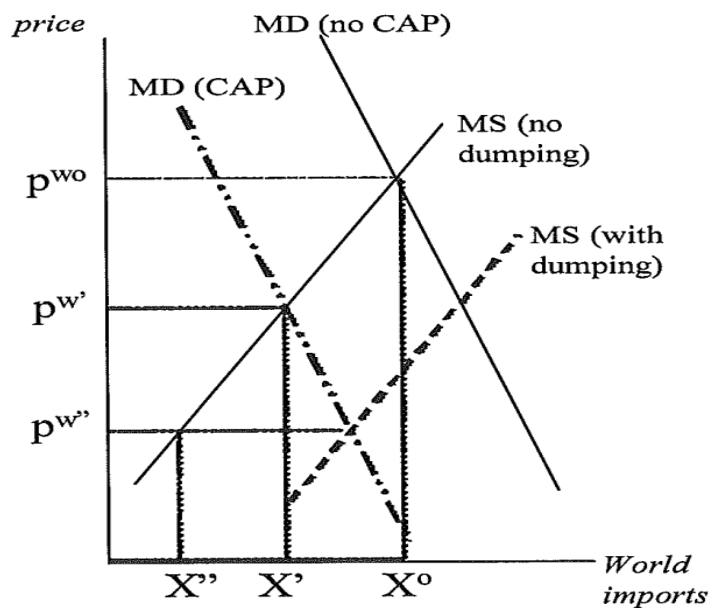


Figure 5. Distortionary effects of the CAP on international trade. (Baldwin, 2002).

The graph depicts international demand and supply curves for agricultural commodities. MD (no CAP) represents the international demand for food in absence of the CAP. In fact, if we go back to figure 4 with the modification that world prices are now lower than the internal equilibrium prices we can easily see that the Community is an exporter just because of the highly set intervention prices. If price support were to be abolished the internal equilibrium price would be higher than the international prices and the Community would actually become a food importer. The graph above translates this feature in terms of the aggregate international demand: since the EU is a considerable market, the additional imports required in the no CAP scenario boost international demand and make it shifting to the right. In the graph, the difference between international demand with and without CAP is the difference between MD (no CAP) and MD (with CAP),

triggering a contraction in the global demand for agricultural products that determine an overall downward pressure on food prices. This is the straightforward consequence of a protectionist policy and we can call it the “direct” effect of the CAP.

However, possibly the main reason why trading partners⁷⁹ were complaining about the CAP was its indirect effect on the international trade. That was an indirect consequence of the price support mechanism and, specifically, the result of the practice of export restitution. I have shown that with the introduction of these artificially high prices the Community shifted from a food importer to a food exporter. In other words, the production in excess was dumped on international markets with the consequence of boosting international supply, therefore reducing international price. This situation is clearly depicted on the graph by the difference between international supply, MS with dumping and MS without dumping. The negative effect on international prices, and consequently on the profits of the other food exporting countries (CRAINS group), was double-sided: on the one hand the decrease of international aggregate demand, on the other hand the increase in international aggregate supply. The result, in the graph, is the price reduction from P_{wo} to P'' and not only to P' , which would be the downward effect considering just the direct CAP effect.

The topic related to this dumping practice used by the Community to dispose the excess production has been studied not only to prove the negative effects on other food exporting countries (which is intuitive as international prices

⁷⁹ Swinbank, A. “Capping the CAP? Implementation of the Uruguay Round agreement by the European Union”, *Food Policy*, vol. 21(4-5), pages 393 – 407.

decrease) but also from the literature that studies the effect of trading policies of the developed world on the developing countries. The common critique is that the protectionist policies of the developed countries have hampered producers in the developing countries, differentiating anyway between the effects of food dumping in food exporting and in food importing countries.

Lingard and Hubbard (1997)⁸⁰ summarize the literature and focus on the harmful effects that (lower) international prices have had for the developing world. They point out that actually the problem is more complex than expected and they draw a clear distinction between developing countries that are food exporters and food importers. For the first ones, and especially for their urban population, the downward effect on prices might have been a positive element, making food more affordable. However, for local producers lower prices meant unfair competition and the impossibility to stay in the market. The result was an exacerbation of the rural exodus and the growing of the urban population that, without a realistic work opportunity in the industrial sector, ended up being unemployed. This thesis is normally supported by international and local NGOs that work in the third world to eradicate the problem of hunger. Low food prices are interpreted as a growing pressure on family farms and as one of the main triggers of the internal migration to the slums of the growing cities in the developing countries. Therefore, also this supposedly positive effect has to be analysed in the right perspective.

⁸⁰ In Harvey, (1997), op. cit.

The effect of lower prices on food exporting countries, instead, is clear and that is the main reason why this set of countries made its voice heard during the Uruguay round negotiations calling for the abandonment of price support as the main tool of the CAP. In countries where the agricultural sector is well developed and ready to export on the international markets, it is intuitive that a reduction in international prices reduces the profitability of this trade, determining a missing opportunity in terms of growing trade and gross national product.

Coming to the third crisis I have highlighted at the beginning, it affects the relationship between the agricultural sector and the environment. In particular, it could be argued that the specific tool of the price support has triggered perverse incentives for the farmers to maximize production. To be more precise, microeconomic theory predicts that a rational producer would expand production up to the level where marginal cost of production equal the price. Let's assume a well-behaved Cobb Douglas production function such that:

$$y = f(K, T, I) \quad ; \quad f'_{k,t,i} > 0 \quad ; \quad f''_{k,t,i} < 0$$

Where y is the level of aggregate output being a function of capital (K), land (T) and the level of input used (I). The assumption is that the marginal productivity of each factor is strictly positive $f' > 0$ but with diminishing returns $f'' < 0$.

This straightforward set up makes clear that, if we also assume that land is finite and cannot be expanded more than a certain level, farmers can maximize production either investing in new capital or increasing the

amount of input used. In the short run it is likely that the farmer would react increasing the amount of input used. Marginal cost are increasing due to the fact that $f'' < 0$. Hence, the farmer has the incentive to use more input than the optimal level he would use with lower international prices.

Coming to a conclusion, the effect of guaranteeing high intervention price is likely to result in the overuse of chemical inputs, fertilisers and pesticide, with the consequent negative effects on the environment: in fact, farmers are guaranteed higher prices and, with increasing marginal cost and some difficulties to respond increasing land and capital use, they will react increasing consumption of polluting chemical inputs.

The important thing to note and that will be tested in the second part is that this overuse of polluting inputs is a direct consequence of the specific tool of price support. In fact, modifying the price of the final product it alters profit maximization decisions of the farmer. What will be tested, specifically with the first test on the effects of Mac Sharry's reform but also regarding the introduction of full decoupling with the Fischler's one, is whether a different form of subsidy to the producer might avoid this distortions on production decisions.⁸¹

This reasoning is nothing but a more formal approach to the standard critique that environmentalist has made to the CAP since its early days.

⁸¹ The idea is that a subsidy like direct payments, if completely decoupled from production decision, might act as a sort of lump sum transfer, not affecting input use but keeping to fulfil the goal of raise farmers income.

Lowe and Whitby (1997)⁸² summarize the literature on the topic, starting from the weak correlation between intensity of production and environmental damages found by Bignall and McCracken (1996)⁸³. Given the reasoning mentioned above this correlation is not surprising as a higher production intensity is by definition characterized by the necessity of increasing the amount of input used.

As regards the negative environmental consequences of the CAP we can also distinguish them into at least two sets of problems:

- First of all the environmental losses associated with the overuse of chemicals. Into this category are comprised phenomena's such as water and air pollution, soil erosion, fertility and biodiversity losses.
- The second set of environmental losses are defined in terms of damages associated to the rural landscape that impact on the environment. In particular, the incentive to mechanize and modernize agriculture has triggered two main consequences: on one hand economies of scale have called for a rise of the so-called monoculture and this has negative repercussions in terms of biodiversity loss. On the other hand the structure of the subsidy to the agriculture did not focus on marginal farmers and land abandonment was a common feature of most of the remote areas. The absence of farm community in these regions lead to environmental losses associated with the destruction of public goods such as irrigation systems, fire prevention, flood resilience and so on.

⁸² Lowe P., and Whitby M., "The CAP and the European Environment", in Harvey (1997).

⁸³ Bignall E., and McCracken D., (1996) "The Ecological Resources of European Farmland" in Whitby M.C., "The European Environment and the CAP Reform: Policies and prospects for conservation" CAB International, Wallingford.

Looking at this double sided problem, it is clear that the price support system and its distortions described above cannot be hold responsible for every single environmental problem. However, I think it is fair to state that the first set of environmental issues were directly co-caused by high intervention prices and that its abolition was likely to trigger improvements. Regarding the second type of environmental problems instead, even if price support might have had an impact, the common belief is that such problems could be tackled effectively only with a serious rural development policy that subsidies directly some farmers to stay in production. In this research I will not analyse the aspects related to rural development but I will try to carry out an empirical analysis of the effects of the reform that gradually abolished price support and then introduced increasingly decoupled payments to farmers as a tool to avoid altering their production decisions in the sense of an increased production intensity. In the part of the thesis that follows, I will provide the result of this investigation.

PART II.

THE REFORM PROCESS.

AN EMPIRICAL INVESTIGATION ON THE EFFECTIVENESS OF THE MAC SHARRY AND FISCHLER'S REFORMS.

From the analysis carried out in the first part it is clear that the so-called “old” CAP had to be reformed urgently to counteract the three crisis and also to “save” the policy itself. In fact, defending the legitimacy of such a wasteful and distortive policy was no longer possible and pressures to fully liberalize the agricultural sector were starting to grow, not only from trading partners but also from inside the Community. The resistance of the farm lobby was perceived to be backward looking and in order to save at least “one” agricultural policy the current CAP had to change dramatically. That situation characterized the eighties but it was already clear since when the Community became a food exporter.

In this brief introduction I will reference three European documents that testify how the European self-awareness about the limits of the policy grew progressively.

Starting from the Mansholt speech (1968),⁸⁴ I will move to the Commission Green Paper of 1985,⁸⁵ which is considered to be a sort of watershed with respect to the way the Commission conceptualized the problem of agriculture⁸⁶; to conclude I will reference the reflection paper of 1991,⁸⁷ which quickly resumes the reasoning I developed in the first part of the thesis, identifying in the reform of the price support policy the real reform to implement in order to solve the problems related to overproduction. The ideas of the reflection paper were at the basis of the forthcoming Mac Sharry reform that, even if limited to the cereal (and beef sector), has been the first reform that addressed the problem of price support instead of trying to come up with some minor adjustment just to save the old system minimizing its more negative consequences.⁸⁸

In the first part of the present work I made clear that the origin of the unsustainability of the price support system started when the Community shifted from being a food importer to a food exporter and that, depending on

⁸⁴ S. Masholt "The future shape of agricultural policy", European Communities, Joint Information Service. Newsletter on the Common Agricultural Policy, N°1, January 1968.

⁸⁵ Commission of the European Communities, "Perspectives for the Common Agricultural Policy", COM (85) 33 final, Brussels, 15 July 1985.

⁸⁶ For instance, another report for the Commission just five years before ("Agriculture and the problem of surpluses", Newsletter on the Agricultural policy, March 1980) still tempted to deny the need to reform the process trying to demonstrate how eventual surpluses were easy to dispose (for example on the international market) and in some ways even trying to deny the existence of a structural problem regarding surpluses in agriculture.

⁸⁷ Commission of the European Communities, "The development and future of the CAP", COM (91) 100, final, 1 February 1991.

⁸⁸ In particular I am referring to the quota system adopted in the milk sector, the co-responsibility levy system introduced also for cereals during the eighties and the so-called automatic stabilizers.

the commodity, that shift happened already at the end of the sixties. At that time the Commission was not worried about the raising problem since the dimension of the excess production to be displaced was negligible; also, since in the majority of the other sectors the Community were still a food importer, having a deficit in the balance of payment of the CMO for wheat⁸⁹ and some dairy products was not a problem and was not causing yet a deficit of the policy overall.

However, during the farmer's conference organized by the Committee of Agricultural Organisations (COPA) in Dusseldorf the Vice-President of the European Communities Sicco Mansholt took the opportunity to deliver a speech that made clear how some members of the Commission started to think about a necessary reform of the price support system after just a decade since its original implementation.

The future Commissioner for the Agricultural Affairs stressed three basic facts, after the president of the COPA's speech magnified the virtues of price support, also, as a mean for a stronger political union. These three arguments were:

- limits of a price support policy to boost agricultural incomes;
- overproduction as a result of a too high price support;

⁸⁹ In fact dairy products and wheat were the first products that the Community became to overproduce due to the very high intervention prices set to help inefficient European farmers. Regarding cereal prices we have already seen in the first part that the price for wheat was crucial for some countries, notably Germany.

Also, the setting of a too high price for this commodity had a sort of negative chain effect on the price of the other cereals, which could not be left at a too low level otherwise cereal producers would have focused only on wheat production determining an even bigger surplus.

- and the need to use a more focused structural policy as a way to achieve a faster technical progress and a more proportionate income for farmers.

Regarding the first point, Mansholt said that price support had not helped marginal farmers in a satisfactory way, challenging the very argument the President of the COPA used to call for a rise in support prices. Mansholt position was that farm income could not be sustained in such way; in fact, price support ended up boosting the profits of big producers whereas marginal farmers were simply kept in production but without the capacity to guarantee a reasonable income without raising prices even more.

In other words, Mansholt already had clear the reasoning I developed in the first part regarding the distributional inefficacy of a price support policy: if incomes had to be boosted a non-discriminatory support such as price support would have barely helped marginal farmers whereas it would have been a source of illegitimate profits for already big producers. This is clear especially when Mansholt criticizes the idea that prices should cover “production costs” clarifying that the concept was itself ambiguous; there was no such thing as a unique production cost but, instead, different costs for different producers: if the intervention price were to be set to cover family farms cost the effect would have been a merely survival for those marginal farmers but illegitimate profits for big producers.

Coming to the second argument, Mansholt stressed how overproduction was already a problem in the milk sector and that the high price for wheat was causing the same problem also for that commodity. Moreover he showed how raising prices was almost certainly not the solution to sustain marginal

farmers' income but rather a measure that would have increased the overproduction with the consequent problems for the European budget.

To conclude, Mansholt declared that the future of the agricultural sector had to be found in a gradual structural policy that helped farmers increasing productivity and the dimension of the holdings and to regulate the rural exodus. This latter element, instead of being seen as a problem, was in Mansholt's conception a natural process that Europe had to face since it was simply impossible to keep a double digit proportion of population employed in the agricultural sector. In fact, increasing the dimension of their holding up to a minimum level that would have allowed them to take advantage of scale effects and investment in new capital was the only solution to sustain marginal farmers income in a structural (and not artificial) way.

This structural adjustment had to be regulated with a comprehensive structural policy in order to avoid a rural exodus that would have created unemployment but the goal was to have fewer people in agriculture so that alternative instruments to boost income (such as focused deficiency payments) could have started to be used.⁹⁰

If this reasoning definitely seemed too harsh to the European agricultural society, it was surely forward looking and anticipated the position that the Commission as an institution began to advocate in the eighties, when the overproduction crisis was at its peak. In the space of less than twenty years after Mansholt delivered his quite shocking speech, the Community had

⁹⁰ In fact, we have seen in the chapter on the economic reasons to adopt price support policy that one of the main drawbacks of using alternative tools as deficiency payments to support agricultural incomes was that due to the number of potential beneficiaries this instrument was simply unsustainable from a budget perspective.

become a food exporter for almost every commodity and the result was a simple unsustainability of the European agricultural budget. In this context, some partial reforms were implemented in different sectors; anyway, those reforms were unable to address the problem of the old CAP at its root which was in fact the perverse incentives put in place by price support.⁹¹

The first official document where the Commission started to question the efficacy of the price support mechanism is the Green paper of 1985.

In this comprehensive document the Commission stressed for the first time that if the goal of maintaining a substantial part of the farming population in agriculture could not be questioned, that should not be done by wasteful and distortive mechanism such as high price support. Moreover, it highlighted how the necessary reform path to undertake consisted in a reduction of price support in order to give more importance to market prices in leading production decision: farmers should stop producing for intervention agencies and be more orientated to what the market requests. Also, it made clear that alternative remedies to the budget crisis, such as the quota system, could not be sustainable in the long future since consumers would eventually stop accepting to pay high prices with the result that a market of substitute goods, if not a black market, would eventually flourish.

The third part of the document is entirely dedicated to the choice between pursuing a reform that lowers price support opposed to a continuation of the current price set up but with an intensification of administrative measures

⁹¹ To have an insight about the efficacy and limits of these attempts to reform the price support policy without questioning its very nature please refer to H. De Gorter and K.D. Meilke "Efficiency of Alternative policies for the EC's Common Agricultural Policy", American Journal of Agricultural Economics, August 1989.

(such as quotas or co-responsibility levies) to limit the budget pressures. It predicts that in the next fifteen years the progresses in terms of technical progress would lead, if high prices were to be maintained, to an expansion of supply that would outweigh even more the growth in demand, which for the reasons seen in the chapter about the farm problem tends to grow at a slow(er) rate. That would lead to an even bigger overproduction and an extension of the quantitative controls of production in order to limit the budgetary pressures.⁹² What the Commission stresses is that even finding new methods to dispose of the excess production like the development of bio-fuels and new markets, that scenario is not manageable and that the only realistic solution is to review the current price policy in the sense of drastically reducing intervention prices and introducing new instruments to achieve the goals of sustaining farm incomes and promote the development of a more environmentally friendly agriculture.

The straightforward concept is that reducing intervention prices the imbalances between demand and supply would decrease and, moreover, the Community would not have to bear the costs of buying the excess production at too high prices with the clear consequences for the European budget.

⁹² Coming back to the reasoning about the presence of substantial transaction costs in the deficiency payment scenario, these considerations about the introduction of co-responsibility levies or a systematic quota system show that also the price support policy would have needed a series of correcting measures that would have determined a raise in transaction costs. Therefore, I believe that the argument that sees price support as potentially preferable to deficiency payments due to lower transaction costs could be finally discarded, at least in the context of a food exporting country and due to the raising transaction costs that even the price support would imply.

Another innovation of the Green paper is that the critique of price support is not limited to the budgetary problems it created. The effects on the environment are taken into consideration and it is explained how guaranteeing public intervention at too high prices lead producers to maximize production by the use of polluting fertilisers and pesticides.

To conclude, also the “third” crisis (the international relations one) is addressed as the Community stressed that the overproduction could not be disposed with export restitutions, which consisted in a form of dumping on the international market that could not be defended during the ongoing negotiations of the Uruguay Round.

To sum up, if Mansholt’s speech was an isolate position of a forward looking individual, the 1985 Green paper was the first organic document where the Commission as a whole claimed the need to overcome the current policy structure by abandoning (or consistently reducing) price support as the main instrument of the Common Agricultural Policy. The practical results of this document, however, were scarce: the bargaining position of the farming representatives was still strong and also the international pressures were still in some sense ignorable. The system continued following a sort of inertia until, at the end of the eighties, the scenario changed both internally and internationally, leading to the Mac Sharry reform.

As regards the internal change it has to be stressed that the new Commissioner for Agriculture, Raymond Mac Sharry, played a significant role to transform Commission’s position from theory to practice. Another

change in the internal scenario is the growing importance of consumers and environmentalists lobbies who claimed, for different reasons, the need to abandon of the traditional price support mechanism. But most importantly, other seven years of partial reforms attempts⁹³ showed that the policy had to be reformed at its roots in order to solve the ongoing, and worsening, budget crisis.

The scenario had changed also internationally, since an agreement in the Uruguay round was subordinate to Europe's acceptance to substantially reform its agricultural sector. In particular, trading partners identified in price support the main responsible of trade distortions and inserted them into the black box of instruments that had to be quickly abandoned.

The results of such internal and international pressures is evident in the reflection paper that the Commission prepared in 1991 as the base of the discussion for a future reform that happened to be, just one year later, the Mac Sharry reform.

The reflection paper resumes clearly the facts I analysed in the first part to be responsible for the three crisis of the CAP, providing also useful data that help contextualize and understanding the gravity of the problem. Regarding overproduction, it states that if supply has risen at a 2% rate for the years between 1973 and 1988, demand has remained stagnant with a 0.5% growth. That resulted in a year deficit calculated in 3.7 billion ECUs for the 1991 budget and to tensions with trading partners regarding the practice of export

⁹³ As regards the topic of my research it is important to note that in 1988 a voluntary (and therefore non compulsory) set-aside scheme was introduced to try reducing supply but the effects were negligible as we will see also from the econometric tests on the leads of the Mac Sharry reform interaction term.

restitutions. Moreover, the report states that “a system which links support to agriculture to the amounts produced stimulates production growth and thus encourages intensification of production techniques. Where intensive production takes place nature is abused, water is polluted and the land impoverished”.

The distributional effects of price support are criticized saying that since support is proportionate to the volume of production it concentrates the subsidy on the largest and the most intensive farms. Regarding cereals the document states that only the 6% of farms account for the 50% of surface area in cereal and for 60% of production. The result of the system is that 80% of the support provided by the FEOGA goes to the 20% of most efficient and biggest holdings, leaving the problem of supporting incomes of marginal farmers largely unresolved.

The report carries out an analysis of the accompanying measures adopted by the Community in 1988, such as the voluntary set aside scheme for the cereal sector and concludes they are not sufficient to stop the growing agricultural budget, which was predicted to grow up to 4 billion ECUs in 1990. The reason of the inefficacy of these policies is that they did not “attack the underlying problem already identified”, namely the perverse incentives determined by price support.

Finally, the report draws some guidelines that will constitute the theoretical background of the Mac Sharry reform. In particular, as regards the object of the present research, the need to reduce intervention prices in the cereal sector is the top priority, accompanied by the introduction of direct payments

to farmers to compensate the income loss and targeting better the problem of marginal farmers. It is easy to see how these two basic concepts represent the basis of the forthcoming Mac Sharry which content will be analysed in detail in the next chapter.

To conclude this brief introduction to the second part, its aim is to describe how the problems I analysed in the first part became object of the Commission's agenda for the reform of the CAP. Up to this point, the main element that has emerged is the need to stop the ongoing tendency to overproduce via a reduction of intervention prices and the implementation of alternative instruments to support farm incomes. As we will see in the next chapters, this two elements were at the basis of the set of reform that characterized the CAP in the last twenty years. In particular, I anticipate that Mac Sharry's reform reduced drastically the intervention prices for cereals and introduced a system of direct payments to farmers, even if it was unable to proceed with a full decoupling of the payments from production.⁹⁴

The second reform that will be tested empirically also focused on those two elements even if the prevailing innovation of the Fischler's reform is the attempt to finally decouple direct payments not only from the level but also

⁹⁴ This element will become clear as the analysis proceed. Here, it can be said that Mac Sharry's payments were based on the idea that there would have been a certain payment per hectare for each commodity interested by the reform (namely for cereals). For example, every cereal benefited from the same payment per hectare. The problem is that when also other sectors were reformed, different commodities ended up to have different payments per hectare. In other words the farmer knew that, depending on his production decisions, he would have benefited from different levels of payments. It is because of this reason that those payments were accused to be unable to delink payments from production decision. However, they were at least able to eliminate the incentive to maximize production by the use of polluting inputs: in fact, the payment was a flat payment per hectare regardless the amount produced and that eliminated the perverse incentives of price support, where the final level of subsidy received by the farmers was, intuitively, directly proportional to the level of production

from the type of production. As regards the cereal sector, I still expect this reform to have triggered a reduction in cereal production since the partially coupled payments introduced by Mac Sharry were still likely to have residual distortions in favour to cereals.⁹⁵

Having clarified how the Commission progressively became aware of the crisis related to the “old” CAP we can now proceed with the empirical analysis, which consists the most innovative part of the present thesis as it build on data analysis carried out autonomously with the aim of providing a clear and reasoned answer to the question: were the reforms of the CAP implemented in the last twenty years effective?

⁹⁵ To be more precise, the payments per hectare introduced for the other commodities during the period between the two reforms were still proportionally less attractive than the ones for cereals. However, this features will be better explained in the empirical analysis.

2.1 Introduction

As anticipated, the main and innovative objective of this thesis is an empirical analysis of the impacts of successive reforms in the European Common Agricultural Policy. In particular, I will focus on two reforms considered as turning points of the overall CAP setup: the Mac Sharry reform, introduced in 1992 and enforced between 1993 and 1995 and the Fischler reform adopted in 2003 and progressively enforced in the following three years, with a full implementation only in 2006.⁹⁶

As Thompson et al. (2002)⁹⁷ highlight, the Mac Sharry reform triggered a shift from what they define the ‘old’ CAP to the new one. The ‘old’ Common Agricultural Policy tried to meet the needs of post-war Europe in its attempts to become self-sufficient in food production, to secure the stability of food supplies and to protect rural communities and farm incomes. The description of the ‘old CAP’ has been the object of the first part of the thesis so it is not necessary to restate the nature of the problem. Rather, a quick recap will be sufficient to describe the problem the Commission had to face when it started to analyse potential reform to undertake, between the end of the eighties and the early nineties.

Thompson et al (2002) describe clearly the functioning of the ‘old’ CAP. The attempt to support farmers’ income was pursued by a market price support mechanism resulting in EU prices higher and more stable than

⁹⁶ “Evaluation of Agricultural Policy Reforms in the European Union”, OECD, 2011

⁹⁷ S. Thompson et al, “Spatial Market Efficiency and Policy Regime Change: Seemingly Unrelated Error Correction Model Estimation”, American Journal of Agricultural Economics, 2002, vol°4 issue 84.

international ones. In practice, an intervention price was set for each commodity and, in order to avoid internal market prices falling below it, intervention agencies bought commodities at their intervention prices. They then stored the commodities and sold them on the world market at a loss. Otherwise, the same agencies would provide private exporters with a 'restitution' subsidy that would compensate for the difference between intervention and international prices.

The authors state that the 'old' CAP (1957-1992) succeeded in transforming post-war agriculture. High intervention prices provided a stable income for the farmers, incentivising mechanisation and resulting in a largely self-sufficient industry.⁹⁸ The industrialisation of the agricultural sector triggered an increase in productivity and a decrease in the number of employed in the agricultural sector, freeing the labour force for the development of European industrial economies.

However, as explained in detail in the first part, the market support mechanism that characterized the original CAP progressively led to two major crises (and to a third one consisting in international pressures from trading partners to the dumping of the excess production on the international market).

The first one is related to the costs of the policy. With an agricultural sector that eventually became more productive, the price support mechanism

⁹⁸ Clearly this brief reconstruction based on Thompson et al (2002) simplifies slightly what has been the object of my analysis in the first part regarding the links between price support and technical progress. They claim that price support triggered a productivity enhancement that instead is likely to be part of a more complex story like the one told by Van Der Meer and Yamada, where productivity increases consistently if the country starts from a low level of productivity as Europe's agriculture happened to be after the second world war.

resulted in a huge deficit since intervention agencies were committed to buy any overproduction. Additionally, food consumer prices were artificially high in comparison with international ones. The burden of the policy, hence, was both on consumers (through higher prices) and on taxpayers (through the increasing budget of the policy).

The second crisis regarded the environmental impacts of the policy: guaranteeing a high intervention price, the policy boosted overproduction and the overuse of chemicals, resulting in a significant increase in emissions, water pollution, soil erosion, and loss of biodiversity.

These two crises, together with new societal demands in term of food quality and pressures from the GATT to liberalise the agricultural sector resulted in the Mac Sharry reform in 1992.

The declared objectives of this reform were to improve competitiveness, stabilise markets, income and expenditures, address the overproduction problem and protect the environment; for the first time the Commission acted with the aim of reforming the historical instrument of the CAP, the price support mechanism. In fact, the major measures taken consisted of a 30% cut in the cereal intervention price, a smaller cut in the intervention prices for beef and butter, the introduction of a mandatory set-aside scheme for the cereal sector, (10% of the arable land had to be withdrawn from production) the introduction of compensatory payments (direct payments) per hectare for cereals and an increase in premiums for beef cows and steers.

The cut in the intervention price and the introduction of direct payments, even though not fully decoupled, was supposed to improve competitiveness

in the sense that farmers would no longer make production decisions based on distortive intervention prices. Moreover, since payments were fixed (per hectare for a certain group of commodities or per animal) and not linked anymore with the amount produced, the overproduction incentive would have been reduced since farmers would no longer have the incentive to maximize production on the basis that they would have earned more selling the crops to the intervention agencies.

Regarding the introduction of compensatory payments and their potential effects in terms of income redistribution it has to be said that the Commission probably lost a good opportunity to make the payments focused to address the problem of marginal farmers. In fact, this instrument, differently from price support, could have been used easily to target specific segments of the farming population in order to sustain incomes of the family farms. However, the choice of providing a basic payment per hectare (given the farmer was producing cereals) with no limits in terms of number of hectares that could have received the subsidy replicated the ongoing disproportion between big and small farmers in terms of subsidies received.

The second main measure introduced was the compulsory set aside scheme. Introduced as a conditionality in order to receive the direct payments, it obliged producers to withdraw up to ten percent (then progressively reduced) of the arable land from production. It is clear how this measure could have likely addressed both the overproduction and the environmental issues even if some potential limits and loopholes will be highlighted in due time.

The other reform that I will consider in the present study is the Fischler reform, approved in 2003 and implemented over the following three years. The main innovation of the 2003 reform was the modification of the compensatory payments introduced by Mac Sharry and the progressive extension of this approach to a growing number of sectors/commodities. In fact, these kind of direct payments were still partially coupled with the type of production (different levels of support per hectare depending on the crop currently under cultivation). The Single Payment Scheme instead consisted of a fixed payment per hectare with no requirement to produce, and was based either on historical entitlements (namely, the payments received by the farmers in the period from 1999 to 2002) or on a flat payment per hectare, not linked with the type of crop produced.⁹⁹

Furthermore, the Fischler reform established that the payments under the 1st pillar, namely the SPS and the residual market price support mechanisms, would become conditional on the adherence to basic environmental standards (cross-compliance). The cross compliance was a formal adherence to standard good agriculture and environmental standards (GAEEC standards) that regarded limits to the use of fertilisers, pesticides and herbicides together with the respect of some common duties like maintaining the land in good agricultural conditions.

⁹⁹ Note that both the historical and the regional method to allocate the payments should be decoupled from actual production decisions. The reason is straightforward in the case of the regional model. Regarding the historical one, the fact is that even if different areas would receive different level of subsidies, that would now depend on the particular commodity that was under cultivation in the (past) reference period, hence not distorting current production decisions. The difference with the Mac Sharry payment is exactly this particular feature since the latter used to allocate a certain subsidy per hectare depending on the crops under cultivation in the current period, hence incentivizing farmers to change production decisions depending on changes in policy allocation of subsidies.

This brief introduction of the evolution of the CAP and of the two main reforms that characterized the last 20 years provides the basic information at the basis of my empirical investigation.

Since the two reforms attempted to address the overproduction and the environmental problems of the ‘old’ CAP, my empirical analysis attempts to find evidence about the solution of the overproduction problem (focusing only on the cereal sector and on the effects of Mac Sharry’s reform), the reduction in GHG emissions and in the use of fertilisers, the increase in the ‘environmental efficiency’ and the hypothetical effectiveness of the new CAP to liberalise the agricultural market, leading to production decisions based on international prices rather than on the administratively set intervention prices.

I will now describe more carefully my empirical approach in the methodology chapter, whereas in the following ones I will divide the analysis of the two reforms in two distinct parts in order to highlight better the most relevant features of the two reforms. The empirical results will be presented after a detailed discussion of the existing literature and after having explained carefully which effects I expect from each of the two reforms. Most of the times the empirical results support the logic behind my tests and in the conclusions I will try to resume what I think has happened to European agriculture in the last twenty years using my results and also some insights from other studies.

2.2 Data description and methodology.

The empirical approach consists in estimating the impact of the two CAP reforms in a sort of natural experiment, a quasi-experimental setting using a difference-in-difference estimation. The datasets are panel composed by two different groups¹⁰⁰, treatment and control, over a period that goes from 1986 to 2009, besides for the regressions on emissions and 'efficiency' where the sample period starts in 1990 due to data limitations for the previous period. The data frequency is yearly for every data in each of the four different datasets.

The data on the production levels for three commodities (barley, wheat and maize), their prices, fertiliser's consumption and average precipitation index, have been downloaded from the Food and Agriculture Organisation database (FAOSTAT). The intervention prices (for cereals) for the European countries come from the OECD database (OECD, 2011)¹⁰¹, whereas the countries' GDP and GDP per capita come from the World Bank database. Since the availability of GDP and GDP per capita data pre-1990 is limited to local currencies, I used average exchange rates, from the World Bank database, for the year before 1990 to calculate the values in US \$. The prices

¹⁰⁰ The treatment group consist of 10 European countries: Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain and United Kingdom whereas the control group is formed only by Australia and New Zealand for the production regression and by Australia, Canada, Japan, New Zealand and United States for the remaining three datasets. I chose to drop Belgium and Luxemburg from the treatment group due to data inconsistencies between sources.

¹⁰¹ OECD (2011), *"Evaluation of Agricultural Policy Reforms in the European Union"*, OECD Publishing, Paris.

of fertilisers come from the World Bank database. Finally, data on GHG emissions from agriculture are provided by the dataset of the United Nations Framework Convention on Climate Change.

I constructed four different datasets for the four different tests on production, emissions, input consumption and ‘efficiency’.¹⁰²

Both for Mac Sharry’s and Fischler’s reform, I am interested in looking at their impact on these four variables. Moreover, using the production dataset, I carry out a robustness check to verify whether the decrease in intervention prices and the shift towards direct payment has had the expected result in determining a shift in the decision making toward a greater exposure to international prices, or if the real determinant was the introduction of the SPS and the full decoupling of direct payments.

In all these specifications, except for the one on production, the control group consists of 5 non-European countries: US, New Zealand, Australia, Canada and Japan. I believe that the similarities, between these 5 countries and the treatment group (EU-12 without Belgium and Luxembourg) can be used to defend the “common pre-trend assumption”. This requirement will be checked for every single regression, trying to provide theoretical arguments as well as graphs for pre and post trends and more precise econometric testing that consists in creating year dummies for the time period pre-reform, interacting them with the treatment dummy and checking

¹⁰² My measure of the “environmental efficiency” of the policy is clearly an approximation being the ratio between production of cereals and emissions. It is not surprising that, in the empirical results section, we will see that the results are not significant.

whether the coefficients on the interaction terms are significantly different from 0.

Hence, the setup of this test which I carry out for all the difference in difference regressions to check to “common pre-trend assumption”, is the following:

$$Y_{i,t} = \rho_t + B_t(\rho_t * EU_i) + \delta'X_{i,t} + \alpha_i + \varepsilon_{i,t}$$

(1)

Where ρ_t is a year dummy for each of the years before the reform, EU is the treatment dummy and the coefficient of interest is B_t . As shown by Lockwood and Porcelli (2013)¹⁰³ if we cannot reject the null that all the B_t coefficients are not different from 0, this method provides an econometric test for the common pre-trend assumption.

Moreover, as Autor (2003)¹⁰⁴ suggests, I provide a test on the leads to verify whether the reforms had any anticipatory effects. That possibility cannot be ruled out since reforms have been implemented over a longer time period, and have been often already perceived by the actors as due to come, possibly influencing their behaviour before being actually adopted. In particular, this might be the case for the intervention price reduction adopted by Mac Sharry. The reduction took three years to be fully implemented, starting even

¹⁰³ Lockwood, B. And Porcelli, F. (2012) *"Incentive Schemes for Local Government: Theory and Evidence from Comprehensive Performance Assessment in England"*, American Economic Journal: Economic Policy, vol. 5, n°3, August 2013.

¹⁰⁴ Autor, D. (2003) *"Outsourcing at will: the contribution of unjust dismissal doctrine to the growth of employment outsourcing"*, Journal of Labour Economics, vol. 21, no. 1, pp. 1-42.

before the official approval of the reform and its contents were already known by the actors.

Coming to the production test, given that most of the countries in the control group experienced similar reforms during the same time period, I decided to drop the US, Canada and Japan from the control group. That leaves in only New Zealand and Australia and this choice is justified by the fact that the agricultural sector of these two countries was already mostly liberalized during the eighties and wasn't affected by other reforms in the period of analysis (OECD, 2002). Instead, US, Canada and Japan underwent different reforms during the same time frame and including them in the regression would have led to a difficulty in disentangling the effects of the European reform from the ones of the reforms occurring at the same time in some of the countries that formed the control group.

For each of the four dependent variables of interest, I run four different model specifications; the first specification, in fact, will be tested both using fixed and random effects:

$$Y_{i,t} = B_1 D_t + B_2 (D_t * EU_i) + \text{linear time trend} + \delta' X_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (2)$$

$$Y_{i,t} = B_2 (D_t * EU_i) + \text{year dummies} + \delta' X_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (3)$$

$$Y_{i,t} = B_1 + B_2 D_t + B_3 EU_i + B_4 (D_t * EU_i) + \text{country FE} + \delta' X_{i,t} + \alpha_i + u_{i,t} \quad (4)$$

The model in (2) will be run both with fixed and random effects and a Hausman test will be performed in order to choose between the two. Specifications in (3) and (4) are also fixed effects, therefore I will normally choose among these three specifications after having performed the Hausman test on (2) and rejected the null. I anticipate that since the post reform dummy D_t is generally significant whereas year dummies are not and since the use of panel commands is theoretically preferable than a Pooled OLS, the specification that will be chosen is the one formalized in (2), with fixed effects.

In (2) D_t is a post-reform dummy that takes value of 1 after the reform is implemented. The term in brackets is the interaction term, being the product of the time and the treatment dummy EU_i . Therefore, the coefficient of interest is B_2 since it captures the treatment effect of the reforms. The dependent variables are $Y_{i,t}$ for the production levels, $Q_{i,t}$ for the emission levels, $F_{i,t}$ for the fertilisers (input) consumption and $E_{i,t}$ for my approximate measure of environmental efficiency obtained dividing total production for the level of emissions. $X_{i,t}$ is a vector of controls.

In (3) I run the tests with an alternative specification that consists of omitting the post-reform dummy D_t and the linear time trend but inserting time-specific effects.

Specifications (2) and (3) make clear the use of an individual effect model, where the error term $u_{i,t} = \alpha_i + \varepsilon_{i,t}$ is decomposed in an individual specific effect α_i and an idiosyncratic error $\varepsilon_{i,t}$. The choice of an individual fixed effects (over an individual random effects) model allows the individual

specific, time invariant, effects α_i to be correlated with the regressors in $X_{i,t}$, allowing a partial endogeneity between the dependent variable and regressors. The choice of a fixed over a random effects model can be defended theoretically arguing that since the analysis is based on a panel of countries, it is likely that each country might have specific characteristics that are correlated with the regressors and, hence, with the dependent variable. The assumption of the random effect model, in fact, states that the individual effects are completely random, which would be difficult to defend in this kind of setup. To overcome this model specification choice, however, I will perform Hausman tests to choose between a fixed effects and a random effects model.

The choice of specification (2), which as anticipated will be the preferred one to perform the difference-in-difference estimator, has been taken looking at Lockwood and Porcelli (2013). In particular, it allows the omission of the treatment dummy from the regression; this is fundamental given my choice to use a fixed effects model, which is in fact unable to estimate time unvarying regressors such as the treatment dummy $EU_{i,t}$ in the present specification.

Specification (4) provides a different estimator, a pooled OLS where country/commodity fixed effects will be inserted as regressors. Therefore, the difference with the specification proposed before would be minimal: instead of using a fixed effect model I run a pooled OLS inserting country fixed effects as regressors in the model.

In this specification, B_1 is the coefficient for the control group pre-reform, $B_1 + B_2$ for the control group post-reform; $B_1 + B_3$ is the coefficient for the treatment group pre-reform whereas $B_1 + B_2 + B_3 + B_4$ is the coefficient for the treatment group post-reform. Therefore the difference-in-difference estimator is derived as follows.

$$(Treatment_{post} - Treatment_{pre}) - (Control_{post} - Control_{pre}) = B_4 \quad (5)$$

To sum up, for each of the econometric test I will provide 4 different estimators:

- a fixed effects model that includes a post-reform dummy and a time trend in the controls;
- a fixed effect model without the post reform dummy and the linear time trend but with the allowance of year dummies in the controls to isolate time-fixed effects;
- a pooled OLS with fixed effects included in the regression;
- and a random effects model with the same features as the fixed effects model in (2).

Regarding the accuracy of the estimates, these individual effects estimators are based on the assumption that the idiosyncratic error $\varepsilon_{i,t}$ is $\sim (0, \sigma_\varepsilon^2)$, whereas this assumption is likely not to hold in panel applications. Hence, it is necessary to compute cluster-robust standard errors (Bertrand et. al. 2004). Without this correction, estimated standard errors would be incorrectly underestimated, giving results that may appear significant even if they are not when using the correct, cluster-robust, standard errors.

Before moving to the empirical analysis, it has to be clarified that since my intent is to test two different reforms on the same sample, I have to run the regressions for the Mac Sharry reform on a subsample that terminates the year before the implementation of the second reform. Otherwise, the coefficient on the interaction term would include the effects of the second reform as well.

Coming to the valuation of the second reform, it is clear that the use of a difference in difference estimator would be inadequate. In fact, given that the common trend assumption held for the period before the first reform, if that reform was effective and changed the trend, there would no longer be a common trend assumption for the second reform. Therefore, instead of running a regression including just the interaction term for the Fischler reform, which would result in a biased estimation for the reason aforementioned, I propose to include another interaction term, for the Fischler reform, in the same regressions used to test the Mac Sharry's one but this time on the entire time period, keeping to use the same four model specifications. As an example, the model in (2) would be specified as follows:

$$\begin{aligned}
 Y_{i,t} = & B_1 D_{MacSharry} + B_2 (D_{MacSharry} * EU_i) + B_3 D_{Fischler} + \\
 & B_4 (D_{Fischler} * EU_i) + \text{linear time trend} + \delta' X_{i,t} + \alpha_i + \varepsilon_{i,t}
 \end{aligned}
 \tag{6}$$

This estimator, hence, should be considered as an estimate of a reinforcement (or attenuation) of the effects of the first reform and not analysed individually. In other words, econometrically, it will be treated as if

it was a lag of the first reform, following the work of Autor (2003). Once the common trend assumption for the years before the first reform has been verified and the test for Mac Sharry performed on the appropriate subsample, running the model in (6) on all time periods gives an estimate of the second reform (B_4). For instance, assuming to have a negative B_2 and B_4 we would interpret B_4 as a further reduction, whereas to have an overall measure of the difference-in-difference estimator between treatment and control group after the second reform, we should add the two coefficients of the interaction terms.

2.3 Empirical analysis and results

Mac Sharry reform

The literature about the CAP reform process has focused on a variety of specific aspects, as well as on broad empirical analysis. The present research follows the second type of approach, seeking to provide an overall analysis of the aggregate changes in the patterns of production, GHG emissions, input use and an ad hoc measure of environmental efficiency. An obvious limit will be the difficulty to disentangle the specific determinants of the (mostly) positive changes that occurred. In fact, we will see that even finding statistically significant results, the fact that the two reforms analysed impacted on more than one single measure leads to some interpretational issues in determining which particular reform contributed the most to the overall achievement. However, it provides a useful tool to develop a broad critical assessment of the overall reform process, providing empirical results to judge the general effectiveness of the reforms.

Starting from the critique of what has been defined the ‘old’ CAP; most experts agree that the high level of ‘coupled’ price intervention resulted in the intensification and concentration of production responsible for the overproduction problem and the deterioration of the environment in terms of loss of biodiversity, soil erosion and GHG emissions (Baldock, 1990)¹⁰⁵.

¹⁰⁵ D. Baldock (1990) *“Agricultural and habitat loss in Europe”*, World Wild Fund for Nature, London, 1990.

They identified the reduction of the intervention prices as the fundamental measure to implement in order to solve the overproduction problem and contribute to a greening of the policy. Whitby and Harvey (1988)¹⁰⁶ argued that the reduction in the intervention prices, reducing profits, would have encouraged a process of production extensification, reducing the pressure on the environment. This type of analysis was largely shared by the official reflection paper that the Commission outlined before the start of the Mac Sharry reform and that I have referenced to show the significant change in the Commission's thinking about the need to overcome the old CAP.

The final measures adopted by the Commission were two. A drastic (30%) reduction in the intervention price for cereals, coupled with the introduction of compensatory direct payments for the farmers that cultivated cereals¹⁰⁷ and the introduction of a compulsory set-aside scheme under which all cereal producers should have withdrawn the 10% of arable land from production in order to benefit from the new system of direct payments. To give an idea about the relevance of the price reduction, the following graph plots cereal intervention prices over the period 1986 to 2009.

¹⁰⁶ Whitby, M. And Harvey, D (1988) Issues and Policies. In "Land use and the European Environment", ed. M. Whitby and J. Ollerenshaw. Belhaven press, London.

¹⁰⁷ It has to be noted that similar measures were applied also for the beef sector but my choice is to focus on cereals since they can be considered the sector whose reform was then implemented in the other sectors of the agricultural policy, the first sector where was applied the substitution between price support and the innovative instrument of direct payments.

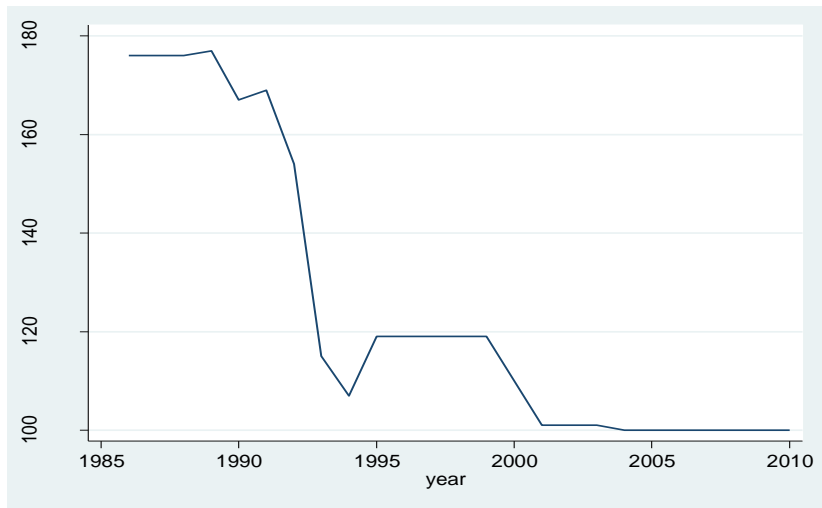


Figure 1. Intervention prices for cereals. (Eur/tonn, 1986-2009).

The effects of the Mac Sharry reform are evident: intervention prices progressively decrease from 169 Euro per ton in 1991 to 154 Euro/ton in 1992, 115 Euro/ton in 1993 and 107 Euro/ton in 1994, before being increased to 119 Euro/ton in 1995.

The reduction of the intervention prices would reverse the perverse mechanism highlighted by Potter (1996)¹⁰⁸ who states that high intervention prices induced farmers to maximize production by increasing the amount of arable land and, since land supply is fixed, by intensifying the production process increasing the use of fertilisers and pesticides, with obvious repercussions in terms of environmental damage. Other scholars have argued in favour of a double dividend (Jenkins, 1990)¹⁰⁹ from agricultural liberalisation: reducing intervention prices would both decrease intensification and free resources for direct payments partially or totally decoupled from production or even for environmental schemes designed to address market failures. Moreover, that could be done at a lower expense for the European citizens who would still bear the burden of the policy as taxpayers, but would now have tangible benefits as consumers in terms of food-price reductions. However, Potter and Goodwin (1998)¹¹⁰ provide a critical assessment of these assumptions, highlighting the potential limits of the argument that the reduction of the intervention prices and their

¹⁰⁸ Potter, C. (1996), *"Decoupling by degrees? Agricultural Liberalisation and its Implication for Nature Conservation in Britain"*, English Nature Research Reports no. 196, Peterborough.

¹⁰⁹ Jenkins, T. (1990), *"Future harvester: the economics of Farming and the Environment"*, Council for the protection of rural England, London

¹¹⁰ Potter, C. and Goodwin, P. (1998), *"Agricultural liberalization in the European Union: An Analysis of the Implications for Nature Conservation"*, Journal of rural studies, vol. 14, no. 3, pp 287-298.

substitution with direct payments would be the major driver for a greening of the CAP. In particular, the authors claim that without an explicit “green” recoupling of the alternative measures introduced, the effects of the price liberalisation would not be automatically positive for the environment; instead, the effect would be ambiguous. They conclude their analysis arguing that the green recoupling needed to achieve the double dividend has not been implemented sufficiently. On the basis of the share of the different measures post Mac Sharry (43% for direct payment, 53% still in MPS and just 4% in AEP) they observe that the resources freed by price reductions basically resulted in direct payments still partially coupled with production, hence inefficient in their ‘liberalising’ purpose and that, moreover, they haven’t been used to create agri-environmental (AEP) schemes to address market failure.

Coming to the other main measure introduced by the Mac Sharry reform, the set-aside was originally thought to address the overproduction problem. However, its link with the environment is straightforward since it basically triggered (for the cereal producers) a withdrawal of almost 10% of the arable land from production. A recent paper (IEEP, 2008)¹¹¹ summarises the benefits produced by set-aside since its introduction as a voluntary measure in 1988. It provides evidence regarding the reduced use of herbicides, fungicides, insecticides and molluscicides on set-aside land in comparison with rape and wheat cultivation. The contribution of set-aside to reducing GHG emission has not been object of many studies but the theoretical

¹¹¹ IEEP (2008), *“The Environmental Benefits of Set-Aside in the EU: a summary of evidence”*, Prepared by The Institute for European Environmental Policy for Department for the Environment, Food and Rural Affairs , February 2008.

argument is normally that the removal of atmospheric CO₂ would come from plants, which would also store the fixed carbon as soil organic matter, and would be a logical consequence of having less land under cultivation. However, as anticipated before, a limit of the capacity of this measure to address the environmental externalities created by the old CAP and the overuse of chemicals is that the farmers could now decide to apply a greater amount of input on the reduced amount of land under cultivation, with the consequence that the overall, positive, effect on emission could be minimized if not cancelled.

This brief analysis of the literature regarding the Mac Sharry reform identifies two main measures that might have had an impact on the environment and production: the reduction in intervention prices and the set-aside. The predicted effects are a (relative) reduction in cereal crops, a reduction in input used due to the ‘extensification effect’ promoted by price cuts and by the set-aside itself and a reduction in the amount of GHG.

Josling (1994) have also claimed that the reduction in intervention prices has increased market exposure, leading farmers to take production decisions on the basis of the international prices. However, the test regarding the effectiveness of the reforms to determine a shift in the way farmers took their production decision will be done in the next section, when the Fischler reform will be taken into account. In fact, since the payments introduced by Mac Sharry were not fully decoupled it makes more sense to carry out an analysis on the complete time period and verify whether international prices became significant only after the full decoupling was introduced or whether the Mac Sharry reform was enough to trigger this change in farmers

behaviour, from producing to the intervention agencies to producing for the market.

Mac Sharry reform: Effects on production.

Starting with the regression on production levels, the control group is formed only by Australia and New Zealand following the work of Legg (OECD, 2002)¹¹², who showed that Canada, Japan and the US proceeded with similar reforms in the same time period. Hence, results using these countries might be biased because they are unable to take into account the effects of these other reforms happening at the same time. Therefore, the choice to exclude those countries is made in order to have a control group composed by countries that have not experienced other reforms in the same time period; moreover, having largely liberalised years before the reform under consideration, these two countries would represent a quite stabilized free trade scenario that will be used as a reference point for the evaluation of the two reforms.

For the test of the Mac Sharry reform, I use a subsample that ends in 2005 in order to avoid the inclusion of the effects of the Fischler reform, implemented in 2006. As shown in Figure 2, production (in thousand tons) of three different cereals has been regressed over the Mac Sharry interaction term and a set of controls: prices, fertiliser consumption, GDP per capita. In the first specification (linear time trend plus post-reform dummy) the interaction term shows a negative and significant coefficient as predicted, and so does the second model, with year dummies to isolate time-fixed

¹¹² Legg, W. (2002) "The evolution of agricultural policies in OECD countries as reflected by the level and structure of agricultural support" in "China in the Global Economy Agricultural Policies in China after WTO Accession", OECD.

effects. The pooled OLS estimator with country fixed effects inserted as regressors shows similar results and so does the random effects model with the post-reform dummy and the linear trend.

Figure 2. Production regression on levels for Mac Sharry reform.

	FE (1) Post & Trend	(2) Time FE	Pooled OLS (3) Post	RE (4) Post
prices	-1.939 (2.649)	-0.697 (3.811)	-2.248 (2.885)	-1.719 (2.532)
Mcsharry	-1586.7** (734.5)	-1641.6** (729.1)	-1662.5** (765.6)	-1197.5 (769.4)
gdpcapita	0.0307 (0.0645)	0.0418 (0.0704)	0.0642* (0.0367)	0.0359 (0.0694)
fertcons	-0.360 (0.491)	-0.521 (0.518)	-0.394 (0.529)	-0.0240 (0.411)
EU			9930.5*** (546.4)	
Time FE	No	Yes	No	No
Post Reform	Yes	No	Yes	Yes
Trend	Yes	No	No	Yes
Country/ Commodity FE	No	No	Yes	No
<i>N</i>	660	660	660	660

Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01

Figure 3. Hausman test production regression

	(1)	(2)
	FE	RE
Mcsharry	-1662.5***	-1275.8**
	(418.3)	(422.8)
Hausman		39.90
Pvalue		0.0000

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In order to choose between fixed and random effects models, I performed a Hausman test where I reject the null at the 1% confidence level (Figure 3). That means that the random effects estimator, which would be preferred under the null since it is both consistent and efficient, has to be ruled out since it is not consistent anymore under the alternative hypothesis.

Therefore, the chosen specification will be one of the three fixed effects models outlined in the first three columns. I opt for the first specification since it includes a post reform dummy that happens to be significant (whereas the time fixed effects of the second model are mostly insignificant) and because the use of a panel data estimator is theoretically more appropriate than a pooled OLS. From the results provided I can conclude that the reform triggered a decrease in the production of the three cereals equal to approximately 1586.7 thousand tons per year in comparison to the control group. In other words, the yearly mean of production levels after

1993 for the treatment group, is 1586.7 thousand tons lower than what it would have been without the reform, since it would have followed the same (higher) increasing trend observed in the control group.

The next test follows Autor (2003) in the attempt to test for anticipatory effects. Taking the first of the four models presented, I include three leads of the interaction term and three pre-reform dummies for the three years before reform's implementation. To check for anticipatory effects we have to look at the coefficients of the leads of the interaction term. As reported Figure 4, an anticipatory effect was present in 1992 and this is not surprising as the intervention prices were reduced from 169 Euro/ton to 154 Euro/ton in 1992. Instead, there is no evidence for anticipatory effects before 1992. It has to be mentioned that a voluntary set aside was already part of the CAP since 1988; hence, an anticipatory effect in 1992 might be the result of an increasing use of the voluntary set aside scheme, combined with the decrease in the intervention prices, with this final factor being, likely, the main driver.

Figure 4. Anticipatory effects

	(1) productionth
Macsharry	-1004.5* (601.2)
LedMcsharry	-1376.6** (635.2)
Led2Mcsharry	1008.2 (756.4)
Led3Mcsharry	-393.3 (259.9)

<i>N</i>	660
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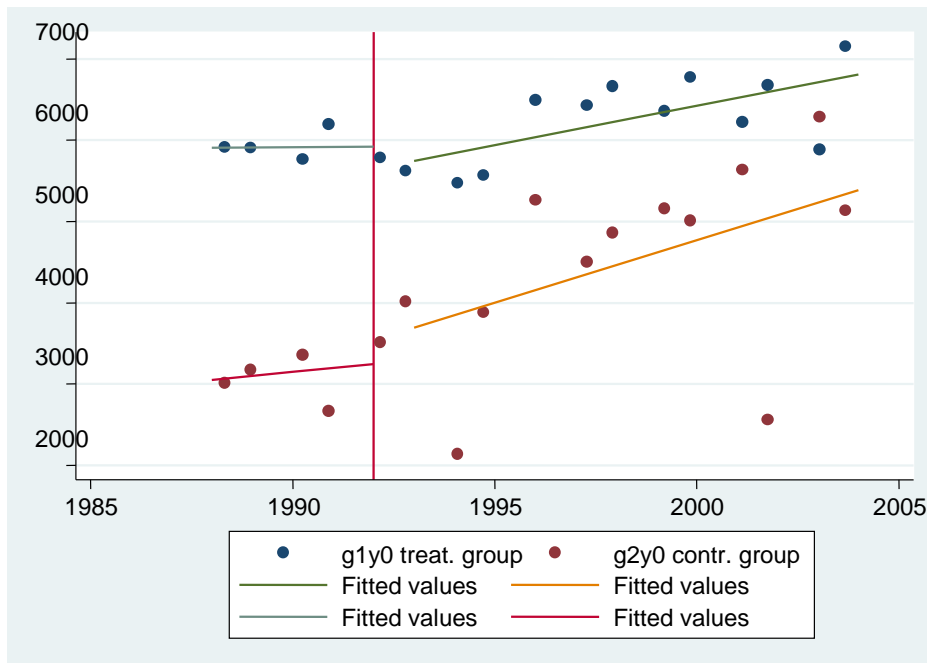
Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

To conclude the analysis of the effects on production, the common trend assumption has to be verified. Figure 5 presents a graph for the trends in treatment and control group before and after the reform¹¹³. Admittedly, the graph is not very useful to see whether the two groups followed a common trend before the reform; hence I proceed with an econometric test following equation (1). However, what seems clear from the graph is that the difference between treatment and control group is decreasing over time (note that the mean of production was higher for the treatment group), due to a slower increase of the production levels in Europe in comparison with the control group. Hence, interpreting equation (5), the diff-in-diff estimator gives a negative and significant coefficient. In other words, we expect that without the reform the production levels for the treatment group would have increased more, keeping almost the same spread with the control group, instead of reducing it.

¹¹³ Here, g1y0 stands for the treatment group, whereas g2y0 indicates the control group. Moreover, the plot points that they represent are not individual data point but are the weighted average of production levels of the countries that form, respectively, the treatment and the control group.

Figure 5. Common trend assumption. Graph analysis.



The results of the econometric test for the pre-reform common trend assumption are in Figure 6. Given that the policy started in 1993, the null hypothesis is that $B_t = 0$ for each time period between 1986 and 1993 (excluded) and it cannot be rejected apart from 1988. Therefore, it could be argued that the use of the difference-in-difference estimator is appropriate and that it validates the theoretical prediction that the Mac Sharry reform was effective in triggering a (relative) decrease in the production levels in comparison with the scenario that would have happened in absence of the reform. Finally, I believe that the anticipatory effect registered in 1992, when the compulsory set aside had not been introduced yet and just a partial cut in the intervention price took place, might be the proof that the real driver of this relative decrease in production has been mainly the cut in the intervention prices, validating the predictions of Whitby and Harvey (1988) and Potter (1996).

Figure 6. Common trend assumption. Econometric test.

	(FE)
	productionth
int1987	753.0 (575.7)
int1988	820.1* (406.2)
int1989	524.4 (488.5)
int1990	189.4 (452.3)
int1991	1252.0 (1120.2)
int1992	-85.14 (621.7)
<i>N</i>	231

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Mac Sharry reform: Effects on emissions

Before presenting the results of the emissions regression I would like to clarify the importance of having a good estimate of these data. Indeed, since I am also analyzing the reform's effects on production, it might be that the results on emissions are simply a linear transformation of the ones on production. In other words, if emissions from agriculture were simply estimated applying a conversion coefficient to the amount of agricultural goods produced it is trivial to say that performing an analysis on emissions would be redundant.

The data come from the FAOSTAT database, in which it is included an estimate of the emissions occurring from agriculture. Tubiniello et al (2013)¹¹⁴ present their methodology, clarifying the use of a bottom-up approach based mainly on the use of a combination of crop area (number of livestock), activity type and an activity- specific emission conversion factors. In other words, each different production type was allocated an emission factor also considering the geographic location of the country (in order to have an approximate distinction between developed and developing countries) and the national emission data from agriculture was computed as the sum of each estimate for each single type of production. Also the use of synthetic fertilisers was included in the analysis with the aim of providing an overall assessment of the level of production intensity.

¹¹⁴ Tubiniello et al, "The FAOSTAT database of greenhouse gas emissions from agriculture", Environmental Research letters, 2013, issue 8.

In my opinion the methodology followed guarantees a substantial independence between the measure of agricultural production and the estimate of total emissions. First of all, the emission factors are applied on the area under cultivation. and not on total production.

Most importantly, there is no obvious direct link between the two. Indeed, it might well be that production remains more or less constant even with a reduction of a land under cultivation (if, for example, more fertilisers are now applied on the diminished land under cultivation) whereas emission decrease substantially (even if the use of fertilisers remains, again, fairly similar) due to a simple decrease in the area under cultivation and the extension of area under forestry or “environmental systems” such as buffer strips.

More importantly, this measure allows to distinguish our emission estimates from a simple transformation of total production if we consider weather’s impact on production. Indeed, it might well be that for certain climatic occurrences production would be boosted or hampered, regardless of the production technique used. In other words, had we used a simple transformation of total production in a particularly bad (or good) year we would have ended up saying that emissions also decreased (or increased) substantially in that particular year for that specific country. Instead, it is extremely likely that this variations in production occurred regardless the fact that the production technique was the same, with the same effects in terms of emissions.

The authors underlie some limitations of their methodology, in particular the considerable uncertainty (and wide confidence intervals) due to the choice of using the same emission conversion factors at a regional level, with the consequence of not being able to capture potentially substantial differences in production intensity between countries within the same regional group. However, for the purposes of the present analysis I believe that this methodology is sufficiently different from the data on production to allow an independent analysis of the emissions from agriculture.

Moreover, I have included a measure of total cereal production in my regression model to test whether it is correlated with emissions and the results seem to indicate that my assumption of independence was correct since total production is not significant in all the three fixed effects models tested (it is significant in the random effect model but we reject it after having performed the Hausman test).

In this regression, the control group is composed of the five mentioned countries. To test the Mac Sharry reform I run, over the same subsample, the four aforementioned model specifications, the results of which are shown in Figure 7.

The interaction term appears to be significant (although just at the 10% level) and negative in all the four different models. As before, to choose between fixed effects and random effects, I use both the theoretical argument that states that a fixed effect model is more appropriate when analysing countries and the econometric test performed with the Hausman test (Figure 8). I reject the null and therefore opt for a fixed effect model. The choice

between the three different fixed effects models is for the first one that allows for a linear trend and includes a post reform dummy, since it happens to be significant at the 10% level. Moreover, time specific effects in the second specification are generally not significant and the choice of a panel estimator is theoretically preferable to the Pooled OLS reported in column three.

Figure 7. Emission regression in levels for Mac Sharry

	FE		Pool	RE
	(1)	(2)	(3)	(4)
	Post & Trend	Time FE	Post	Post
fprice	-0.00938 (1.099)	2.459 (6.659)	-0.250 (1.041)	-0.621 (0.595)
Totalproduction	0.0537 (0.0464)	0.0503 (0.0425)	0.0548 (0.0469)	0.152*** (0.0525)
Mcsharry	-7189.6* (3525.4)	-7210.5* (3632.3)	-7200.7* (3732.1)	-7245.2* (3884.5)
gdpcapita	0.185 (0.213)	0.203 (0.227)	-0.0270 (0.112)	0.239 (0.257)
avprecipitation	3469.9* (1711.2)	3464.0* (1655.8)	3580.3* (1783.9)	27.38* (15.15)
EU			13709208.5* (6846127.0)	
Time FE	No	Yes	No	No
Post Reform	Yes	No	Yes	Yes
Trend	Yes	No	No	Yes
Country/Commodity FE	No	No	Yes	No
<i>N</i>	240	240	240	240

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Figure 8. Hausman test Emission regression

	(1)	(2)
	FE	RE
Mcsharry	-7200.7*** (1181.0)	-7282.3*** (1444.5)
Avprecipitation	3580.3*** (939.2)	27.55*** (2.973)
Hausman		85.24
Pvalue		0.0000

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

I conclude saying that the reform triggered a decrease in the emission levels of the treatment group equal to approximately 7189.6 tons per year in comparison to the control group. In other words, the means of the yearly emissions for the post reform period are 7189.6 tons lower than what they would have been in absence of the reform. In Figure 10, I also provided results for the same test, taking the natural logarithm of the dependent variable. That allows the interpretation of the coefficients as a percentage variation. I conclude that emissions decreased by approximately 9.5% in the treatment group in comparison with the control group.

Figure 10. Emission regressions for Mac Sharry in Logarithm (% change)

	FE		Pool	RE
	(1)	(2)	(3)	(4)
	Post & Trend	Time FE	Post	Post
fprice	-0.00000939 (0.0000119)	0.0000220 (0.000145)	-0.0000112 (0.0000132)	-0.00000718 (0.0000103)
totalproductionth	0.00000104 (0.000000934)	0.000000934 (0.000000887)	0.00000104 (0.000000959)	0.000000899 (0.000000621)
Mcsharry	-0.0945* (0.0448)	-0.0951* (0.0459)	-0.0946* (0.0463)	-0.0892* (0.0469)
gdpcapita	-0.00000148 (0.00000523)	-0.000000975 (0.00000552)	-0.00000309 (0.00000300)	-0.00000190 (0.00000530)
avprecipitation	-0.0214 (0.0428)	-0.0214 (0.0418)	-0.0206 (0.0442)	0.000276*** (0.0000868)
EU			-79.26 (169.7)	
Time FE	No	Yes	No	No
Post Reform	Yes	No	Yes	Yes
Trend	Yes	No	No	Yes
Country/Commodity FE	No	No	Yes	No
<i>N</i>	240	240	240	240

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Figure 11. Anticipatory effects

(1)	
Emissions	
Mcsharry	-7650.7* (3872.7)
LedMcsharry	2567.3 (2032.5)
Led2Mcsharry	-3728.5 (2316.4)
<i>N</i>	240
Standard errors in parentheses	
* p<0.1, ** p<0.05, *** p<0.01	

Moving to the test for anticipatory effects, Figure 11 shows the absence of any anticipatory effects in the years before the reform. This result is particularly interesting if compared with the presence of anticipatory effects in the production regression. I interpret the difference as follows: an anticipatory effect was present in the production regression for 1992 because intervention prices were already decreased (by 169 to 154 Euro/ton) during the year before the final implementation of the reform; therefore the real driver for reductions in production was the cut in intervention prices. This cut, however, does not result in an anticipatory decrease in emissions for two

reasons. The first relates to the fact that the measure of emissions incorporates the overall agricultural sector; therefore, even if a partial reduction took place in 1992 for the cereal sector, its magnitude might be too small to be significant. The second, which is not alternative but complementary to the first one, explains the reduction in emissions as the effect of the compulsory set-aside which, although binding just for the cereal arable land, determined a withdrawal of a significant portion of arable land from production. Hence the decrease in emissions has been triggered mainly by the introduction of a compulsory set-aside, and only possibly by an extensification of the production process triggered by the further reduction in the intervention price. However, it is difficult to disentangle the specific effect of each of the two measures. To conclude, the fact that the reform affected only the cereal sector suggests that if a similar measure was taken in every sector, the reduction in emission could have been even stronger.

Figure 12. Common trend assumption. Graph Analysis

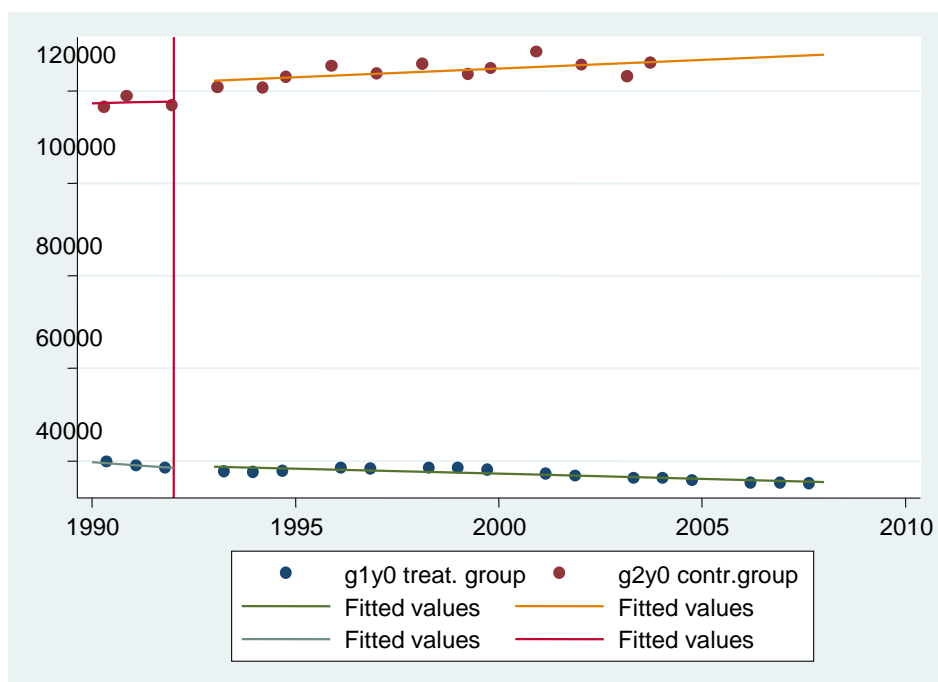


Figure 13. Common trend assumption. Econometric test

	(1)
	Emissions
int1990	4626.2 (2978.0)
int1991	2883.9 (1696.9)
int1992	1678.8 (1303.3)
<i>N</i>	60

Standard errors in parentheses
 * p<0.1, ** p<0.05, *** p<0.01

Finally, figure 12 shows the graph for the common trend assumption before the reform, whereas figure 13 provides the results of the econometric test specified in equation (1)¹¹⁵. It seems that the common trend assumption pre-reform holds and that, after the reform, emissions start to increase for the control group, whereas they decrease for the treatment group. The econometric test confirms these results, substantially validating the common trend assumption pre-reform since all the coefficients on the B_t coefficient in (1) are insignificant. Therefore, the use of a difference-in-difference estimator seems to be appropriate and validates the prediction that the Mac

¹¹⁵ As before, g1y0 expresses the weighted average of emissions levels for the treatment group, whereas g2y0 provides the same measure for the control group.

Sharry reform, through the reduction of intervention prices and, mainly, through the adoption of a set-aside scheme, was effective in reducing the GHG emissions for the overall agricultural sector.

Mac Sharry reform: effects on input use and environmental efficiency

Coming to the effects of Mac Sharry's reform on input use, the theoretical arguments suggested that this might have occurred as a consequence of both the reduction in the intervention prices (and the consequent extensification of the productive system) and the introduction of the set aside that suddenly implied the withdrawal of a consistent proportion of arable land from productive use. However, as reported in the IEEP paper (2008) the set aside might have determined a parallel increase in input use on the residual arable land, with an ambiguous overall effect.

Figure 15 shows the result of the main regression and all the four models show a negative and significant coefficient for the interaction term. However, as the graph in figure 16 suggests¹¹⁶, the common trend assumption before the reform does not hold. The econometric test in figure 17 shows that the B_t coefficients before 1993 are not equal to 0. Therefore, the difference-in-difference estimator leads to biased estimates and cannot be used to test the effects of the reform.

¹¹⁶ g1y0 expresses the weighted average of fertilisers' consumption for the treatment group, whereas g2y0 provides the same measure for the control group.

Figure 15. Fertilisers consumption regression in levels

	FE		Pool	RE
	(1)	(2)	(3)	(4)
	Post & Trend	Time FE	Post	Post
Fprice	0.00548 (0.13)	-0.549 (-1.06)	-0.0819** (-2.20)	0.00545 (0.12)
Mcsharry	-916.1** (-2.91)	-916.1** (-2.84)	-915.9** (-2.61)	-919.7*** (-2.91)
Gdpcapita	0.0413* (1.82)	0.0446 (1.66)	-0.00703 (-0.70)	0.0431* (1.83)
EU			855.1*** (3.69)	
Time FE	No	Yes	No	No
Post Reform	Yes	No	Yes	Yes
Trend	Yes	No	No	Yes
Country/Commodity FE	No	No	Yes	No
<i>N</i>	300	300	300	300

t statistics in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Figure 16. Common trend assumption. Graph analysis

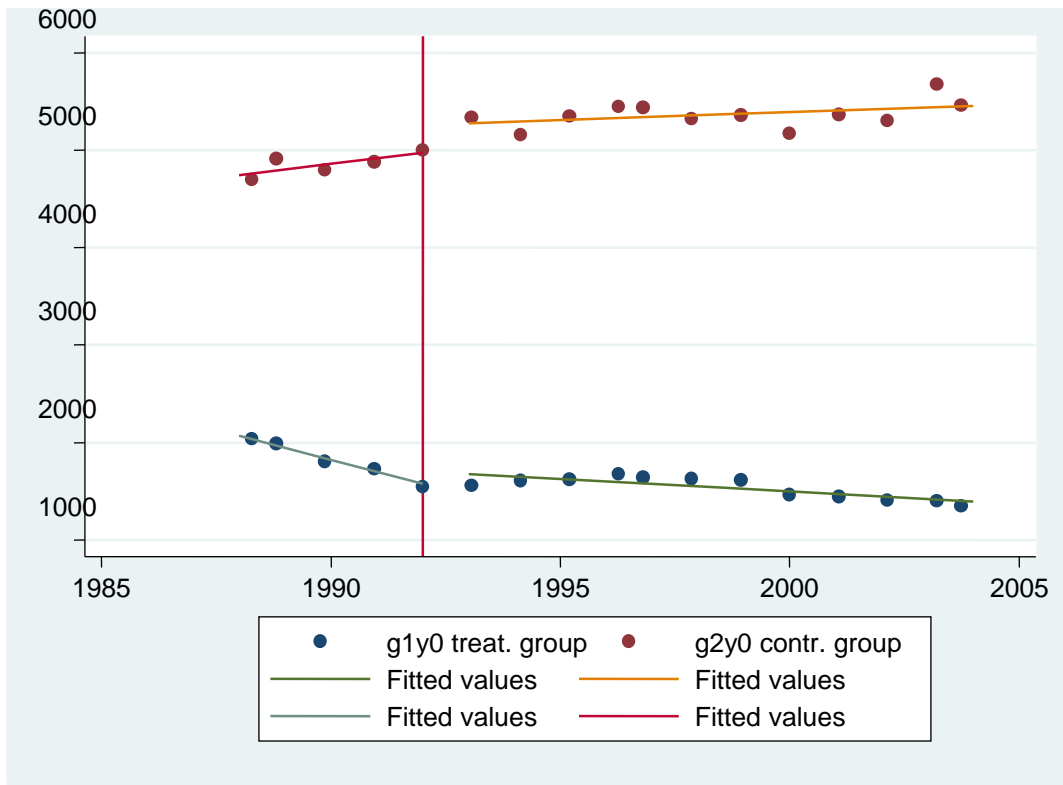


Figure 17. Common trend assumption. Econometric test

	(1)
	Fertcons
int1987	-187.5*
	(99.15)
int1988	-138.8
	(110.9)
int1989	-396.2
	(289.5)
int1990	-436.1
	(332.4)
int1991	-561.5
	(377.5)
int1992	-875.0*
	(424.8)
fprice	1.089
	(1.083)
gdpcapita	-0.0913
	(0.143)

<i>N</i>	105
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Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

To conclude, the only fact that seems evident from a simple graph analysis is that, whereas the input use had been constantly increasing in the control group, the treatment group had experienced a significant decrease from the beginning of the time period. However, there is no empirical evidence of any effect of the reform on the input use. Coming back to our theoretical hypothesis this particular feature could be the result of the phenomenon I described above as a potential counteracting force with respect to input reductions. On the one hand we have said that both price reduction and the compulsory set aside should have decreased input use. On the other hand it might be the case that the farmers increased the level of input use on the land still under cultivation with an overall reduction too small to be statistically significant and captured by the model.

Moving to the analysis of our measure of environmental inefficiency, I constructed an approximate measure of ‘environmental efficiency’ that consists in dividing total agricultural production (in tons) by emissions (in tons) I followed the aforementioned methodology to investigate the effects of both the reforms. However, as Figure 18 and 19 show the common trend assumption does not hold either before 1993, or before 2006¹¹⁷. Hence, a simple graph analysis depicts that a difference-in-difference estimator would lead to biased estimates and the results would not be presented since they would be theoretically inaccurate. It is still possible, however, draw some conclusions looking at the trend in both the treatment and in the control group. Particularly, it seems that my measure of efficiency has constantly increased over the last 20 years for the 10 European countries analysed: emissions have decreased substantially whereas the total production remained stable or even increased (as reported for the cereal sector), resulting in an overall increase of efficiency. On the other hand, this measure of efficiency has been substantially stable in the control group, suggesting that the reforms that occurred in the European Union might have had a positive effect in boosting efficiency. Indeed, had we observed a similar raise in efficiency also in the control group it would have been more logical to find its reason in some factor (like for example a new and better fertiliser or a new production technique) that affected cereal production across the world; the fact that this measure of efficiency grows only in the EU, instead, seems to suggest an impact of the reform.

¹¹⁷ g1y0 expresses the weighted average of my measure of ‘environmental efficiency’ for the treatment group, whereas g2y0 provides the same measure for the control group.

Figure 18. Testing the common trend assumption for Mac Sharry.

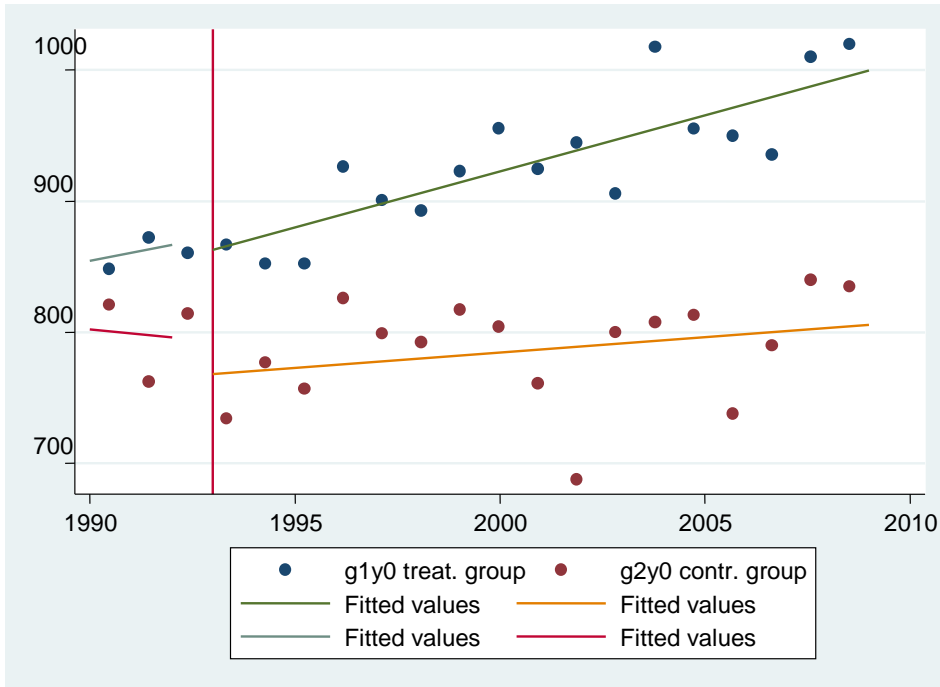
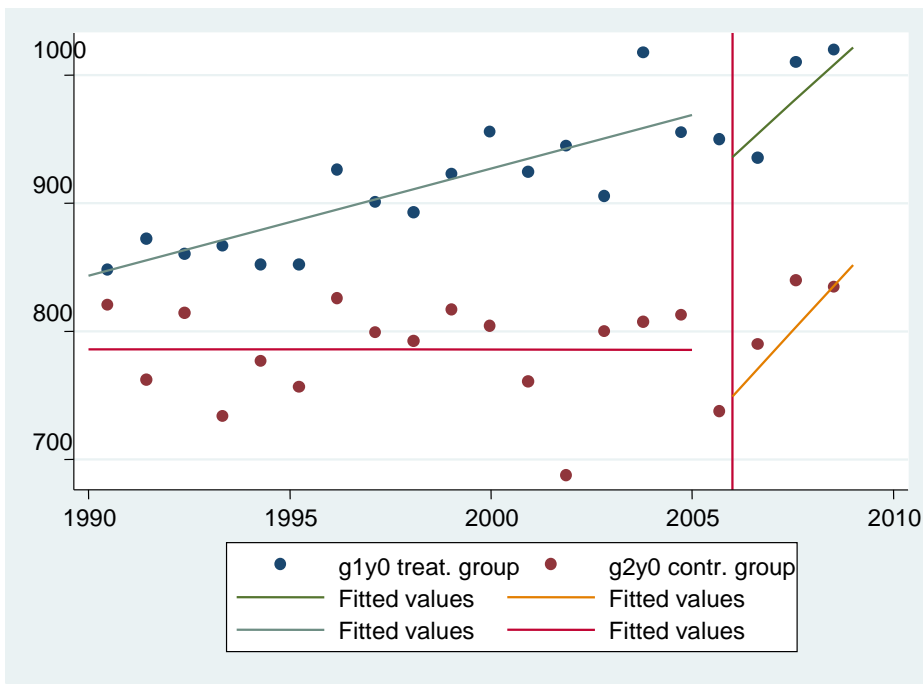


Figure 19. Testing the common trend assumption for Fischler.



Fischler reform

As regards the Fischler reform, approved in 2003 and finally implemented in 2006, its main changes consist in an attempt to fully decouple the direct payments under the first pillar of the CAP and in the introduction of environmental standards to be respected in order to receive the payments (cross-compliance).

As anticipated, the reform of the direct payments and the introduction of the Single Payment Scheme was meant to end the link between the level of subsidy and the current type of production. Each European country had the choice between adopting an “historical” or a “regional” model for the allocation of payments under the I pillar. Under the historical model every payment per hectare depended on the amounts of payments received in the reference period (2000-2002). Hence the level of payment per hectare was already fixed and not affecting the production decisions in the present time. Under the regional model a flat rate per hectare was fixed in every region and therefore had no impact on the type of crop under cultivation.

Another main feature of the SPS was the introduction of GAEC¹¹⁸ standards which subordinated the payments to the fulfilment of standards regarding agricultural and environmental practice. Respecting GAEC standards was the only condition for the reception of the payments. Hence, production was not compulsory in order to benefit from the SPS. That was a main innovation of the SPS that aimed at eliminating any form of distortions on production

¹¹⁸ Good Agro-Environmental Conditions.

decisions. Another expected effect of the introduction of GAEC standards is a beneficial effect on some environmental indicators (especially water and air quality and the level of greenhouse gas emissions, GHG) due to the conditionality of SPS payments. However, as we will see from the literature review on the environmental effects of the Fischler reform, decoupling might trigger negative effects on some environmental public goods as agricultural production declined on marginal land with potentially negative effects in terms of management of the agricultural landscape, water systems and fire and soil erosion prevention.

Literature review

Decoupling payments have been a major area of research in agricultural economics in the last twenty years, as different countries tried to implement policies which managed to fulfil the goal of sustaining farm incomes without distorting production decisions. Regarding the CAP I described the progression from price support to still partially coupled direct payments (under Mac Sharry) to the fully decoupled payments under Fischler reform. I will proceed providing some of the main findings of the recent literature on the topic and then moving on to studies that directly examined the European situation. Then, the main empirical findings of the present research will be outlined and analysed in light of the findings in the existing literature.

Starting from the general literature about decoupled payment, as Beard and Swinbank (2001)¹¹⁹ note, several nation introduced progressively more decoupled payments starting from the early eighties and at least a partial decoupling of national agricultural policy became a milestone of the Uruguay round negotiations of the GATT. The idea was that in order to liberalize trade in the agricultural sector, policies that created distortions on production decisions and hence increase internal production artificially would have had negative spill-overs on other nation via a reduction of the international prices. The central assumption regarding decoupled direct payments in fact was their ability not to influence production decisions. Agricultural economists have faced the problem from both a theoretical and an empirical perspective, finding contrasting results on both fields.

From a theoretical point of view there are at least three different explanations of how decoupled direct payments could still affect production decisions.

The first is the assumption that farmers might have a non-constant (specifically decreasing in wealth) risk aversion.¹²⁰ In particular, farmers are assumed to be more inclined to make risky (but possibly more productive) investments as their level of wealth increases. Hence, direct payment could still boost production via a wealth effect as the farmer might undertake investments that he wouldn't have made in absence of the direct payments..

¹¹⁹ Beard, N., Swinbank,A. "Decoupled payments to facilitate CAP reform", Food Policy 26 (2001).

¹²⁰ Hennessy, D. A. 1998. The Production Effects of Agricultural Income Support Policies under Uncertainty. *American Journal of Agricultural Economics* 80(1): 46–57.

The second argument follows the assumption of imperfect credit markets and credit constrained farmers. In such a situation an hypothetical farmer willing to make a new productive investment might not be given the capital required because of imperfect credit market. Direct payments would hence enable farmers to sustain short term liquidity needs or undertake long term investment. By increasing land values and the collateral they might ease the credit constrain therefore allowing for greater investment and output.¹²¹ In this scenario the payments help the farmer undertaking the investments both directly and indirectly through the raise in land values and collateral that would boost the farmer's likelihood to be allowed a loan from a bank.

The third argument used to explain a potential production non-neutrality of decoupled direct payments regards household labour allocation.¹²² The idea is that getting more money would create the incentive for households to decrease off-farm labour allocation and work more on their farm with the predictable result of an increase in output.

Having clarified theoretically the potential channels through which decoupled payments could still affect production, the empirical literature finds contrasting results. For instance, Serra, Godwin and Featherstone (2011)¹²³ find empirical evidence of risk aversion decreasing in wealth. On the other hand, the estimated elasticity between direct payments and agricultural output seems to be negligible, suggesting that the argument, even if valid

¹²¹ Roe, T., A. Somwaru, and X. Diao. 2003. Do Direct Payments Have Intertemporal Effects on US Agriculture? In *Government Policy and Farmland Markets*, ed. C. B. Moss and A. Schmitz 115–139. Ames, IA: Iowa State Press.

¹²² A. Hearn, M., El-Osta, H. and Dewbre, J. 'The impact of coupled and decoupled government subsidies on off-farm labor participation of U.S. farm operators', *American Journal of Agricultural Economics*, Vol. 88, (2006) pp. 393–408

¹²³ Serra, T., B. K. Goodwin, and A. Featherstone. 2011. Risk Behavior in the Presence of Government Programs. *Journal of Econometrics* 162(1): 18–24.

from a theoretical point of view could not explain the non-neutrality of direct payments on production, assuming that the phenomenon is actually real (and measurable). A recent paper of Bakhshy and Gray (2012)¹²⁴ analyses the Canadian case and finds consistent acreage responses to the introduction of decoupled payments, with consequent non-neutral effects on production. Key et al (2005)¹²⁵ analyse the US 1996 FAIR act comparing acreage and farm size growth between farms participating or not in the federal agricultural program; their result also suggest a positive production effect of decoupled payments. On the other hand, Godwin and Misra (2006)¹²⁶ results on the effects of the FAIR act suggest that production effects, even if positive and significant, are very modest and that probit estimations show that decoupled payments do not influence the likelihood that farmers will acquire more land.

Regarding the studies on decoupled payments in the European Union a previous word of warning has to be spent since normally the objective of the research is not to test whether the SPS still has production effects but whether it reduced them in comparison with the pre-reform scenario. This feature will characterize also my empirical tests on production and on emission which in fact will have to be interpreted as a further reinforcement of the negative effects on the two dependent variables already found for the Mc Sharry reform.

¹²⁴ Bakhshy, R. S. Gray 'Acreage response to whole farm income stabilisation programs' *Journal of Agricultural Economics*, Vol. 63, No. 2, 2012, 385–407

¹²⁵ Key, N., R. N. Lubowski and M. J. Roberts, 'Farm-level production effects from participation in government commodity programs: did the 1996 federal agricultural improvement and reform act make a difference?' *American Journal of Agricultural Economics*, Vol. 87, (2005) pp. 1211-1219.

¹²⁶ Goodwin, B. K. and A. K. Mishra. 'Are "Decoupled" Farm Payments Really Decoupled? An Empirical Evaluation'. *American Journal of Agricultural Economics* Vol. 88(1), 2006: 73–89.

Gohin (2006) analyses whether the Fischler reform actually reduced production incentives with respect to the previous, still partially coupled, Mac Sharry payments.¹²⁷ His findings confirm that Fischler reform has increased the level of decoupling of direct payments, decreasing the production incentives with respect to the pre-reform scenario. Sckokai and Moro (2009) analyse the effect of the introduction of the SPS in the arable sector in terms of effects on farm investment and output.¹²⁸ Using a sample of Italian farms from the Farm Data Accountancy Network they find that, contrary to changes in intervention prices, policy changes not affecting price uncertainty (such as the SPS) do not have significant effects on production and hence can be considered almost totally decoupled.

Regarding the Fischler's reform effects on the environment, Schmid et al. (2007) state that the reform attempted to phase out environmentally harmful subsidies. However, it might be argued that the main scope of the further 'decoupling' was to induce farmers to take decisions based on market signals, whereas the positive effect on the environment would have been already included as a result of the Mac Sharry reform, being based on the extensification argument triggered by price cuts and on the set-aside. A positive effect in terms of GHG emission reduction might have been caused instead, by the conditionality for the payments under the first-pillar. Schmid et al. (2007) then compare the 2003 reform with what would have happened with a prosecution of the Agenda 2000 to isolate the effects of decoupling

¹²⁷ Gohin, A., 'Assessing CAP reform: Sensitivity of Modelling decoupled policies'. *Journal of Agricultural Economics*, Vol. 57 No. 3, 2006, 415-440.

¹²⁸ Sckokai, P., D. Moro 'Modelling the impact of the Single Farm Payment on farm investment and output'. *European Review of Agricultural Economics*, Vol. 6, No. 3, 2009, pp 395-423.

and cross compliance. They conclude that “OECD indicators measuring soil fertility, air pollution and water quality show diminishing pressures on the environment” arguing that “this is mainly due to changing land uses (expansion of grassland while arable land is reduced)”. This expansion of the grass land can be interpreted as a consequence of the decoupling; in fact, direct payments under the previous set-up were still linked with the type of production, implying that production was taking place. Conversely, the single payment scheme introduced between 2004 and 2006 does not require the farmer to sow any crop and consequently allows converting the less productive fields into grassland.

Sorrentino et al. (2011) highlight how decoupling has led to efficiency gains since farmers abandoned crops made artificially profitable by the direct payments and the premiums given for certain productions. Additionally, they claim that the cross-compliance requirements might have had a role in reducing the pressure on the environment even though, since the requirements were not particularly strict, their function has been more linked to the necessity to justify the presence of the single payment scheme rather than to trigger substantial changes in the productive system.

To conclude, Brady (2010) analyses the effect of the Fischler reform with a dynamic agent-based modelling with the AgriPoliS model. Decoupling effects are ambiguous. In fact, the absence of any requirement to produce seems to have determined an abandonment of marginal lands, resulting in losses in terms of landscape values, soil erosion and vulnerability to floods and fires. Nevertheless, decoupling has certainly triggered an increase in

efficiency since farmers have now got the capacity to choose not only what to produce but also whether to produce or not, abandoning marginal lands.

From the results provided by these studies the predicted effects of the Fischler reform are a further reduction in cereal production and GHG emissions and a possible increase in the 'environmental efficiency' of the productive system. Regarding the effects on environmental indicators other than air and water pollution or GHG emission, the reform is likely to have had negative effect but it is difficult to capture this effects and this is not the scope of the present research where just the effects on the overall level of GHG emissions is taken into account. Moreover, the SPS should have led to production decisions made on market prices rather than administratively set intervention prices. This final robustness test, already carried out after 1993, should be more likely to be significant for the single payment scheme since the partially coupled payments introduced by Mac Sharry still affected the relative price of eligible crops, leading to still distorted production decisions.

Fischler reform: effects on production

Coming to the analysis of the effects of the Fischler reform, I perform the test specified in equation (6), which is reported in Figure 20. The coefficient on the Fischler's interaction term is insignificant, therefore there is no evidence that this reform triggered any further change in the production levels for cereals. This result contradicts partially the existing literature. However, it should be noted that the design of this test is slightly different from the mentioned papers of production effects of decoupled payments: in fact, the present test tries to depict the additional negative production effect of a further reform of direct payments. The findings should be interpreted in the sense that since the main driver for a reduction in production is the cut in intervention prices, this happened already for the cereal sector in 1993 and that Mac Sharry payments already triggered a substantial production reduction. However, from a theoretical perspective there should have been a further reduction if Mac Sharry payments were disproportionately high for the cereal sector in comparison with the ones progressively introduced in the other sectors. In this case, cereal production would still have been distorted and the decoupling implemented in 2006 could have freed land from cereal production; however, these results show that this hypothesis is not statistically significant.

Before I move on with the results on emission, I would like to stress the partial efficacy of this test to depict the effects of decoupled payments. With this procedure we would capture the difference between Mac Sharry and

Fischler payments on cereal production just assuming no other payments per hectare were present for the other commodities. In that case, if Fischler payments were fully decoupled, we could capture their reducing effect on production. However, as in the present case, cereal were not the only commodity that benefited from per hectare payments in the pre-reform scenario; hence the relative reduction of cereal production depends mainly on the difference between per hectare payments of cereals and concurrent products prior to the reform: if that difference was high (hence cereal premium were disproportionately high and cereal production over incentivized) switching to payments decoupled from the type of production would have triggered a relative reduction in cereal production (in favour to concurrent ones) that my model would have captured. If the pre-reform difference was small, however, the relative reduction of cereal production would be small and the model could fail to capture it, as actually happens in my regression. This feature might explain the difference from my results and the ones found in the existing literature.

To sum up, I believe the results of my empirical tests on production prove that the main (reducing) effect on production has been the decoupling of payments from the level of production and that happened with the Mac Sharry payments. Reducing intervention price has reduced the incentive to maximize production and this effect is clearly depicted in my empirical test. Regarding the effects of decoupling the payments from the type of production, I believe that what happened is that the differential between different commodity premiums before the Fischler reform was not big enough to trigger a further shift away from cereal production.

Hence I will conclude that even if theoretically partially coupled payments like the ones under Mac Sharry could affect production, the fact that the differential between different commodity premiums was not significant explains why we do not observe a further reduction of cereal production after the implementation of the Fischler reform.

Figure 20. Production regressions in levels for Fischler reform

	FE		Pool	RE
	(1)	(2)	(3)	(4)
	Post & Trend	Time FE	Post	Post
Prices	0.156 (2.160)	0.195 (3.458)	-0.239 (2.243)	0.204 (2.098)
Macsharry	- 1701.5 ** (789.1)	- 1788.4** (748.2)	-1805.8** (834.2)	-1401.0* (809.2)
Gdpcapita	0.0253 (0.0376)	0.0309 (0.0412)	0.0619* (0.0316)	0.0255 (0.0419)
Fertcons	-0.665 (0.452)	-0.753 (0.481)	-0.717 (0.475)	-0.406 (0.389)
DtFischler	1268.3 (901.3)		-1168.8 (915.9)	-1298.7 (884.4)
Fischler	538.4 (593.9)	509.6 (605.0)	498.9 (610.4)	614.2 (580.4)
EU			9879.2*** (534.7)	
Time FE	No	Yes	No	No
DtMacSharry	Yes	No	Yes	Yes
Trend	Yes	No	No	Yes
Country/Com modity FE	No	No	Yes	No
<i>N</i>	792	792	792	792

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Fischler reform: effects on emissions.

Figure 21 provides the results for the test of Fischler's reform. The coefficient on its interaction term is negative and significant (at the 5% level). As stated in the methodology I have to interpret it as a further decrease in trend; Fischler's reform determined a further decrease in trend equal to -3147.9 tons per year. Instead the overall effect of the two reforms after 2006 amounts to a reduction of almost 10337.5 tons per year in comparison with the control group. It could be argued that this further reduction in emissions is due to two main factors. First of all, the implementation of the direct payments in substitution of intervention prices for almost every commodity could have determined the extensification effect predicted by Sorrentino et al. (2011); moreover, a characteristic of the Fischler reform is the introduction of an environmental cross compliance in order to beneficiate from direct payments and that might have had a determinant role as well.

Figure 14. Emission regression for Fischler

	(1) Emissions
fprice	-0.104 (0.0908)
totalproductionth	0.110*** (0.0268)
Dt	7059.3* (4196.8)
year	-369.9 (265.0)
Mcsharry	-7758.6* (4022.7)
DtFischler	1109.9 (1050.5)
Fischler	-3147.9** (1225.7)
gdpcapita	0.278 (0.243)
avprecipitation	36.46*** (7.469)
<i>N</i>	300

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Robustness check.

In this final paragraph, my attempt is to verify whether production decisions in the cereal sector are determined by intervention prices or by market prices. In fact, part of the reasoning about the effects of the Mac Sharry and Fischler reform is centred on the idea that cutting intervention prices and decoupling the direct payments from the type of production, farmers would have been encouraged to take decisions on the basis of international prices rather than administratively set intervention prices.

In order to test this prediction, I ran the following model, where cereal production is assumed to depend on prices and a set of controls (which includes gdp per capita, fertilisers' consumption and a linear time trend).

$$\begin{aligned} Y_{i,t} = & B_1(prices * NonEU) + B_2(ip * Z_t * EU) + B_3(prices * D_t * EU) \\ & + B_4(prices * Z_t * EU) + B_5(prices * B_t * EU) \\ & + B_6(ip * D_t * EU) + \delta' X_{i,t} + \alpha_i + \varepsilon_{i,t} \end{aligned} \quad (7)$$

Ip are the intervention prices, D_t a time dummy that goes to 1 after the implementation of the Mac Sharry reform, Z_t a time dummy equal to 1 for the years before 1993 and B_t is another time dummy that goes to 1 after the implementation of the Fischler reform. Theoretically, I expect intervention prices to be significant before 1993 and not after, whereas international prices should be insignificant before 1993. International prices might have become significant either after 1993 or 2005. In fact, the direct payments

introduced in 1993 as a compensation for the reduction in intervention prices were still partially coupled with the type of production. Therefore, Mac Sharry might not have been effective in triggering a shift in production decisions. Instead, Fischler's reform, introducing direct payments fully decoupled from production, should have led to production decisions fully based on international prices. The results are provided in Figure 20 and basically confirm the theoretical predictions. The coefficient on intervention prices happens to be highly significant (and positive) before 1993 whereas international prices are insignificant. Intervention prices are still significant, even if just at the 5% level, after the implementation of the Mac Sharry reform, suggesting that the persistent coupling between direct payments and type of production avoided the shift towards production decisions based on international prices. For the period before Mac Sharry we can interpret the coefficient on ip saying that a unit increase in the intervention prices (*ceteris paribus*) determines an increase in production of 118.5 thousand tons. International prices become significant after 2005: the full decoupling of direct payments triggers the shift of production decisions, now based on international prices.

A word of warning has to be spent interpreting the negative coefficient on prices; in theory, we would expect production to depend positively on prices but, as a matter of fact, the two variables are endogenous: prices determine production but production determines prices. A negative coefficient on prices might be the result of a Cobweb model, where farmers take decisions looking at past prices: if those were high, farmers would increase production and the relative overproduction in the following period would trigger a

reduction in prices, explaining the estimated negative coefficient. Obviously, this does not hold for the intervention prices that, being already known by the farmers also for the following year, should keep the predicted (and positive) relation with production levels.

This interpretation would be consistent with the literature that explains price fluctuations as a phenomenon which has to be considered as endogenous to the agricultural market (e.g., Ezekiel 1938; Day and Hanson 1991, Finkenstadt and Kuhbier 1992, Boussard 1996, Hommes 1998, Athanasiou et al 2008). In this literature price fluctuations in which erroneous expectations might lead to either over or under-supply. Another interesting extension of the cobweb model is the recent contribute of Mitra and Boussard (2012), which analyses the effect of storage on price fluctuations, providing a further extension of the Cobweb model.

All these recent extension of the Cobweb model refined the original, simplistic prediction of the model first introduced by Ezekiel and overcome some of its limitation. In particular, the idea that price fluctuation can be recurrent, as it seems also in my empirical analysis as indicated by the negative and significant coefficient on international prices after the Fischler reform, has been questioned, based on the idea that if fluctuations are recurrent, some agent in the market would recognize that this is the case and try to take advantage of them, with the effect of eliminating this regular fluctuation.

Figure 20. robustness regression

	(1)
	Productionth
pricesnonEU	-3.554 (5.021)
Ip*Zt*EU (Intervention prices in EU pre MacSharry)	118.5*** (40.10)
Prices*Dt*EU (International prices in EU post MacSharry)	10.94 (12.24)
Prices*Zt*EU (International prices in EU pre MacSharry)	-11.58 (14.70)
Ip*Dt*EU (Intervention prices in EU post MacSharry)	117.1** (58.53)
Prices*Bt*EU (International prices in EU post Fischler)	-19.76*** (7.584)
Gdpcapita	0.592*** (0.146)
Fertilizers' consumption	-0.616 (0.591)
Year	-156.9 (158.5)
<i>N</i>	984

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

2.4 Conclusions.

This empirical research provides evidence of the positive effects of both Mac Sharry and Fischler reforms. In particular the Mac Sharry reform was a fundamental step in overcoming the overproduction problem in the cereal sector and its success suggests that the reforms taken in the following years in the remaining sectors might have had the same effect. Besides the effectiveness of the reform in triggering a relative decrease in production, its specific set up, substituting market support mechanism with direct payments de-linked from the amount produced was successful in solving the budgetary crisis that characterized the CAP in the eighties, since its origins have been traced in the distortive incentives created by high administratively set intervention prices. The Fischler reform seems not to have reinforced the reduction in cereal production, leaving us with the conviction that the real trigger of production reductions was the cut in intervention prices and the introduction of direct payments, even if not fully decoupled. More precisely, the results suggest that the cereal premium that cereal had in comparison with concurrent crops during the period from Mac Sharry's and Fischler's reform implementations was not big enough to trigger a sensible reduction of cereal production when Fischler reform decoupled payments not only from the level but also from the type of production.

The Mac sharry reform was also fundamental in reducing the amount of GHG from agriculture and it seems that especially the set aside has been the real determinant of the reductions. The Fischler reform determined a further

reduction in the emission levels but it is difficult to disentangle which measure has been the main driver between the full decoupling of direct payments and the introduction of the cross compliance to receive the payments in the first place.

The test on input use, carried out as a proxy of environmental goods that are difficult to measure as soil erosion, water pollution and so on, does not show any evidence for both the reforms. However, the simple graph analysis in Figure 16 shows a constant decrease in input use for the treatment group that happens together with a substantial increase in fertilisers' consumption in the control group. The test on our measure of efficiency again shows no econometric evidence, but the graph analysis suggests that the ratio between total agricultural production and emissions has been constantly increasing in Europe, whereas it has been stable for the other five countries analysed, suggesting a likely positive impact of the cycle of reforms in the European Union.

Finally, the robustness check has shown that progressively farmers' decisions have become based on international prices, with a fundamental role for the fully decoupled SPS introduced with the Fischler reform. This is an important result of the present empirical analysis as it clearly shows that intervention prices are not a driver of farmers' production decision anymore. It can be used to argue that Fischler's reform has succeeded in achieving a fully decoupling of direct payments. In fact, this robustness check is more effective than the test on production levels to argue that the SPS introduced by Fischler has achieved a full decoupling.

PART III.

PERSPECTIVES OF REFORM.

**ANALYSIS OF THE UPCOMING REFORM OF THE SINGLE
PAYMENT SCHEME.**

Introduction

With the Communication “The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future”¹²⁹ of November 2010, the Commission outlined the steps to take for a further reform of the CAP for the post 2013. After three years of discussion and the circulation of the official Commission legal proposals,¹³⁰ a political agreement was reached the 26th of June 2013, outlining the core elements of the future CAP. The guidelines of the reform regarding the main area of interest of the present thesis (the reform of the direct payments, namely the SPS, as the main tool affecting the cereal sector) have been stated clearly. Finally, on 16 December 2013 the Council of EU Agriculture Ministers formally adopted the four basic regulations for the reformed CAP and the transition rules for 2014. The next step will be the approval of the national options. Indeed, due to the delays in the reform process, the new CAP will be fully operational only from 2015. For the scope of the present thesis, the regulation of interest is the n° 1307/2013 of 17 December 2013, which establishes the new rules for direct payments to farmers.¹³¹

The ambition of this brief conclusion is to outline the main innovations of the system of direct payments after 2013 and to comment on their expected

¹²⁹ European Commission, “The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future”, COM 672, (2010), final

¹³⁰ European Commission, “Proposal for a regulation of the European Parliament and of the Council establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy”, COM 625 final/2, 2011

¹³¹ Regulation (EU) No 1307/2013 of 17 December 2013 establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No 73/2009.

effects. This preliminary analysis will be based on the results of the impact assessment conducted by the Commission and other available pieces of quantitative and qualitative evidence.

Communication “The CAP towards 2020”

Commission’s Communication 672 of 2010 officially started the process of reform of the CAP with the aim of reaching a reform for the post 2013 period. The communication was completed after an extensive public debate that took place in the first months of 2010. The desire of the agricultural organisations was to maintain a strong agricultural policy and the current division in two pillars, hence keeping direct payments (pillar I) as a substantial component of the overall policy. On the other hand, there were consistent pressures to proceed with a more ambitious reform of the CAP that would have possibly implied even the complete abolishment of the first pillar with a consequent reutilisation of its funds within the second pillar. Other important issues that were stressed were to guarantee long term food security, food quality and, again as a main concern of farmers’ representatives, to maintain and even create new employment opportunities in the agricultural sector.

The document stressed that the reform path undertaken at the beginning of the nineties had contributed to the improvement of the competitiveness of European agriculture, to create a more effective tool to sustain farm incomes and to promote a greener agricultural policy. However a further reform is necessary to better achieve the same goals and to correct some limitations of the current set up. In particular, regarding the extent of the present research, the Commission highlighted the need to analyse further the efficacy of the SPS. Even if the Single Payment Scheme was introduced recently, the concerns about its limits regards different aspects:

- the disproportion of the level of payments per hectare between farmers both within the same country and, especially, between different countries, with the new members currently receiving a reduced level of agricultural payments. This has been both the result of the implementation of the ‘historical’ version of the SPS¹³² by the old members that still benefited from payments per hectare based on the 2000-2002 reference period, but especially regarded the situation of the countries that joined the European Union from 2004 onwards, who were systematically allocated lower level of payments per hectare in comparison with the old members.

- the extent to which the GAEC standards have been a sufficient conditionality to promote a more environmental model of European agriculture. In fact, considering that one of the main goal of the Commission for the post 2013 CAP is the greening of the policy and that the SPS absorbs the largest share of CAP expenditure, the fact that GAEC standards are considered to be quite lenient in terms of environmental requirements implies that a tightening of these standards might contribute to a considerable greening of the policy.

- another main issue, raised by farmer organisation, is the fact that the SPS largely beneficiates inactive farmers, which we can define in two ways: people that use land outside agriculture and absent landowners that rent out land for agricultural use. Regarding the first category, farmers’ organisations

¹³² Even for the countries (the vast majority) that opted for the adoption of the regional model with the Fischler reform it has to be said that the per hectare payments established by the Fischler reform were somehow linked to the amount that farmers used to receive under the previous set up; hence, carrying on the disproportions in direct payments typical of the “old” CAP.

have highlighted that the requirement of simply respecting GAEC standards actually allow landowners that use land for other form of production besides farming (such as trees cultivation, production of renewable energies but even extreme cases such as airports and sport centers) to benefit from CAP payments; that subtract funds that could otherwise be used to support farmers' income, which is still lagging behind non-agricultural income regardless the improvements of the last twenty years. However, the main complaint of farmers' organization is that it is quite common that absent landowners own the entitlement to receive the direct payments: hence, the farmer that is actually cultivating the land does not benefit from direct payments as a form of income support. The classic example is the paradox that the largest recipient of direct payments in Europe is the Queen of England, which actually does not need such type of income support.

In its first Communication the Commission tried to address the issue of the reform of direct payments alongside with new proposals regarding market measures for risk management and an enhanced rural development policy. the Commission outlined three possible scenarios of reform for each of the three areas. I will present the three different policy scenarios regarding the reform of the direct payments and ignore largely the other two areas as this is the specific area of interest of the present research.

The three policy scenarios outlined by the Commission take completely different approaches and can be represented on a continuum between conservation and innovation.

Scenario 1 was the most conservative and regarding direct payments the only innovation would be to introduce more equity in the distribution of direct payments between old and new member States. Besides this modification, the system would remain the same with no greening of the direct payments and no transfers of funds from the first to the II pillar to increase the available funds for the financing of measures closely and directly related to agro-environmental schemes, food quality and rural development (no modulation scenario).

The second scenario is in the middle of the continuum and implies redistribution of direct payments among member States (as in the first one). However, on the top of that it would significantly change the design of direct payments. The original intention of the Commission in the 2010 Communication was to have direct payments as actually composed by four parts:

- a basic proportion of the existing expenditure for pillar I would be allocated as a basic form of income support, with no conditionality attached.
- A compulsory additional aid for specific “green public goods”. That means that every farmer will be required to implement some agri-environmental actions with the certainty of being compensated for the additional supplementary costs he will sustain to carry out these actions. These measures would be compulsory and non-contractual since the aim of the Commission is to achieve some level of provision of public good directly from a better and more targeted use of direct payments. The idea is that since it is difficult to proceed with a substantial modulation (transfer of funds from the I to the II pillar to finance specific agro-environmental measures) the

direct greening of at least a substantial part of the I pillar might be an alternative effective way to achieve the desired level of public goods.

- Additional payments to compensate for region specific natural constrains and some other voluntary coupled support component for sectors that are characteristic in some disadvantaged regions.

- A specific support for young farmers aimed at incentivising employment in the sector.

The third scenario was based on the idea that direct payments are not an effective way to address the overall goal of achieving a more environmentally friendly agriculture able to provide a large amount of environmental public goods. It is based on the phasing out of direct payments in their current form, providing instead limited and targeted payments for the provision of public goods and to sustain farm incomes in regions with evident natural constrains. The third scenario clearly follows the most radical approach for reforming the CAP and also implies the abolishment of all market measures besides some income support systems in case of severe crises.

It is clear that the three policy scenario define distinct and concurrent views on how the Common Agricultural Policy should be designed after 2013. It is also easily recognizable that the most radical approach described in scenario three would actually trigger a drastic change of the existing policy framework and there is no surprise that main farmers' organisations have repeatedly stressed the importance to maintain the current structure in two pillars.

After more than one year from the publication of the Communication, the Commission approved the legal proposals for the CAP post 2013, which I will present in the following paragraph.

Legal proposals for the CAP after 2013.

A basic preliminary analysis of the legal proposals that the Commission approved in October 2011 shows that the scenario number three, which would imply a drastic redefinition of the CAP and in particular a phasing out of the direct payments under the first pillar has been excluded from the set of the available alternatives. The Commission itself in fact proposed to keep the current division into two pillars. Given that the Commission is historically the actor that has taken the most drastic positions regarding the reform process, the fact that scenario number three has been already excluded with the publication of the official proposals means that the CAP for the post 2013 will largely reflect the actual structure. In fact, it is evident that the policy framework which emerges resemble closely the scenario number two described above.

Regarding the structure of direct payments the new design seeks to exploit synergies with Pillar II building on the 2003 and Health Check reforms that decoupled payments from production and subordinating them to cross compliance requirements regarding rural and environmental practices. With the aim of enhancing the overall environmental performance of the CAP the Commission has defined a set of certain practices particularly beneficial for the environment and they will be compulsory for every farmer in order to receive a consistent part of the direct payments. This reflects clearly the approach of scenario number two where a compulsory aid for specific “green public goods” was intended to be a main instrument to transform payments under the I pillar into a measure usable to achieve also goals other than basic income support.

The legal proposals clarify the share of the different instruments under the direct payment:

- A basic payment for all farmers that will replace the actual Single Payment Scheme. This payment, intended as a basic payment per hectare, is meant to converge over time in order to reduce the distributional imbalances that are the result of the Fischler's reform calculation of direct payments, which we should recall was linked to a reference period (2000-2002) where the new members that joined the EU in 2004 (and in 2007) were not part of the EU yet. That implied that with their accession to the Union, due to budget constraints, they received proportionally less support per hectare. On the top of that, historical imbalances were already present for old members and the new basic payment schemes aims at reducing imbalances to a level where the most penalised region receives at least more than 75% of the Community average.

- A new greening component of direct payments that shall constitute up to 30% of the annual national ceilings of the payments under the I pillar. This means that in order to receive the full amount of direct payments the farmers will have to fulfil specific and region specific requirements in the following major areas: crop diversification, maintenance of permanent pastures and safeguard of ecological focus areas.

The part that describes crop diversification specified that whether the area is not left fallow or entirely cultivated with crops under water for a considerable part of the year cultivation should consist of at least three crops

in order to benefit from the additional payment.¹³³ Moreover, up to 5% of farmers' land could be converted into permanent grassland and 7% of the eligible hectares, besides the area allocated to permanent grassland, should constitute ecological focus area such as buffer strips, land left fallow, terraces, landscape features or afforested areas.

What is clear is that in order to benefit from the additional greening component of the direct payments the farmers will be required to fulfil some minimum requirements in terms of crop rotation and definition of ecological focus areas. This shows clearly how the Commission attempts to transfer into the I pillar a set of instrument that would have normally been under the second pillar and in particular under the axis 2 of the II pillar, which regards the agro-environmental schemes.

One of the goals of this final part is to comment on this political choice, establishing whether this inclusion of these instruments under the I pillar can be effective for the overall goal of achieving higher provision of public goods. On the other hand it has been claimed that this choice reveals instead the lack of political agreement on a more ambitious reform that would have drastically changed the set-up of the CAP or at least implied a high modulation/transfer of resources from the I to the II pillar.

- Up to 5% of annual national ceilings for direct payments could be allocated to farmers in areas facing specific natural constrains. This means that each country can decide to sustain producers on marginal land directly

¹³³ Mentioning the possibility for the land to be left fallow will be important when I come to the analysis of the political agreement on the future reform.

using funds from the I pillar with the predictable effect that the amount dedicated to this particular objective might increase.¹³⁴

- Up to 2% of annual national ceilings can be allocated to support the activities of young farmers.

After almost two years since the approval of the legal proposal, the European Parliament, the EU council of Ministers and the European Commission have reached an agreement on reforming the common agricultural policy post 2013. Commissioner Dacian Cioloș is convinced the agreement will lead to far-reaching changes: making direct payments fairer and environmentally focused, improving the competitiveness of European agriculture and strengthening the position of farmers within the food production chain.

¹³⁴ This element, together with the greening of a substantial amount of the funds under the I pillar has been criticised as a measure that might interfere with the goal of achieving a full decoupling. In fact, in my conclusions I will show how there is substantially a trade-off between achieving a full decoupling and using particular instruments to achieve a set of other goals such as income support and provision of environmental goods.

The Political agreement on new direction for the common agricultural policy and the regulation 1307/2013 of 17 December 2013 on the future of direct payments.

The political agreement clarified that the aim of making the CAP fairer implies the elimination of every historical reference in the mechanism used to compute the amount of direct payments. As is has been shown also the SPS system was largely based on reference periods prior to the access of the ten new East European member in 2004 (and Romania and Bulgaria in 2007) determining substantial imbalances in per hectare payments among States.

“Convergence” is an important objective of the reform and the agreement confirms the orientation already expressed in the legal proposals regarding the need to ensure that no single member State receives less than 75% of the Community average by 2019. Moreover, the agreement clarifies the convergence rules within countries and regions: in particular differences in the levels of per hectare payments will be reduced assuring that aid will not be less than 60% of the average per hectare aid allocated in a single administrative area. The political agreement clarifies that only active farmers will benefit from income support schemes.

Regarding the greening of the I pillar, the political agreement confirms the orientation of the legal proposals, stressing that 30% of direct payments will be linked to three environmentally-friendly farming practices: crop diversification, maintaining permanent grassland and conserving 5%, and later 7%, of areas of ecological interest as from 2018 or measures considered to have at least equivalent environmental benefits.

Finally, the regulation n° 1307/2013 largely confirms the outcomes of the legal proposals and clarifies better issues such as convergence, the capping of direct payments for the bigger beneficiaries and the controversial issue of the “active farmers”. The regulation also confirms the greening of the first pillar, which I will analyse in more detail in the next paragraphs.

As for the active farmers issue, it has been raised continuously by farmer organisation throughout the negotiations as one of the worst distortions of the previous policy framework. In this sense, the regulation shed light on the definition of active farmer, which is specified in article n° 4(2):

- “ (a) “farmer” means a natural or legal person, or a group of natural or legal persons.. .. whose holding is situated within the territorial scope of the Treaties, as defined in Article 52 TUE in conjunction with articles 349 and 355 TFEU, and who exercises an agricultural activity”.

Moreover, the same article defines agricultural activity as follows:

“agricultural activities” defined as follows:

- “Production, rearing or growing of agricultural products, including harvesting, milking, breeding animals, and keeping animals for farming purposes.
- Maintaining an agricultural area in a state which makes it suitable for grazing or cultivation without preparatory action going beyond usual agricultural methods and machineries, based on criteria established by Member States on the basis of a framework established by the Commission, or
- Carrying out a minimum activity, defined by Member States, on agricultural areas naturally kept in a state suitable for grazing or cultivation.”

Moreover, article 9 on “active farmers” also specifies that no payments should be corresponded to persons for which the amount of the direct payments would be lower than 5% of their income from non-agricultural activities. This additional measure is indeed aimed at excluding from the beneficiaries part time farmers that cannot claim to live off agriculture.

Coming to the convergence, it is regulated by article n°25 of the new regulation, that establishes: “Member States shall provide that, at the latest for claim year 2019, no payment entitlement shall have a unit value lower than 60 % of the national or regional unit value in 2019”, again, confirming the orientation already emerged in the legal proposals.

A final mention is dedicated to the “capping” of direct payments, which is regulated by article n° 11 that states that “ Member States shall reduce the amount of direct payments to be granted to a farmer pursuant Chapter 1 of Title III for a given calendar by at least 5% for the part exceeding EUR 150000”.

It is clear that with the capping of direct payment and, especially, with a better definition of the “active farmer”, the Commission has responded to the pressures of the farming organisations that have historically complained about the distortions in the repartition of direct payments. The capping is clearly aimed at reducing the overall level of support to bigger farmers, who are clearly big enough to survive with a lower level of subsidy, whereas the redefinition of the active farmer, even if somehow problematic especially regarding the criteria “Direct Paymet > 5% non- agricultural income” is at

least useful at excluding from the beneficiaries persons and legal persons that do not carry out any type of agricultural practice.

Preliminary analysis of the effectiveness of the proposed CAP reform

Given the very recent agreement on the future of the CAP post 2013 it is difficult to provide something more than a preliminary analysis of the likely effects of the reform. In the present research I will rely mainly on the impact assessment (2011)¹³⁵ carried out by the Commission after the approval of the legal proposals and on some independent studies, among which the work of Tangerman (2011)¹³⁶ stands out for the rigour of the analysis and for the independent and heterodox views expressed, especially regarding the analysis of the “greening” of direct payments. Another source of information is the OECD report “Disaggregated impacts of CAP reforms” (2011)¹³⁷ which provides quantitative and qualitative evidence on the effects of the 2003 and Health Check reforms but can be used to comment on the effects of the reform of the direct payments. Lastly, De Filippis et al (2012)¹³⁸ have produced an organic review of the new CAP set up and their contribution is essential to understand the economic impact of the reform on farmers’ welfare, which is crucial in the present analysis.

Considering that the aim of my research has been to prove whether successive reforms of the CAP has led to a more competitive agricultural sector (with payments completely decoupled from the level and the type of production) and whether they have helped reducing the environmental

¹³⁵ European Commission “Impact assessment. Common Agricultural Policy toward 2020”, SEC 1153 (2011) final.

¹³⁶ S. Tangermann, “Direct payments in the CAP post 2013”, Directorate General for Internal Policies. Policy Department B: structural and cohesion policies, European Parliament, 2011.

¹³⁷ OECD “Disaggregated impacts of CAP reforms”, OECD publications, Paris, 2011.

¹³⁸ De Filippis et al., “La Nuova PAC 2014-2020: un’analisi delle proposte della Commissione”, edizioni Tellus, Roma, 2012.

impact of the policy, I will limit my considerations on how the reform of the direct payments might impact on those two main objectives. Before that I will comment on the likely effects on income; in fact, this has been one of the major objective of the CAP from its birth, the challenge being, now, sustaining incomes without the distortions that characterized the policy before Mac Sharry and that still partially affected it before the implementation of progressive forms of decoupling.

Effects on income.

The claim of the impact assessment carried out by the Commission in 2011 as regards the so-called “integration scenario” (scenario number two above) is that the direct payments will better achieve the goal of providing a stable income and will lead to a more balanced allocation of direct payments between members and farmers within the same country. On the top of that, the greening component is predicted to be particularly beneficial for certain basic environmental public goods.

However, regarding the effects of greening of farm income and profitability the report highlights the importance of getting a right balance between the additional costs that the “green” measure will impose to farmers and the amount of payments per hectare that will be allocated to the virtuous farmers, which we have seen can go up to the 30% of the national ceiling of the first pillar. In fact, green policies might affect farm revenues in at least three ways: by increasing costs of production, by diminishing level of production and revenue and by impeding the shift to a more profitable

(intensive) production system. The two costs are easily measurable providing data availability (even if they would vary considerably from region to region) whereas the third one is an opportunity cost that would be more difficult to quantify and that would depend even more on location-specific elements. The report estimates that the resulting average cost per hectare of all the greening measures together across the EU 27 would vary in a range from 33 to 41€ per hectare, even if the variation is considerable. As an example, the costs per hectare will be lower for marginal regions where extensive farming was already taking place before the reform whereas for area of intensive and one-crop farming (monocultures) the cost will be dramatically high. The estimates are that on average the “greening option” will result in a decrease in the average income ranging from -3,2% and -1,4%. However, the same report notes as positive variations of farm income might actually occur for farmers that are already respecting stricter environmental requirements and how these might be a benefit or marginal farmers. Regarding these productions the greening of a considerable part of the first pillar will reinforce phenomenon already highlighted by Chatelier and Guymard (2011)¹³⁹ in their paper on the distributional effects of the Health check in France. The simulations on farm incomes, conducted with the Farm Accountancy Data Network (FADN), demonstrate a shift of direct payments in favour of extensive grazing farms, mainly those with a high proportion of pasture in their rotation. By contrast, crop farms and farms with intensive production of cattle are losers. This demonstrates how moving towards a flatter rate has also production and environmental consequences.

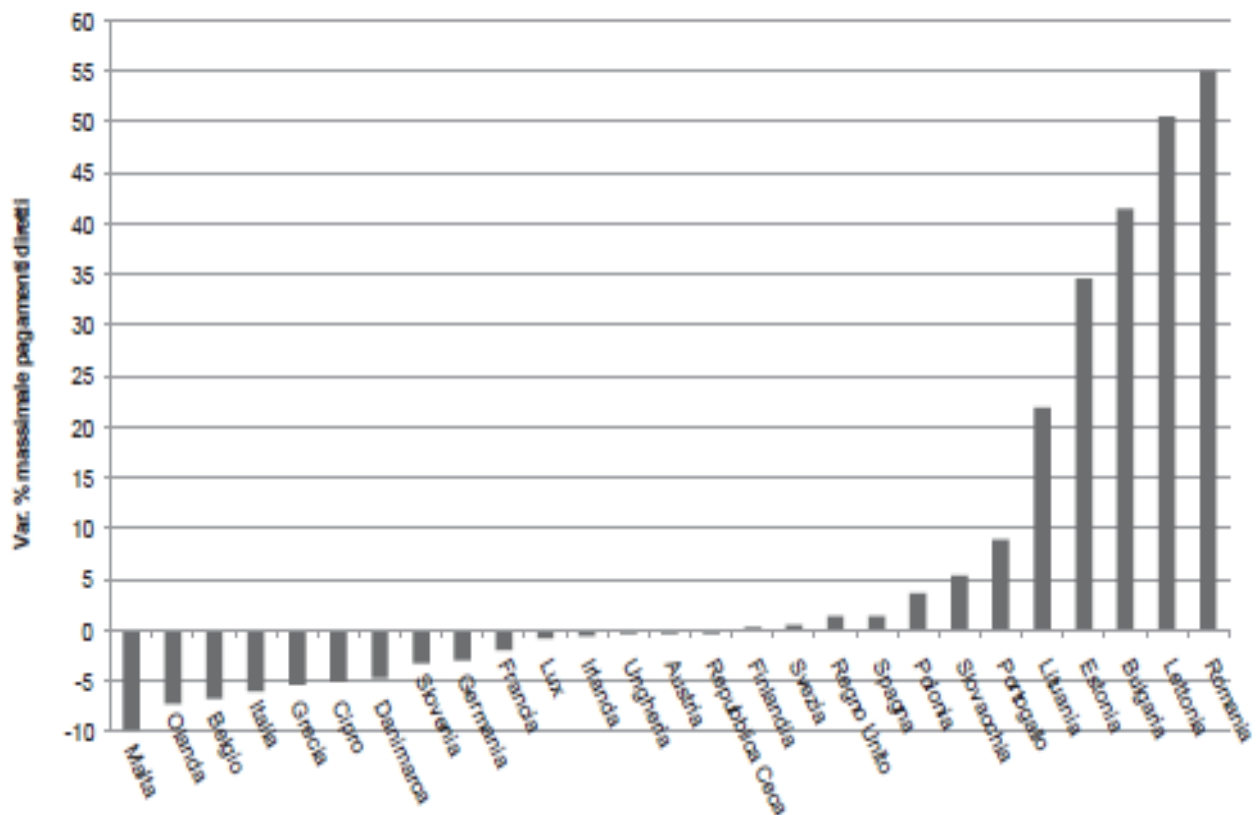
¹³⁹ Chatelier and Guymard (2011), in OECD “Disaggregated impacts of CAP reforms”, OECD publications, Paris, 2011.

This feature regarding distributional effects of a flatter rate is also quite straightforward and follows from the fact that also the SPS payments were based on a reference scenario based on Mac Sharry payments that largely favoured intensive farming systems and arable crops.

The last element of the reform that will have an impact on the income of farmers is the application of the convergence criteria. As De Filippis et al. (2012) highlight, the application of the “convergence criteria” will have different effects in different countries and also depending on the type of cultivation. The authors highlight that Italy in particular will be penalised by this declination of the convergence criteria and advocate an ad hoc measure to counteract this negative effect on Italian farmers. As for Italy, the authors stress that the national ceiling would decrease from 4024 mld of Euros in 2014 to 3842 in 2019 claiming that Italy alone would contribute to almost a third of the funds “moved” by the convergence mechanism. As a percentage reduction of previous payments, only Holland, Belgium and Malta would be more penalised than Italy, whereas France and Germany would lose only marginally, UK would experience a slight increase between pre and post reform payments and, as expected, the countries that will benefit the most are the new members (but also Spain and Portugal).

In particular, the reason why Italy will be particularly penalised lies in the fact that it had adopted the historical model for the direct payments with the Fischler reform. Given that the convergence relates to the “average payment per hectare” obtained dividing the national ceiling by the surface eligible for direct payments as for the year 2009. This is exactly the origin of the penalisation as in 2009 the countries that adopted the regional model

extended the eligible area to all the agricultural area, regardless of the cultivation whereas that measure remained the same for the countries adopting the historical model. As a consequence of that, when dividing the national ceiling for the admissible area the average payment per hectare for Italy results in a considerably greater number, which is the base one which the convergence criteria is applied. To clarify the matter, the following table from De Filippis (2012) gives an intuitive and graphic representation of the predicted effects in terms of redistribution of direct payments among different member states. Quite clearly the redistribution will lead to a compensation for the countries that historically experienced lower levels of payments but that is done penalising the countries that opted for the historical method to implement the Fischler reform.



To conclude, their effect on farm income will probably depend on the type of farming considered. The greening of the direct payments will add to the increasing convergence in the sense that both measure will tend to favour more extensive farming systems which are likely to involve marginal farmers while penalising intensive farming in comparison with the pre reform scenario.

However, the impact assessment states clearly that overall there will be a reduction in the average income. This prediction is shared by Tangermann (2011) that states that depending on the share of direct payments dedicated to the “greening” component the negative effect on overall farm income might become considerable. In fact, considering that they will likely subtract resources from the basic direct payments and that they will impose extra costs on the farmers, it is straightforward that the overall effect is that the new direct payments will generate less farm income, per Euro spent, than the SPS scheme. This is a logic consequence of the additional costs implied by the “green” measures in pillar I. The fact that this requirements affect such a generalised instrument and therefore every farm eligible for direct payments is also another issue. In fact, as it will be clear when analysing the effects of the reform on the provision of public goods, the generalisation of higher environmental standards might create considerable costs (in terms of loss of revenue and opportunity costs) to the intensive farming systems while it is not clear if they are the most efficient way to increase the provision of public goods.

Another measure included in the reform aimed at improving farmers’ income is the focus on active farmers, however, I will briefly discuss it in the

next paragraph as I believe that the actual (positive) effects on agricultural incomes are bound to be limited whereas the measure raises concerns about a very important aspect of the CAP: its capacity to provide a form of support completely decoupled from production in order to increase the competitiveness of the overall agricultural sector and to comply with the international regulation under the WTO agreement for agricultural markets.

Effects on agricultural competitiveness and Green box compatibility.

One main question that, I believe, has not been addressed properly in the recent debate on CAP reform is whether the new direct payment system will maintain, enhance or diminish the level of decoupling achieved with the Fischler reform. This concern has to be raised considering two features of the upcoming reform: the attention on active farmers and the measures that are required in order to benefit from the green component of direct payments.

As Swinbank and Tranter (2005)¹⁴⁰ pointed out already for the SPS scheme, payments are totally decoupled whether they are completely independent from the fact that production is even taking place. The question they raised about the SPS is that even if the amount of payments received did not depend neither on the level nor on the type of production, the GAEC standards and in particular the requirement to keep the land in good agricultural conditions might actually be partly correlated with production. The reasoning is the following: differently from a totally decoupled payment system, the fact that the owner of an hypothetical unit of marginal land would still have to do some work on it in order to benefit from the payments might end up creating the incentive for him either to produce something on it or to convert it into grassland (which would boost livestock production) or to rent it out. In other words, the fact that something has to be done in order to

¹⁴⁰ Swinbank, A., and R. Tranter (2005), *Decoupling EU Farm Support: Does the New Single Payment Scheme Fit within the Green Box?* The Estey Centre Journal of International Law and Trade Policy, Vol. 6, pp. 47-61.

benefit from the payments creates the incentive either to allocate more time to on farm activities or to rent the land to some other producer and benefiting from the SPS payments. Going back to the literature review, this argument follows the Ahearn, M., El-Osta, H. and Dewbre (2006) paper on the effects of direct payments on labour allocation: direct payments (and especially payments which imply measures such as the ones under the new “green” component) can distort labour allocation and increase the likelihood that farmers that would have left production stay active.

Coming to the “greening” of the direct payments, the argument would work in the same way and actually become more compelling. An example might help clarifying the problem. Consider the owner of a unit of marginal land. In a fully decoupled scenario aimed at sustaining temporarily farm incomes in order to regulate the farm exodus, he would receive direct payments for a limited period of time (ten years in the bond scheme proposed by Swinbank and Tranter in their most famous contribution)¹⁴¹ so that only the really competitive farmers would remain in production in the long run. That was, by the way, the initial goal when direct payments were initially introduced before becoming somewhat a permanent feature of the CAP. This hypothetical farm would have to figure out whether he could compete in the market space, knowing in advance that he would benefit from direct payments for a limited period of time. If yes he would have a temporary help to increase economy of scales and improve competitiveness. If not he would have time to develop some extra-agricultural activity with the positive result of having a safety net against unemployment. Now, abstracting and

¹⁴¹ Swinbank, A., and R. Tranter (eds.) (2004), *A Bond Scheme for Common Agricultural Policy Reform*. Wallingford: CABI Publishing.

generalizing, a fully decoupled payment scheme would favour the self-selection of efficient farmers with the long run result that only really competitive farmers would keep producing. The effect on total production is clear in the sense of a reduction in comparison with the pre-reform scenario, for example in comparison with a system based on some form of price support.

In a system where direct payments are corresponded depending on some measures that imply on-farm activities, instead, the effect could be an incentive to allocate even more time to those activities or anyway to rent out the land in order to benefit from the payments; maybe to another producer with sufficiently big economies of scale to make cultivation of that marginal land profitable. The overall effect would be in any case a boost in total agricultural production in comparison with the bond scheme/free market scenario.

This argument is raised by Tangermann, who stresses the results of Swinbank and Tranter's research and add that this distortive effect of direct payments is particularly critical especially considering the fact that the payments will be corresponded only to active farmers. The author stresses that the "greening" component of the new direct payments might be problematic in "Green box" term as they will probably undermine the decoupled nature of direct payments overall. Regarding the "active farmers" focus of the new direct payments, it has been introduced to guarantee that the payments would actually sustain farmers' income and not the one of absent landowners, the aim being supporting farm income since it is lagging behind non-agricultural income. However, Tangermann highlights how this

requirement might be meaningless in practice due to the fact that, even if the payments were corresponded to the farmers that rent out the land from the landowner, the latter will probably be able to extract the correspondent amount as a rent premium. In other words, direct payments are going to be captured in rents anyway and the re-focusing of direct payments on active farmers only will not be an effective way to guarantee the subsidy ends up to the actual producer and not to unproductive landlords.

This standard prediction of neoclassical models has been recently challenged by empirical researches which have shown that, at least considering the empirical evidence examined, landlords are not able to capture all subsidies in rents but just a minor part (Kirwan, 2009)¹⁴². However, the theoretical explanation of the phenomenon might be location specific and apply to places (such as the US) where land is not a scarce resource and therefore the bargaining power of the farmer is enhanced relative to the landlords'. To conclude this brief parenthesis, the extent to which the focus on active farmers will be effective in boosting agricultural income is then a matter of empirical testing also for an agricultural sector as the European one it is likely that the neoclassical prediction might prevail.

The very important element though is that this focus on active farmers might act alongside the effects of the greening in the sense of reducing the decoupling nature of direct payments, hence making them more difficult to justify and include under the "Green box" in the WTO agreements on agriculture. The reason why this focus might alter the decoupling nature of

¹⁴² Barrett E. Kirwan, "The Incidence of U.S. Agricultural Subsidies on Farmland Rental Rates" *Journal of Political Economy*, Vol. 117, No. 1 (February 2009), pp. 138-164.

the new direct payments in fact is rather obvious and that is definitely an issue that might impact on the goal of improving the competitiveness of European agriculture. The two measures together are therefore likely to trigger a positive effect on production in comparison with a fully liberalised scenario or with a total decoupling one; they would probably help keeping in production farmer's that would have had to leave the sector otherwise.

Having stated some plausible reasons to be somehow sceptical about two of the main aspects of the reform of the direct payments, it has to be said that there is also a valid justification of such sort of measures, in particular the claim that they are necessary to incentive the provision of public goods. As the literature about market failures stresses, a pure market based set of incentives is often unable to pursue public interest. Agriculture itself can produce valuable environmental public goods or create environmental losses whose burden falls on society overall. The issue here is to determine whether the value of the public goods created outweigh the cost of the measures put in place to achieve them; not only the economic cost of the policy itself but the private losses the farmers have to sustain and the opportunity costs as well. Briefly, it is important to determine whether the policy are Pareto improvements or not. In order to do that rigorously we should be able to carry out a detailed cost benefit analysis including precise estimates of the costs and the benefits foreseen. Being that almost impossible as it implies issues such as the monetary valuation of public goods, a realistic approach would aim at verifying two facts: are the policies implemented effective in order to reach the goals? The second question, instead, regards efficiency: are the instruments proposed able to achieve the proposed goals in the most

efficient way? Could we achieve the same results doing something else and maximizing total Welfare? The last paragraph aims at providing a provisional answer to this question.

Finally, also the increased focus on sustaining active farmers income has valid reasons if we consider that before the reform, payments were allocated even to people absolutely not involved in agricultural activities. In this sense, the recent regulation of December 2013 contributes to the solution of the problem specifying the two criteria for the definition of active farmers already mentioned above.

Besides the limits of this approach, an immediate and positive result will be to exclude from the beneficiaries legal persons that have not got anything to do with agricultural production, correcting the distortions of the previous policy set up, under which it was possible that legal persons such as sport centres and even airport could still claim agricultural payments if their land had previously been used for agriculture. De Filippis et al. (2012) highlight how the “ $DP > 5\%$ ” criteria is more debatable but anyway agree that this correction would allow for more funds to be redistributed between actual farmers, which should be the logical scope of an agricultural policy.

Effects of provision of public goods.

Coming to the analysis of the expected effects on the capacity of the European agriculture to provide public goods, the impact assessment carried out by the Commission stresses that the inclusion under the first pillar of measures directly aimed at providing public goods will enable the agricultural sector to provide a generalised set of public goods which were not delivered by the previous cross compliance requirements. The claim is that the subordination of a significant proportion of direct payments to relatively high standards will act as a sort of “super cross compliance” that would force every farmer to satisfy higher environmental standards, with the expectation that this type of approach would help delivering more public goods.

The work of Tangermann is particularly instructive and I will largely reflect his approach, stating from the very beginning that I do not agree with its criticism regarding the political implications of the policy.

In particular, Tangermann states that the inclusion of measures such as crop rotation, pasture maintenance and the safeguard of ecological focus area under a generalised instrument such as the direct payments of the first pillar might be an effective way to achieve a certain level of public goods but it is definitely not the most efficient policy. In fact, environmental public goods can have differing geographical dimensions, from global ones such as the reduction of GHG emissions and of air pollution, to local ones such as flood and fire prevention or the maintenance of valuable agricultural landscapes.

Given this multidimensional nature of the concept of environmental public goods, the critique is that such a generalised instrument might be inefficient in the sense that a more sector and local specific approach might address better the problem, achieving better overall results with a reduced amount of resources. Moreover, given the fact that many environmental public goods are of a primarily local nature, it follows logically that following a standardized approach throughout the entire European Union cannot be the best strategy to address the huge variety of local needs. The reasoning is pretty straightforward; for example setting of relatively high environmental standards for intensive farming can create massive private losses in terms of revenue losses and opportunity costs, whereas the benefits from the respect of such standards might be negligible, especially considering that the same resources might be used to promote particular actions (for example the safeguard of biodiversity or instruments to improve water quality or flood prevention) on marginal land that would create more valuable public goods and would not be a cost for the producers since the revenue losses and the opportunity costs. To sum up, even though the provision of public goods of EU wide importance should be pursued at an European level, the fact that such specific measures are included under a very general instrument will decrease the efficiency of the policy.

However, my position differs from Tangermann regarding the political interpretation of the reform. The author states that if the aim of the reform is to shift the “dividing line” between the two pillars in order to make pillar one a concurrent tool to achieve goals that have been traditionally kept under pillar two is not a practical idea and it is likely to create a lot of technical

difficulties. He brings the example that compensating farmers for the actual costs sustained to carry out a particular policy is such an individually based action that should be carried out under the contractual agreements typical of the II pillar and cannot be extended to the I pillar since those payments are generalized. Another matter of concern is the fact that the I pillar payments are completely funded by the European Union and the inclusion of measures that used to be co-financed under the II pillar might decrease State accountability and possibly affect the implementation of the measures.

Even though the concerns expressed by Tangermann are largely understandable, I would tend to see the shift of some measures under the first pillar from a different perspective; in particular, I believe we should approach the reform considering the three scenarios that were outlined from the very beginning and the risk that the consultative process started three years ago might have ended substantially with no reform of the CAP. In this light, the greening of the first pillar can be interpreted as a sort of compromise between the view of those who wanted to keep the CAP as it was and the advocates of a revolutionary reform. Given the overall goal of improving the public good provision from the agricultural sector and the difficulties to reach a reform based on a decisive shift of resources from the I pillar to the II one, transferring the measures under the first one, inverting the logic, is certainly inefficient but possibly the better compromise possible. In fact, the opposition of farmers' organisation to a reform based on the scenario number three are largely known. Even the member States were against a drastic change as it would have implied an increase in their budgetary burden. In other words, if the goal of the Commission was to

change the priorities of the agricultural policy stressing its environmental implications, the choice of transferring measures from the second to the first pillar instead of funds from the pillar I to pillar II might have been the only politically acceptable compromise given the positions of the relevant actors and the risk of having no reform at all.

Conclusions.

This thesis analyses the successive reforms of the CAP from the early nineties. After defining the context that led to the reform, the second part carries out an in-depth empirical analysis and my results largely confirm the ones of the existing literature. First, the Mac Sharry reform has had a significant impact on production, proving that even a system just partially decoupled (from the level but not from the type of production) was effective in tempering the distortionary effects of the price support system.

In my analysis, the Fischler reform seems not to have had significant effects in terms of decrease in production.¹⁴³ Moreover, the robustness check on prices demonstrates that international prices became significant in explaining production decisions just after the Fischler reform, validating the claim that these payments were really decoupled and led to market-based decision making. The test on the effects of the two reforms on GHG emissions is robust and significant, confirming the expectations that a progressive decoupling of direct payments would have helped the delivery of global public goods such as greenhouse gas reductions. These results are in line with the existing literature and with the theoretical expectations derived from economic theory and contribute to the literature on the effects of the CAP reform process.

Coming to the final chapter, I tried to present some features of the reform that has been debated in the last three years, concluded with the sign political agreement of the 26th of June 2013. I outlined the main contents of the

¹⁴³ In the second part I also addressed this issue clarifying how the set-up of my test might be itself a potential explanation for this partially unexpected result.

reform and carried out a preliminary analysis. My conclusions regarding three major areas are the following:

- The effects on income are bound to be negative overall. Making costly agro-environmental measure compulsory will determine significant loss of revenues and opportunity costs for the producers, alongside with the considerable costs of the policy for the European budget. Another basic result is that the higher level of convergence will favour the income of the marginal farmer and penalise intensive farming in comparison with the past SPS scheme.
- Probably the major concerns are related to the fact that the reform might diminish the competitiveness of European agriculture due to its attention to “active farmers” and the inclusion of some “green” measures under the first pillar. The reasoning is developed in the third part and claims that this two innovations might create a partial recoupling of the policy even if it would be a sort of “green” recoupling, therefore probably more legitimate. Another concern is whether the reformed direct payments will comply to the “Green box” under the WTO agreement.
- The effects on the provision of public good are certainly positive. The inclusion of agro-environmentally related measures under the first pillar is bound to increase the amount of public goods delivered by European agriculture. I have also argued, following Tangermann’s contribution, that this will not be done in the most efficient way. However, my overall judgment of the reform is less critic than the one provided by the author. Considering the political context and the risk

of having no reform, given the initial goal to enhance the “greening” of the CAP I believe that the solution found is a good compromise and a quite clever way to get around the predictable opposition to any sort of more radical reform that would have question the general structure of the CAP as we know it.

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