AGRICULTURE AND ECONOMIC
DEVELOPMENT IN PORTUGAL, 1870-1973

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1st DRAFT
Introduction

At the beginning of the century analysed in this chapter, about 2/3 of the Portuguese labour force was employed in the agrarian sector. This labour force had very low standards of living and was poorly educated. Moreover, they had too little capital to work with including animals, tools, buildings, irrigation systems and other infrastructures, and the land endowment was also comparatively small. Thus, the average productivity of Portugal’s agricultural workers was very low by western European standards and compared only to the levels attained in the poorest and most remote areas of the continent, such as the southern provinces of Spain and Italy and the Balkan countries. By 1930 the share of labour force in Portuguese agriculture was virtually the same as half a century before, and only after 1950 did that share start declining in a significant and consistent way. The absolute decline in the number of workers in agriculture happened only during the 1960s.

Understanding the reasons why the agrarian sector kept such dominant role for so long in the Portuguese economy is crucial for any explanations of economic backwardness in this country in the poor periphery of Europe. To answer that question we need to take into account the constraints imposed by the institutional framework concerning the agrarian sector, as well as the performance of the rest of the economy, and the role of foreign trade in agricultural products. Did agriculture survive for so long in such poor conditions because of lack of institutional change within the sector? Or did it happen so because the rest of the economy was not sufficiently dynamic in order to attract labour from agriculture and increase demand for primary output? Did agriculture generate enough savings? Or was the sector a drag on other sector’s savings? How much was agrarian backwardness a consequence of the lack of ability of the sector to compete on the international markets? And what was the role of subsidies, price controls, and tariff policies in that respect? These questions dominate most international studies on the contribution of agriculture to economic growth and they will be addressed in this chapter for the case of Portugal.

The resilience of Portugal’s agrarian sector, until about 1960, was first of all a consequence of three factors which were working together: the growth of domestic demand for agrarian products, protection from foreign competition, and public policies that imposed price controls and promoted investment in infrastructures.1 But the resilience of agriculture was also the outcome of the fact that the potential for output and productivity growth

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1 After 1973 and particularly after Portugal joined the EEC, in 1986, the state resumed its intervention in the agrarian sector, but then it was essentially to help maintaining the income levels of those left behind.
remained comparatively large until late in the twentieth century. In fact, in certain periods of time, the levels of labour productivity in agrarian activities such as fruits and vegetables, animal products, or cork, were higher – and could increase faster – than levels in some branches of the industrial or the service sectors. The overall productivity gap of the agrarian sector hides the fact that the structural change within the primary sector could bring more productivity gains that the shift of resources from agriculture to industries such as low value added textiles. It was only with the rapid industrialization in the 1960s and increasing imports of agrarian products, that that changed in a significant way. The increase in agrarian imports did not put too much pressure on the external accounts, because of the growing inflow of emigrant remittances and capital imports. Moreover, the Portuguese agrarian sector, despite its shortcomings in comparison to other parts of Europe, managed to obtain considerable labour and capital productivity gains during parts of the period analysed in this chapter. Such overall productivity gains implied that investments in the agrarian sector could compete favourably with investments in other sectors of the economy.

In order to explore the determinants of growth of Portugal’s agrarian sector, next section presents growth patterns for agriculture in the context of total GDP growth in Portugal, as well as the growth of agrarian factor inputs and productivities. Section 3 puts the analysis of the agricultural in the context of developments in domestic demand and economic policy. Section 4 concludes.

**Phases of growth: output, inputs and factor productivity**

The evolution of the structure of employment and output in Portugal is depicted in tables 1 and 2. As shown there, in the late 1870s, about 66 percent of total male labour force was occupied in the agrarian sector and contributed with 40 percent to total output. Labour productivity in the agrarian sector was about 60 percent of the productivity of the rest of the economy and thus that there were great potential gains from shifting labour out of agriculture to industry and services. Yet, during the following thirty years, the shares of labour employed in the agrarian sector and agrarian output in total GDP changed very little. In fact, in 1900, agriculture still accounted for 66.4 percent of total labour force and 40.1 percent of total GDP. It was only after 1900 that the importance of agriculture started declining, but even then at a very slow rate, as in 1930 the share of employment in agriculture was still 60.9 percent and the share of output had just declined to 31.5 percent. Thus the productivity gap of the agrarian sector declined very slightly in the same time span, from 60 to 52 percent. Structural change
gained momentum in the decades after, when there was a more consistent reduction of the share of labour force in agriculture, accompanied by the decline of agriculture’s share in output. The release of labour after 1930 did not impact positively in the labour productivity gap in the following years and in 1970 the labour productivity gap was still at 55 percent of the rest of the economy.

[TABLES 1 AND 2]

The annual evolution of the output of agriculture, industry and services is shown in Figure 1. There we may see that the industrial sector expanded faster than the rest of the economy up to World War I. The war affected negatively the three sectors and from the mid 1920s down to the mid 1950s the three sectors had similar trend growth rates. This pattern of growth is in accordance with the relatively small overall structural change of the Portuguese economy identified above. From the mid 1950s onwards the industrial sector entered a period of rapid growth, and from the beginning of the 1960s onwards agriculture entered a period of virtually flat trend growth rate.

The agrarian sector depicts four main periods of growth. The first is between the peak years of 1865 and 1902 when agrarian output expanded at the relatively fast rate of 1.41 percent per year; a period of slower growth followed, from 1902 to 1927, when output increased at 0.77 percent per year; and a period of rapid growth, between the peak years of 1927 and 1962, at 2.43 percent per year; and then finally a decade of depression, from 1962 to 1973 (see also Table 4 below).

[FIGURE 1]

Table 3 and Figures 2 to 4 show decennial growth rates for output, labour and labour productivity for the three sectors and the whole economy during the four epochs of growth defined for the agrarian sector. Figure 2 clearly shows that industry expanded faster than the rest of the economy in all periods except in 1960-1990, when it was surpassed by the service sector, albeit by a thin margin. Figure 3 shows that the agrarian labour force increased down to 1930 and remained stagnant in 1930-1960 to decline steeply in 1960-1990. Finally, Figure 4 shows how labour productivity in agriculture increased at rates which compare rather well with those of the other sectors in, except in 1900-1930 (and in 1850-1870). We may also see in that figure that the periods in which labour productivity in agriculture increased fastest, namely 1930-1960 and 1960-1990, are also those in which labour employed in the sector was

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2 During the last decades of the twentieth century, the productivity gap declined for the first time, and in 1990 labour productivity in the agrarian sector was 80 percent of labour productivity in the rest of the economy.
either not expanding or declining. This is a common feature of labour productivity growth in agriculture in the industrialized world and implies that changes in labour productivity in the primary sector depend on the capacity of the other sectors (or emigration) to attract agricultural workers.

Table 4 shows growth rates and ratios for factor inputs employed in the agrarian sector. The area of land employed in agriculture increased from 1865 to 1902, at 0.66 percent per year, and then decline slightly, at -0.14 percent. During this period the land/labour ratio (H/L) declined and that declined was particularly significant after 1902. The rate of growth of the capital stock was very close to the rate of growth of labour force in the period to 1927 and thus the capital/labour ratio did not change in a significant way. All in all, there was a decline in the conditions of the agrarian labour force, in terms of availability of land and capital. Despite that worsening there was an increase in the output per unit of land, by 0.75 percent per year in 1865-1902 and by 0.91 percent per year in 1902-1927. During the period of growth from 1927 to 1962, the growth of land was marginally higher than that of the labour force. On the other hand, the capital labour ratio increased for the first time in a significant way, at 1.32 percent per year. Similarly, output per unit of land also increased fast, at 2.18 percent per year, and output per labour also increased at 2.31 percent per year.

The two growth periods of the area under use, namely, 1867-1902 and 1927-1962 were different in one significant way. In fact, as Table 5 shows, there was a crucial structural change in the use of land in the second period of growth which was the fact that there was a very rapid decline in the number of hectares left under fallow and a correspondent increase in the area under crop. In 1929, about a third of the productive area was under fallow and in 1951-56 that proportion had fallen to 7.7 percent. This decline was followed by a small increase in 1968-78 to 12 percent, because of the increase in pasturage. This change in the use of land was the most important change in the agrarian sector for a long time – the change most resembling a “green revolution”. The reason behind that change was the fact that by 1929 most area fit for agricultural use was already under occupation and thus the increase in output had to be accomplished also by reducing the area under fallow. A second important feature in the use of land in Portugal was the continuation of the expansion of the area

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3 There was also a contraction in the area under pasturage, which is not depicted in the table, but of little significance because pasturages accounted for a very small part of the use of land until later in the twentieth century.
devoted to forests. This was particularly important for the increase in the income of the agrarian populations, but also because it led to the development of the industrial forest sector.

**TABLE 5**

Table 4 above also depicts a high growth rate for agrarian capital in the decades after 1927, at 1.44 percent per year. This rate of growth was only exceeded in the period after 1973, when capital was substituting for the decline in the labour force. But the driving force of growth in this period was not capital but total factor productivity growth. In fact, as Table 6 shows, capital contributed with 14.8 percent of total output growth in 1927-1962, whereas total factor productivity (TFP) growth contributed with 79.7 percent of output growth. This was the period in which TFP growth had a largest contribution and that is another facet of the true revolution that the agrarian sector was undergoing which we will analyse with more detail in the next section. In the following decade growth was negative, but after 1973 TFP had again a large contribution, at 120.5 percent of growth. Labour had a positive growth until 1962, and from then on its contribution was heavily negative which accounts for the decline of the population occupied in the sector.

**TABLE 6**

_Explaining growth: domestic demand and state protection_

The performance of the Portuguese agrarian sector in the first phase of growth identified in the previous section was quite an achievement, both in terms of the historical experience of the country, and in terms of what happened elsewhere in Europe. Truly, part of that growth was due to the fact that agriculture was recovering from the deep depression registered in the 1850s and which was due to the fact that wine output was depressed by a vine disease. The growth of output was a consequence of the growth of inputs, with capital expanding slightly slower than land and labour, as well as of the growth of total factor productivity.

The period since 1870 was also a time of institutional development in Portugal, marked by the increase of the role of the state in the economy and investments in social overhead capital, such as roads and railways, and in education. These trends in the institutional framework somehow affected positively the agrarian sector. We should take into account that some of such institutional developments were very basic, as Portugal went
through a long period of civil wars and political unrest until well into the mid nineteenth century. As such, the capacity of the government to control the whole territory was something relatively recent by 1870 and that was a change that favoured the agrarian sector as it helped securing property rights and extending the areas under agrarian occupation. Despite the fact that the Ancien Regime had fallen formally with a revolution in 1820, it was only in the 1860s that they were totally enforced. Later on there were more relevant changes deriving from investments in infrastructures. The most important example in this respect is the fact that the development of the railway network was crucial for the growth of wheat output in the southern regions of Santarém and Alentejo, from where cereals were transported by rail to the Lisbon market.

The changes in the institutional framework were thus very limited and that certainly affected the pace of structural change in the Portuguese agriculture and the economy at large. Yet we need to take into account the possibility that agrarian expansion was not far from the growth potential for the period and thus that it was seriously constrained by the slow pace of institutional change.

In order to explain the growth of agrarian output we also have to take into account the fact that during the period from 1870 onwards, Portugal entered its first phase of sustained industrialization. Again such change was only moderate and that was so because the point of departure was very low, with only 17 percent of the labour force occupied in industry in 1870. But the fact is that industrial output expanded at 2.5 percent per year, from 1870 to 1913. Industrial growth was dependent on high levels of tariff protection and state intervention, which were among the highest in Europe. Industrial protection helped shaping the structure of the Portuguese industrial sector against its pattern of comparative advantage but the fact is that presumably industrial growth would have been slower without high tariffs. The growth of the industrial sector was the driving force for the growth of incomes and domestic demand, from which the agrarian sector clearly benefited. Up to the early 1890s, the domestic market for agrarian products was overall unprotected, except for relatively low tariffs for wheat. But that lack of protection was not crucial because during this period trade in agrarian products within Europe was very minor, except for sectors catering for higher income markets, which Portugal was too poor to consume.\(^5\) In 1889 and 1899 tariffs on wheat were considerably increased and that led to a steep increase in wheat output, which ultimately became part of the

\(^5\) The main exception was cod fish, which was imported into Portugal in every increasing quantities, but only by the end of the nineteenth century did it weight considerably in Portugal’s negative balance of trade.
story of agrarian growth in this period. The agrarian sector was less protected in general than industry, as it happened elsewhere in Europe, with the exception of wheat, which was the only main agricultural produce that was traded internationally. Wheat tariffs were reintroduced in 1865 and were heightened considerably in 1889 and 1899. Protection led to a considerable expansion of wheat output which also led to the increase of the area under cultivation. The expansion of wheat output in the 1890s was a major contribution to the growth of total agricultural output. Domestic wheat output expanded rapidly and this time that expansion was followed by a small revolution in production methods, which involved the increasing use of chemical fertilizers, draft animals, and mechanical threshing. Railways were also increasingly used as a means of transportation as wheat travelled further to be sold at larger urban markets, such as Lisbon. The use of the new practices remained relatively limited as the starting level was very low.

Another important feature of the development of the agrarian sector during its first period of growth (1870-1900) was the growing importance of exports of wine, live animals, fish preserves, and cork. Wine accounted for as much as 45.3 percent of total exports in 1870-79 and still for 34.4 percent in 1905-14 (Lains, 2003, p. 75). Wine exports were very important in some periods and changes in external markets could have considerable impact on output growth of the sector. Yet, the domestic market was considerably more important, as it account to about 90 percent of total output, throughout the period from 1870-1900. Exports were concentrated on few other products, namely live animals and raw cork and Portugal lost its market shares to competitors from southern Europe and Latin America. The loss of market shares was a consequence of the fact that exporters did not go up in the production chain. That would have implied specialization of exports of wines with lower alcoholic content, instead of the heavy wines Portugal kept exporting. In the case of animals exports, going up the production chain would have implied shifting to exports of frozen meat, which became a large export item from Latin America late in the century, instead of live animals. In the case of the cork industry, it would have implied the expansion of exports of fabricated materials instead of the raw product. And there are many other examples which can be drawn from comparison with Spain other southern European countries and also with the success stories that Portugal achieved later on in the twentieth century. The late development of more sophisticated agrarian exports was however as much a cause of agrarian backwardness as well as a consequence of that backwardness. In fact, shifting towards better products implied considerable investments which in many occasions were out of the reach of illiterate and poor farmers.
There was an episode that shows how the development of agriculture after 1870 was markedly different from that of the previous decades, which was the reaction of the wine sector to a second spread of disease in the vines that occurred precisely in this first period of growth. This episode is much relevant as it compares favourably to the lack of response of the wine sector to the other spread of disease that occurred in the 1850s. In fact, the wine sector managed to react to the phylloxera disease that attacked vines in many parts of the country since the late 1860s. And that was made possible by the rapid substitution of the existent vines by new ones imported from the Americas and which were immune to the phylloxera insect. This implied a large and coordinated effort by the state and by the owners of vines, which was unheard of in previous episodes of widespread diseases in agrarian production. The fight against phylloxera led to important changes in the structure of wine output, as well as in the regional distribution of vines, which led to the increase in the share of lower quality wines and the output of southern regions of the country. This transformation led to substantial gains because there was an increasing demand for lower quality wines, both in the domestic market and the international markets. Portuguese wines were exported to France during the 1880s in order to fill the gap in the production of wine in France which was also affected by phylloxera. This demonstration of flexibility and investment capacity to change output according to changes in factors of production was new in Portugal’s agrarian sector and is the outcome of the slow changes that had been occurring since around 1870. The fact that the exports and the domestic economy, because of industrialization, was expanding was certainly favourable to that process of change, as they implied continuing growth of demand. On the negative side of such episode lies the fact that the new wines did not increase in quality and also there were no important developments in marketing, neither in other sectors linked to wine such as bottling and production of cork bottle stoppers and glass bottles. These were direct consequences of the low quality of output, as wine was sold mainly in bulk and not bottled.

Output from other sectors of the agrarian sector also expanded. That was the case with wheat output where expansion was due to the growth of domestic demand and occurred in a context of free trade and increasing imports. The other smaller sectors also expanded namely olive oil, rye, potatoes and meat but their contribution to total output did not change significantly. As a matter of fact, the structure of Portugal’s agrarian sector, shown in Table 7, remained virtually unchanged in the decades from 1870-1900 and that certainly one main feature of the development of the sector and the persistence of its degree of backwardness. Table 7 shows that the share of animals in total output remained extremely low, by northern
European standards, as did the shares of crops such as fruits and vegetables or other products with higher income elasticities. Crop productivities also remained low throughout the period.

[Tables 7 and 8]

The output of the wheat continued to increase after 1900, but the fact that output of the other cereals and of wine entered a period of depression led to the decline in total agrarian output after the peak year in 1902. During the following three decades the trend growth rate for Portuguese agrarian sector declined to 0.77 percent per year. The slow development of the agrarian sector in the decades from about 1900 to 1930 is a direct consequence of the type of extensive growth with little structural transformation that occurred during the last third of the nineteenth century. The conditions for growth of the agrarian sector after 1900 changed in considerable ways. Probably the most important change was the fact that by 1900 the use of agricultural land reached a ceiling. Further increases in the use of land concerned only forests. As labour employed in agriculture continued to increase at 0.59 percent per year, the land-labour ratio declined by -0.73 percent per year. The role of capital investment in the growth of output increased slightly, compensating the decline in the expansion of land. In fact, Table 5 above shows that the contribution of capital to total output growth increased to 27.9 percent in the years from 1902 to 1927, and the contribution of total factor productivity growth declined slightly but remained close to 50 percent.

Growth during 1900-1930 was also affected by the consequences of World War I. By the outbreak of the war, Portuguese agrarian exports were not in a particularly favourable moment, but the conflict was no help for exports of wine and cork, although exports of preserved fish had a small impulse. The war had a negative impact on the industrial sector, as it was dependent on imports of inputs. Moreover, the war also had a direct impact on the agrarian sector and, for example, the stock of animals was substantially reduced. The war also impacted on the financial stability of the country, as the government financed its involvement by printing money and the fall in exports, including exports from the Portuguese colonies in Africa and the fall in emigrant remittances and capital imports also led to problems in financing the current account deficit. This double deficit meant that the capability of the Portuguese government to intervene in the agrarian sector was substantially reduced. Moreover, Portugal also entered a period of great political instability which did not help either.

Financial instability came to an end by 1924, with the end of hyperinflation and rapid depreciation of the Portuguese currency, and political instability came to an end in 1928, after a military coup and the rise of Salazar to the ministry of Finance. Immediately after, in 1929,
the government launched the *campanha do trigo*, as in Fascist Italy, and increase once more the protection to the wheat sector, which led to the virtual disappearance of wheat imports and a big push in wheat output. Then a series of public policies followed, which helped substantially the recovery of the Portuguese economy and, in particular, the import substitution industrial sectors and also the agrarian sector. The outcome was economic growth under protection and the economy became ever more closed and less competitive in the international markets. The Portuguese tradition of growth by protection was being again followed but this time not in contrast with the rest of the world and the short to medium term gains were substantial. Protective public policies and the direct intervention of the state in the economy continued for the following decades. In the case of the agrarian sector, state intervention was a major factor as it led to the development of infrastructures that helped increase productivity levels. Since the 1930s, the Portuguese state invest massively in the construction (and improvement) of roads, dams for hydro electrical and irrigation uses, public buildings, including schools and government agencies. Moreover, the government tried hard to be faithful to Salazar’s corporatist ideology and developed a few corporatist institutions that had the advantage of providing levels of organization among farmers and of spreading technical know-how with an intensity that was totally new for most of the Portuguese countryside.

During the period marked by the peak years of 1927 and 1962, total agrarian output expanded at 2.43 percent per year. This was a considerable change from the trend growth rate of 0.77 percent observed in the previous three decades. The sharp increase in the trend growth rate of Portugal’s agrarian sector was contemporary to the intensification of the pace of industrial growth to slightly more than 4 percent during the same period. The service sector also expanded at rapidly at 2.78 percent. Due the rapid growth of the agrarian sector, its share in total GDP declined only slightly from 31.5 percent in 1930 to 27.2 percent in 1960, but the share of labour employed in agriculture declined faster from 60.9 to 43.1 percent in the same period. During this period the Portuguese economy caught-up consistently for the first time, albeit only partially, to the levels of income of the European forerunners, and there still was a large contribution of the agrarian sector.

This second period of growth of Portuguese agriculture was different from the one that had occurred in the last third of the nineteenth century for several reasons. Firstly, growth in 1930-1960 affected all main branches of the agrarian sector, from wheat to fruits and vegetables, animal products and forests. Secondly, the structure of the agrarian output changed considerably this time, as the output of products with higher levels of income
demand elasticities increased more rapidly than traditional sectors. Thirdly, because the levels of investment, the use of fertilizers and machinery and the construction of infrastructures also gained momentum in the three decades after 1930.

The changes that occurred in the use of land were closely linked to the increase in the rate of investment in the agrarian sector, both private and public. At an annual growth of 1.44 percent, for the period from 1927 to 1962, the agrarian capital stock expanded faster than ever in Portugal (see Table 4 above). This high growth rate is corroborated by information on the increase of other items of the capital stock. In fact, between 1934/38 and 1961 the number of tractors in use by Portuguese farmers increased from 0.1 to 2.6 per hectare (Pintado, 2002, p. 95). The other piece of quantitative evidence relating to investment in agriculture comes from expenditure undertaken by the first state economic plan for the long period between 1935 and 1950. According to the balance sheet for that plan, direct investment in the agrarian sector accounted for 1/3 of total expenditures which corresponded to about 2.2 percent of total agrarian output.  

A further indicator of the increase of investment in agriculture is provided by the share of agricultural land under irrigation which increased from virtually zero to 14 percent in the 1950s (Estatística Agrícola). The decrease of the area under fallow was also made possible by a three-fold increase in the use of chemical fertilizers, from 10 kg per hectare in 1934/38 to 35 in 1960/62 (Pintado, 2002, p. 106). The changes observed in the Portuguese agrarian sector during the decades from 1930 to 1960 were however not sufficient to overcame its extreme degree of backwardness. In fact, in 1961, the number of tractors per hectare in Portugal was the lowest in southern Europe, and only slightly above Turkey (Pitando, 2002, p. 95). The use of chemical fertilizers was comparatively more intense, but still far away from the indicators for northern Europe (Pintado, 2002, p. 106).

These changes are also reflected on the increase in the contribution of the growth of total factor productivity which reached 1.9 percent per year (see Table 6 above). The composition of output also changed in a significant way. The major change was in the diminution of the share of cereals, particularly maize and rye, which were used in lower quality breads. On the contrary, the shares of fruits and vegetables and animal products increased in a significant way. According to Tables 7 and 8, meat accounted for 18.7 percent of total agrarian output in 1935-39, 20.7 percent in 1950-54 and 27.6 percent in 1965-69. Contrarily, the share of cereals and potatoes declined from 40.6 percent in 1935-39 to about 17 percent in 1965-69. These changes in the structure of output were made possible by the

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6 Lains 2003, p. 175. 30.7 percent of total expenditure * 2 percent of GDP * share o agriculture in total GDP.
changes described above concerning the use of land and growing investment in various forms. But they were also related to changes in the pattern of domestic demand, with significant increases in consumption of meat, poultry, eggs, milk, fruits and vegetables, and rice. The fact that the rest of the economy was expanding fast was of course a major factor behind those rapid changes in demand. Government policy also helped significantly because the prices for the non-traditional sector were left uncontrolled, whereas the government imposed upper limits for prices of wheat and other cereals. Thus relative prices of non traditional sectors expanded in the 1950s and the 1960s.\(^7\)

The growth of the agrarian sector was to a large extent dependent on the protection that the state provided to the sector, either in the form of tariffs, regulated prices, and direct investments. Protection stemmed out of social and political considerations, as individuals and the government were concerned with living conditions in the countryside as well as political stability. Yet, agrarian protection can also be understood in terms of the economic gains that it could bring to producers and the rest of the population. We need to recall that throughout most of this period, particularly in the 1930s and 1940s, international trade in agrarian products was limited, as was most of international trade. Moreover, the general practice in Europe was that states conceded protection to their national agricultural sectors. It was only with the creation of the EEC, in 1957, that protection to agriculture became somehow coordinated between states, in such a way that the international markets could start opening up. But that was limited to a restricted group of countries. Portugal was a founding member of EFTA, in 1959, but that association only dealt with trade in industrial products. The rationale behind protection to the other European agrarian sectors was not too different from what happened in Portugal: governments needed to tackle with the downward pressure on incomes in the agrarian sectors, in order to contain social and political pressures.

There was a more relevant economic rationale behind that, though, which was the fact that capital invested in the agrarian sector could not be diverted to other sectors, as it is overwhelmingly specific to primary production, as is of course the case of land, animals and machinery. Thus protection to agriculture was also protection to investments in the sector. It should also be added that protection to the agrarian sector in many European countries was just one of the many forms of protection that the states conceded to many other economic sectors. Agriculture was in many cases just another ‘industry’.

\(^7\) See Sevinate Pinto et al. pp. 50-60.
In the period from the peak year of 1962 to 1973, protection conceded by the state to the agrarian sector was substantially reduced, both in terms of price controls and in terms of subsidies and investments in infrastructure. Agrarian output growth declined substantially, as did the use of land and labour force. The growth of capital investment was also reduced to 1.20 percent per year. The decline in agrarian output led to a substantial increase in imports of agricultural produce, for human and animal consumption, as well as industrial raw materials, which led to the deterioration of Portugal’s commercial balance. That was however not a major problem for government policy because the deficit was being financed by the steady inflow of emigrant remittances and capital imports. The financing of the external account became a problem after 1973, when recession, the reduction in emigration, the 1974 Revolution, and the independence of the colonies affected the inflow of capital, that the importance of the external deficit of the agrarian sector became a serious problem which was eventually tackled by a new period of government intervention in the sector.\(^8\)

What were the consequences of the developments of the agrarian sector to the overall performance of the Portuguese economy? Did the fact that the state protected a sector with lower levels of factor productivity impact negatively on structural change and total productivity growth? For the years after about 1950, the impact of policies that favoured agrarian growth was presumably small given the fact that by then the diversion of resources from other sectors were also presumably small. In fact, according to one estimate, agriculture contributed with 5.5 percent of total GDP growth during 1953-1963 and the cost of the agrarian policies would probably have fallen beyond that mark. During 1963-1973, the same estimate puts the contribution of agriculture to GDP growth at 1.2 percent which would then fall below the cost of the same policies and that would help explaining why less attention was paid to the sector by the state.\(^9\)

**Conclusion**

Portugal is a peculiar case in European economic history during the century starting in 1870. In fact, the country started off with a low productivity agrarian sector, characterized by a series of important shortcomings, which range from the type of land tenure, to low capitalization, in terms of physical and human capital, and to the limited use of draft animals and fertilizers, to the concentration of production towards sectors with low demand

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\(^8\) See World Bank 1978, pp ii and iii.

elasticities. Those shortcomings were reflected in very low levels of land and labour productivity that expanded relatively slowly and, consequently in the low capacity to compete in the international markets and to develop a sizable export sector. With this scenario as background, we could expect that the decades after 1870 would be characterized by a persistent increase in the share of the industrial sector, as well as services. That did in fact occur but not in a systematic way. In fact, during the decade 1880-1890, the productivity of labour employed in the agrarian sector increased more rapidly than that of the industrial sector and, what is more important, this was a decade of higher overall growth. Similar out performance of agriculture as compared to industry occurred once more in the 1920s and, again, with an increase in the trend growth rate of the whole economy.

Throughout the years from 1870 to 1960, agrarian growth was achieved through a higher use of factors of production. The use of land expanded down to the end of the nineteenth century, whereas labour increased for most of the period to 1960. Capital productivity also increased in some periods. But changes in productivity were not due to changes in the production methods but to changes in the product mix, which benefit sectors with higher levels of factor productivity. In fact, the level of productivity of most crops, as well as animal products, did not change at all during the period here analysed to 1960. Thus, changes in agrarian factor productivity in Portugal are intimately related to the increase in demand, particularly of products with higher income elasticities of demand. The fact that land productivity for most crops did not change significantly during such a long period is one of the most important characteristics of Portugal’s agrarian sector. What happened after 1960 can help us determine what the causes behind such inability to increase productivity were.

Such unexpected pattern of growth where periods of industrialization are interrupted by periods of increasing shares of agriculture and increase in the overall rate of expansion of the economy has to be explained in terms of the extreme backwardness of the Portuguese economy at the start of the period under observation. Backwardness implied that the productivity gap between agriculture and industry was overall small. Such small productivity gap implies that labour productivity in some branches of agriculture could be higher than labour productivity in some industrial sectors. Moreover, as the levels of consumption was also very poor, there could be the case in which demand elasticities could be higher for agrarian output than for industrial output. As a consequence of all this, positive exogenous shocks could favour the agrarian sector in comparison to the industrial sector. One such occasion occurred in the period starting in the late 1920s. Then, demand for agrarian products of higher value added and labour and land productivity, such as fruits and vegetables or meat
increased at a quicker rate than demand for textiles. That led to a response of the agrarian sector and due to the fact that labour productivity in those agrarian products was higher than labour productivity in some industrial branches, the overall rate of productivity growth of the economy increased. This of course happened in a context of tariff and other protection for the agrarian sector and in a context of declining or stagnant growth of exports of industrial output.

This pattern of growth where a backward agrarian sector could still contribute positively to overall growth changed in a dramatic way after 1930. The main factor behind that change was the rapid growth of manufacturing which could then count on the growth of both domestic and international demand, and on the growth of investment in the sector. The kind of industrial growth that occurred then was no match for agriculture and so for the first time, the size of the primary sector shrank in a systematic way, both in terms of the share of employment and output. Due to the fact that employment in the agrarian sector fell more rapidly than output, there were improvements in labour productivity and, for the first time again, also in the productivity of land of the main crops, such as wheat, other cereals, as well as animal output. Moreover, investment in the agrarian sector expanded at slower growth than investment in industry in a systematic way. Due to the fact that industrial productivity growth expanded at rates that the agrarian sector could not follow, there was probably no place for economic policies that could have diminished the pace of structural change without consequences in the overall rate of economic growth. But there were also no relevant policies that would compensate for the loss of income either. The accession to the EEC in 1986 changed that and interestingly enough the financial transfers to Portuguese agriculture supported by the cohesion funds ended up by having some impact on the structure of output and thus on factor productivity in agriculture.

Endnotes and references: to be added
Table 1 – Male labour force (1841-1950) and total employment (1960-1990)

<table>
<thead>
<tr>
<th>Year</th>
<th>Agriculture</th>
<th>Industry</th>
<th>Services</th>
<th>Total male labour force</th>
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<tbody>
<tr>
<td>1841</td>
<td>67.5</td>
<td>15.9</td>
<td>16.6</td>
<td>993</td>
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<tr>
<td>1862</td>
<td>65.9</td>
<td>15.5</td>
<td>18.5</td>
<td>1,161</td>
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<tr>
<td>1864</td>
<td>66.0</td>
<td>15.7</td>
<td>18.2</td>
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<td>17.0</td>
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</tr>
<tr>
<td>1890</td>
<td>66.9</td>
<td>18.3</td>
<td>14.8</td>
<td>1,432</td>
</tr>
<tr>
<td>1900</td>
<td>66.4</td>
<td>18.8</td>
<td>14.8</td>
<td>1,522</td>
</tr>
<tr>
<td>1911</td>
<td>61.0</td>
<td>21.7</td>
<td>17.3</td>
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<td>1920</td>
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<td>21.2</td>
<td>17.9</td>
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<tr>
<td>1930</td>
<td>60.9</td>
<td>20.7</td>
<td>18.4</td>
<td>1,967</td>
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<tr>
<td>1940</td>
<td>57.8</td>
<td>21.0</td>
<td>21.1</td>
<td>2,241</td>
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<td>1950</td>
<td>53.8</td>
<td>24.6</td>
<td>21.6</td>
<td>2,562</td>
</tr>
<tr>
<td>1960</td>
<td>43.1</td>
<td>28.2</td>
<td>28.7</td>
<td>1,902</td>
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<tr>
<td>1970</td>
<td>27.6</td>
<td>33.9</td>
<td>38.6</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>19.2</td>
<td>37.7</td>
<td>43.1</td>
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</tr>
<tr>
<td>1990</td>
<td>13.1</td>
<td>37.3</td>
<td>49.6</td>
<td></td>
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</table>

Sources: Male labour force, Lains REH Employment. BP, Séries Longas

Table 2 – Portugal: Composition of GDP, 1850-1990 (percent)

<table>
<thead>
<tr>
<th>Year</th>
<th>Agriculture</th>
<th>Industry</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850(1)</td>
<td>47.8</td>
<td>11.7</td>
<td>[40.5]</td>
</tr>
<tr>
<td>1860(2)</td>
<td>38.6</td>
<td>17.4</td>
<td>[44.0]</td>
</tr>
<tr>
<td>1870</td>
<td>40.8</td>
<td>17.2</td>
<td>[42.1]</td>
</tr>
<tr>
<td>1880</td>
<td>40.4</td>
<td>17.1</td>
<td>[42.6]</td>
</tr>
<tr>
<td>1890</td>
<td>40.9</td>
<td>21.5</td>
<td>[37.6]</td>
</tr>
<tr>
<td>1900</td>
<td>40.1</td>
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<td>[35.3]</td>
</tr>
<tr>
<td>1910</td>
<td>37.1</td>
<td>27.1</td>
<td>35.8</td>
</tr>
<tr>
<td>1920</td>
<td>30.4</td>
<td>25.8</td>
<td>43.9</td>
</tr>
<tr>
<td>1930</td>
<td>31.5</td>
<td>28.0</td>
<td>40.5</td>
</tr>
<tr>
<td>1940</td>
<td>30.6</td>
<td>28.7</td>
<td>40.6</td>
</tr>
<tr>
<td>1950</td>
<td>32.1</td>
<td>30.3</td>
<td>37.6</td>
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<td>1960</td>
<td>27.2</td>
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</tr>
<tr>
<td>1970</td>
<td>15.3</td>
<td>48.8</td>
<td>35.9</td>
</tr>
<tr>
<td>1980</td>
<td>10.5</td>
<td>48.8</td>
<td>40.7</td>
</tr>
<tr>
<td>1990</td>
<td>10.4</td>
<td>44.6</td>
<td>45.0</td>
</tr>
</tbody>
</table>

(1) 1851; (2) 1861 1958 prices
Sources: Lains REH and Lains Statistical App..
Table 3 – Growth of output, labour force and labour productivity, 1860-1950
(annual growth rates, percent)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Output (1)</th>
<th>Agriculture</th>
<th>Industry</th>
<th>Services</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850-1870</td>
<td>-0.50</td>
<td>2.17</td>
<td>0.63</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>1870-1900</td>
<td>1.62</td>
<td>2.57</td>
<td>0.74</td>
<td>1.47</td>
<td></td>
</tr>
<tr>
<td>1900-1930</td>
<td>0.82</td>
<td>2.16</td>
<td>2.03</td>
<td>1.60</td>
<td></td>
</tr>
<tr>
<td>1930-1960</td>
<td>2.42</td>
<td>4.02</td>
<td>2.74</td>
<td>3.08</td>
<td></td>
</tr>
<tr>
<td>1960-1990</td>
<td>1.33</td>
<td>5.45</td>
<td>5.51</td>
<td>4.81</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Labour force (2)</th>
<th>Agriculture</th>
<th>Industry</th>
<th>Services</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850-1870</td>
<td>0.70</td>
<td>0.95</td>
<td>0.59</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>1870-1900</td>
<td>0.72</td>
<td>1.19</td>
<td>0.18</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>1900-1930</td>
<td>0.59</td>
<td>1.13</td>
<td>1.55</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>1930-1960</td>
<td>0.12</td>
<td>2.53</td>
<td>1.91</td>
<td>1.13</td>
<td></td>
</tr>
<tr>
<td>1960-1990</td>
<td>-3.07</td>
<td>1.81</td>
<td>2.72</td>
<td>0.86</td>
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</tr>
</tbody>
</table>

Labour productivity

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Agriculture</th>
<th>Industry</th>
<th>Services</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850-1870</td>
<td>-1.20</td>
<td>1.22</td>
<td>0.04</td>
<td>-0.38</td>
</tr>
<tr>
<td>1870-1900</td>
<td>0.90</td>
<td>1.39</td>
<td>0.57</td>
<td>0.76</td>
</tr>
<tr>
<td>1900-1930</td>
<td>0.23</td>
<td>1.03</td>
<td>0.48</td>
<td>0.75</td>
</tr>
<tr>
<td>1930-1960</td>
<td>2.30</td>
<td>1.50</td>
<td>0.83</td>
<td>1.94</td>
</tr>
<tr>
<td>1960-1990</td>
<td>4.40</td>
<td>3.64</td>
<td>2.79</td>
<td>3.95</td>
</tr>
</tbody>
</table>

(1) 3 year averages, except 1850=1851 and 1860=1861
(2) 1850-60=1841-62; 1860-70=1870-80=1862-78
Table 4 – Growth of inputs and ratios  
(annual growth rates, percent)

<table>
<thead>
<tr>
<th></th>
<th>Output</th>
<th>Land (H)</th>
<th>Labour</th>
<th>Capital (K)</th>
<th>O/L</th>
<th>H/L</th>
<th>K/L</th>
<th>O/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>1865-1902</td>
<td>1.41</td>
<td>0.66</td>
<td>0.72</td>
<td>0.63</td>
<td>0.69</td>
<td>-0.06</td>
<td>-0.09</td>
<td>0.75</td>
</tr>
<tr>
<td>1902-1927</td>
<td>0.77</td>
<td>-0.14</td>
<td>0.59</td>
<td>0.86</td>
<td>0.18</td>
<td>-0.73</td>
<td>0.27</td>
<td>0.91</td>
</tr>
<tr>
<td>1927-1962</td>
<td>2.43</td>
<td>0.25</td>
<td>0.12</td>
<td>1.44</td>
<td>2.31</td>
<td>0.13</td>
<td>1.32</td>
<td>2.18</td>
</tr>
<tr>
<td>1962-1973</td>
<td>-2.00</td>
<td>-0.38</td>
<td>-3.46</td>
<td>1.20</td>
<td>1.46</td>
<td>3.08</td>
<td>4.66</td>
<td>-1.62</td>
</tr>
<tr>
<td>1973-1990</td>
<td>2.68</td>
<td>-0.21</td>
<td>-2.88</td>
<td>2.70</td>
<td>5.56</td>
<td>2.67</td>
<td>5.58</td>
<td>2.89</td>
</tr>
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</table>


Table 5 – Land use

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Under crop</td>
<td>1,886</td>
<td>3,111</td>
<td>3,282</td>
<td>3,380</td>
<td>4,762</td>
<td>4,206</td>
<td>3,902</td>
<td>2,973</td>
</tr>
<tr>
<td>2. Fallow and pasturage</td>
<td>2,116</td>
<td>1,926</td>
<td>1,565</td>
<td>1,484</td>
<td>396</td>
<td>590</td>
<td>1,049</td>
<td>1,590</td>
</tr>
<tr>
<td>3. Agricultural (1+2)</td>
<td>4,002</td>
<td>5,037</td>
<td>4,847</td>
<td>4,864</td>
<td>5,158</td>
<td>4,796</td>
<td>4,951</td>
<td>4,563</td>
</tr>
<tr>
<td>4. Forests</td>
<td>1,240</td>
<td>1,957</td>
<td>2,332</td>
<td>2,467</td>
<td>2,832</td>
<td>2,969</td>
<td>3,108</td>
<td>3,349</td>
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<tr>
<td>5. Productive (3+4)</td>
<td>5,242</td>
<td>6,994</td>
<td>7,179</td>
<td>7,331</td>
<td>7,990</td>
<td>7,765</td>
<td>8,059</td>
<td>7,912</td>
</tr>
<tr>
<td>6. Unused but fit</td>
<td>3,347</td>
<td>1,516</td>
<td>1,318</td>
<td>1,165</td>
<td>490</td>
<td>690</td>
<td>371</td>
<td>465</td>
</tr>
<tr>
<td>7. Unfit</td>
<td>291</td>
<td>370</td>
<td>383</td>
<td>384</td>
<td>400</td>
<td>425</td>
<td>450</td>
<td>503</td>
</tr>
<tr>
<td>8. Inland watercourses</td>
<td>107</td>
<td>107</td>
<td>107</td>
<td>107</td>
<td>107</td>
<td>107</td>
<td>107</td>
<td>107</td>
</tr>
<tr>
<td>Total (5+6+7+8)</td>
<td>8,987</td>
<td>8,987</td>
<td>8,987</td>
<td>8,987</td>
<td>8,987</td>
<td>8,987</td>
<td>8,987</td>
<td>8,987</td>
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</table>

PERCENT

<table>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Under crop</td>
<td>21.0</td>
<td>34.6</td>
<td>36.5</td>
<td>37.6</td>
<td>53.0</td>
<td>46.8</td>
<td>43.4</td>
<td>33.1</td>
</tr>
<tr>
<td>2. Fallow and pasturage</td>
<td>23.5</td>
<td>21.4</td>
<td>17.4</td>
<td>16.5</td>
<td>4.4</td>
<td>6.6</td>
<td>11.7</td>
<td>17.7</td>
</tr>
<tr>
<td>3. Agricultural (1+2)</td>
<td>44.5</td>
<td>56.0</td>
<td>53.9</td>
<td>54.1</td>
<td>57.4</td>
<td>53.4</td>
<td>55.1</td>
<td>50.8</td>
</tr>
<tr>
<td>4. Forests</td>
<td>13.8</td>
<td>21.8</td>
<td>25.9</td>
<td>27.5</td>
<td>31.5</td>
<td>33.0</td>
<td>34.6</td>
<td>37.3</td>
</tr>
<tr>
<td>5. Productive (3+4)</td>
<td>58.3</td>
<td>77.8</td>
<td>79.9</td>
<td>81.6</td>
<td>88.9</td>
<td>86.4</td>
<td>89.7</td>
<td>88.0</td>
</tr>
<tr>
<td>6. Unused but fit</td>
<td>37.2</td>
<td>16.9</td>
<td>14.7</td>
<td>13.0</td>
<td>5.5</td>
<td>7.7</td>
<td>4.1</td>
<td>5.2</td>
</tr>
<tr>
<td>7. Unfit</td>
<td>3.2</td>
<td>4.1</td>
<td>4.3</td>
<td>4.3</td>
<td>4.5</td>
<td>4.7</td>
<td>5.0</td>
<td>5.6</td>
</tr>
<tr>
<td>8. Inland watercourses</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Total (5+6+7+8)</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 6 – Contribution of inputs and TFP to output growth (percent)

<table>
<thead>
<tr>
<th>As percent of output growth</th>
<th>Land</th>
<th>Labour</th>
<th>Capital</th>
<th>TFP</th>
<th>Land</th>
<th>Labour</th>
<th>Capital</th>
<th>TFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1865-1902</td>
<td>0.231</td>
<td>0.288</td>
<td>0.158</td>
<td>0.734</td>
<td>16.4</td>
<td>20.4</td>
<td>11.2</td>
<td>52.0</td>
</tr>
<tr>
<td>1902-1927</td>
<td>-0.049</td>
<td>0.236</td>
<td>0.215</td>
<td>0.368</td>
<td>-6.4</td>
<td>30.6</td>
<td>27.9</td>
<td>47.8</td>
</tr>
<tr>
<td>1927-1962</td>
<td>0.088</td>
<td>0.049</td>
<td>0.360</td>
<td>1.936</td>
<td>3.6</td>
<td>2.0</td>
<td>14.8</td>
<td>79.7</td>
</tr>
<tr>
<td>1962-1973</td>
<td>-0.133</td>
<td>-1.384</td>
<td>0.300</td>
<td>-0.788</td>
<td>-6.7</td>
<td>-69.2</td>
<td>15.0</td>
<td>-39.4</td>
</tr>
<tr>
<td>1973-1990</td>
<td>-0.074</td>
<td>-1.152</td>
<td>0.675</td>
<td>3.231</td>
<td>-2.7</td>
<td>-43.0</td>
<td>25.2</td>
<td>120.5</td>
</tr>
</tbody>
</table>

Shares: Land = 0.35; Labour = 0.40; Capital = 0.25
Sources: see Table 4

Table 7 - The structure of agricultural output, 1853-1958 (current prices; per cent)

<table>
<thead>
<tr>
<th>1861-70</th>
<th>1900-9</th>
<th>1935-39</th>
<th>1954-58</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals and potatoes</td>
<td>38.9</td>
<td>35.4</td>
<td>40.6</td>
</tr>
<tr>
<td>Wheat</td>
<td>10.8</td>
<td>11.0</td>
<td>17.5</td>
</tr>
<tr>
<td>Other cereals</td>
<td>23.6</td>
<td>19.9</td>
<td>14.0</td>
</tr>
<tr>
<td>Potatoes</td>
<td>4.5</td>
<td>4.5</td>
<td>9.1</td>
</tr>
<tr>
<td>Wine</td>
<td>21.8</td>
<td>23.3</td>
<td>13.5</td>
</tr>
<tr>
<td>Olive oil</td>
<td>5.8</td>
<td>8.1</td>
<td>7.9</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>7.8</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Animal products</td>
<td>24.8</td>
<td>23.1</td>
<td>28.0</td>
</tr>
<tr>
<td>Meat</td>
<td>15.3</td>
<td>16.2</td>
<td>18.7</td>
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<tr>
<td>Dairy</td>
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<td>5.6</td>
<td>7.8</td>
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<td>1.5</td>
</tr>
<tr>
<td>Cork</td>
<td>0.7</td>
<td>3.8</td>
<td>3.2</td>
</tr>
<tr>
<td>TOTAL</td>
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</table>

* Included in wheat
Table 8 - The structure of agricultural output, 1950-1973
(Constant prices; per cent)

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<tbody>
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<td>Cereals</td>
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<td>16,7</td>
<td>13,0</td>
<td>10,7</td>
<td>16,2</td>
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<tr>
<td>Beans, potatoes, etc.</td>
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<td>7,4</td>
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<td>6,5</td>
<td>7,5</td>
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<td>Wine and eau-de-vie</td>
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<td>12,4</td>
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<td>6,6</td>
<td>6,0</td>
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<td>3,8</td>
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<tr>
<td>Fruits</td>
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<tr>
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<tr>
<td>Milk</td>
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<td>6,5</td>
<td>6,5</td>
<td>6,8</td>
<td>7,4</td>
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<td>21,2</td>
<td>21,3</td>
<td>27,6</td>
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<tr>
<td>Eggs, wool, etc.</td>
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<td>5,1</td>
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<tr>
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<td>3,8</td>
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<td>Wood</td>
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<td>8,8</td>
<td>9,0</td>
<td>9,5</td>
<td>10,9</td>
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<tr>
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<td>Animal products</td>
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<td>32,9</td>
<td>39,7</td>
<td>31,3</td>
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<tr>
<td>Forest products</td>
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<td>14,5</td>
<td>16,4</td>
<td>15,3</td>
<td>16,9</td>
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<tr>
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<td>100,0</td>
<td>100,0</td>
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Source: Girão, Tables A2.4 to A2.6
### Table 9 – Agricultural sectoral growth, 1850-1973
(Constant prices; per cent)

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</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>-0.42</td>
<td>1.09</td>
<td>1.81</td>
<td>2.10</td>
<td>-1.54</td>
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<td>-1.23</td>
<td>-0.04</td>
<td>-1.01</td>
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<td>Rye</td>
<td>-1.04</td>
<td>1.87</td>
<td>-1.07</td>
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<td>Rice</td>
<td>4.57</td>
<td>-1.89</td>
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<td>Wine &amp; spirits (1)</td>
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<td>3.99</td>
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<tr>
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<td>-7.79</td>
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<tr>
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<td>0.49</td>
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<td></td>
<td></td>
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</tbody>
</table>

(1) Wine only to 1950; (2) Olive oil only to 1950; (3) Potatoes only to 1950; To 1950 the years are the center of three-year averages. Sources: Lains, REH; Girão, Tables A2.4 to A2.6 and A2.11 for cereals.