# *Spain in Europe: a Century of Growth*

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## 1. Europe as a Natural Environment

Although the historical presence of the united European states defined a geographical space nominally divided into countries, in practice, any event occurring in any part of the continent always had had swift repercussions over the rest. Despite poor transportation links and communication technology in earlier periods, diffusion consistently occurred throughout the entire European area.

Thus a common European space above and beyond the political administrative division of each one of its specific areas can easily be considered. What the European division did do, in all probability, was increase the transaction costs of the diffusion of ideas, and therefore of technical change, which created gaps in the application of knowledge within the various geographical areas of the continent. Responsible for national legislation, the states encouraged institutional and technological divergence among the various countries.

Fortunately, there are, and always have been, homogenizing forces of such intensity that isolationist attempts on the part of national states have, at least partially, been frustrated. This fact leads to our belief that no European country should be analyzed without considering its geographic, economic and political context. The analysis of the Spanish situation is a case in point and we therefore propose to place its economic development within the European context.

## 2. The Theoretical Framework

Partly due to the growth model's inability to make predictions when applied to developing countries, interest in literature dealing with growth fell to a low ebb for two decades. Growth theory then revived in the eighties, although at this time the "residual" factor was considered as being endogenous to the model. The more efficient the theory is in explaining the variables of a model from within its own internal structure, the more viable the model and the stronger the theory. This is what Romer (1986) and Lucas (1988), among others, have proposed as an alternative to more traditional growth models. Economic progress identified with "on the job" knowledge is the most outstanding contribution of both authors. Embedded and applied knowledge, as well as its accumulation, are behind the so-called "residual" which has consistently emerged as the factor determining growth. In the words of Lucas (1993, p. 270):

"The engine of growth is the accumulation of human capital, of knowledge, and the main source of differences in living standards among nations is differences in human capital. Physical capital accumulation plays an essential but decidedly subsidiary role.[1]"

In symbiosis with physical capital, human capital determines whether economy and society as a whole will gradually acquire greater levels of knowledge and, in turn, greater levels of growth. This occurs because man not only invests in himself, although it is obvious that this is his primary motivation, but he also unwittingly invests in society. A dual accumulation occurs: direct for the individual and induced for society. The engine of accumulation is the dynamic relation between man and machine over time, that is, of human knowledge and its product, technical change.

Without technical change, capital accumulation would tend to bring a collapse in economic growth due to the appearance of diminishing returns in capital input. The way to avoid this is through technological change which, together with skilled labour, allow the economy to move along the "quality ladder" (Grossman and Helpman, 1991).

[1] Romer (1994) expresses a similar opinion when he laments his temporary indecisiveness in not having placed more emphasis on knowledge as the principal cause of growth.

Parallel to technical change, institutions, defined as creations of man to impose constraints, reflect the possibilities, incentives and limitations available to members of the social group over time (North, 1990).

Knowledge and its accumulation are the origin and purpose of both technical and institutional change. Knowledge is simultaneously used to create institutional norms and technology. This dual action on the part of knowledge, upward within the institutional framework and downward in the form of technological change, defines our theoretical framework for the analysis of the economy. Economic growth is constrained as much by the action of technological forces as by institutional forces[2] and a society's growth and progress depend on its ability to adapt and change.
- A country is more likely to succeed, in terms of growth and welfare for its citizens, the more capable it is of adapting to the following essential factors conditioning its possibilities over time:
- A stable but not inflexible institutional structure that guarantees incentives to its citizens and organizations within a stable political order. The literature of economy refers to this condition as "ultimate growth causality".
- A process of technological change based on the accumulation of human knowledge over time acquired through research and development and, particularly, learning on the job. This condition is known as "near causality".

Individuals are the essential agents in these processes although their actions inevitably have social repercussions through spillovers occasioned by geographical proximity, historically toward the city and its environment. With knowledge as a tool, individuals are the builders of institutions and technologies.

These factors determine the analysis of economic and social progress which is, essentially, the study of evolutionary change advanced by the technological and institutional forces described above. These are united in their origin, but divergent in their results. The institutional force tends toward stability while the technological force tends toward change. The dynamics at play between the two forces determines the net result for society.

[2] Kuznets (1973) refers to the institutional framework as "social technology" and the technological framework as "material technology".

## 3. Ultimate and near growth causalities

Although ultimate causality or social technology is difficult to perceive, for the purposes of this paper the institutional framework will be represented by commercial freedom and recognition of property rights as evidence that both individuals and organizations are able to practise economic activity. The possibility of buying and selling as well as transmitting and receiving inheritance, among other activities, clearly defines capitalist societies as opposed to earlier organizations (Pejovich, 1995).

But economic freedom can scarcely take place in society without an impartial judicial structure capable of dealing with the inevitable discrepancies that arise from mercantile activity. Property rights can hardly be assumed without a referee to guarantee equality for all parties involved. But unbiased treatment of all parties requires the existence of a market that guarantees a neutral space and referees that make decisions that are impartial *a priori*, whenever the need arises.

Commerce has always implied the acceptance of "others" in conditions of impartiality which, in turn, requires the existence of neutral courts when discrepancies arise. In international commerce, it is not at all paradoxical that special neutral courts were formed separately from state jurisdictions.

Property rights, ratified by the population as a sign of freedom, along with unquestionable judicial impartiality are the pillars of the institutional framework that we will describe in this paper.[3] The logical product of this framework is the market with its historical tendency toward expansion. Thus, the stronger the pillars described, the more motivated individuals will be to participate while accepting the rules that assure neutrality.

Commercial freedom and judicial independence are not only basic requirements for economic growth but also for political freedom. The higher the level of development, the greater the degree of political

[3] There are obviously many other institutions that we could have used. The capitalist system has generated a great variety and number of them. See Rosenberg and Birzal (1992).

freedom (Scully, 1992). Already well established in Europe at the beginning of the XXth century, freedom and the right to economic association as well as judicial independence were increasingly strengthened. However, in the political arena, democracy continued to show signs of weakness and actually lost ground at times. It was only after World War II that political freedom was able to parallel economic freedom.

With regard to near causality, efforts on the part of Maddison (1991, 1996), Bairoch (1974), Levy-Leboyer, *et al.* (1981) and Heston and Summers (1987, 1992)[4] have compiled great quantities of uniform statistical data, in many cases dating from the beginning of the XIXth century, thus providing an inestimable aid to the study of the economies of a large number of countries.

Therefore, as with Maddison (1996), we will evaluate near causality of growth based on real GDP per capita and output per hour worked as well as on three, widely accepted economic indicators: life expectancy, an educational index and workforce participation scheduled by occupation.

## 4. 1900-1913[5]: The Legacy of the XIXth Century

In the first decades of the XXth century, the United States became the leader as a rôle model of economic development based on the two types of causality described above. On the one hand, it was endowed with an institutional matrix in which property rights, judicial independence and political stability favoured development, thus rapidly placing the U.S. among the most advanced countries. On the other, the technological framework also placed this country on the frontier of world technology. Reciprocity between both causalities demonstrates the harmony existing in the United States between the two forms in which knowledge is manifested.

[4] Heston and Summers' research (1987, 1992) provides information since 1950 for 114 countries and 19 values, different but uniform among themselves.

[5] We adopt here the division into periods most accepted by researchers: 1900-1913, 1913-1950, 1950-1973 and 1973-1992.

Tendencies in the U.S. economy are shown in tables 1, 2 and 3 where levels of output per hour worked, job participation by sector and years of education are represented. In all of these tables, the United States consistently ranks among the highest at the international level and graph 1 corroborates this tendency for real GDP per capita values, therefore establishing a correlation between real GDP per capita and indicators of near causality.

The subsequent diffusion of technical and organizational change from the United States to European countries was to become a decisive factor in these countries' growth depending on their capacity to absorb change (Craft and Toniolo, 1996). Growth potential was not an isolated matter but rather a universal phenomenon in which knowledge behaves as a quasi-public good available to individuals and organizations. The existence of national political borders was unable to isolate countries from technological and institutional diffusion. This will be demonstrated quite conclusively by the European countries in our sample.

In this period, Spain tended to lag, not only behind the leader but also behind the other European countries as can be seen in graph 1. The causes are clear: neither the ultimate causality of Spanish institutional structure nor the indicators expressing near causality were capable of supporting sustained economic growth at faster rates. In order to have benefited from the capitalist impulse then pervading Europe, Spain's technological and institutional structure would have had to respond to the opportunities existing at that time. Attempts at reform or "revolution" appearing throughout the greater part of the XIXth century were based on the belief that a proclamation or a decree would be sufficient to change reality (Tomás y Valiente, 1979 and Artola, 1978). The creators of these laws had not taken into account the material and technological situation, particularly the deficient educational level of the great majority of the Spanish population.

However, it can be argued that the ultimate causes of development in Spain showed at least nominal signs of alignment with European legislation. Property rights, commercial freedom and judicial impartiality were gradually being accepted into the mentality of the Spanish population and a tendency to place Spanish institutional organization into its European milieu can be identified (Fusi y Palafox, 1997).

The near causes of development were much weaker in both intensity and direction. As can be seen in graph 2, at the beginning of the century Spain's population was mostly rural and the agricultural sector absorbed almost 70% of the work force, half of the population was illiterate and, much more significant, only a little over a third of children attended school (Tortella, 1994)[6]. It is here, in the near causes, that the state's incapacity to assume its "sovereign duties" became obvious (Sundrum, 1983). There was no appreciable effort to improve education nor to create infrastructures that would facilitate greater union within the country, nor was an effort made to strengthen economic institutions (Sánchez Albornoz, 1973).

Hence, the productive potential of the Spanish population in general lagged behind institutional development. That is, there was a considerable rift between what legislated rules allowed and what individuals and organizations were prepared to undertake and productively absorb (Maddison, 1964). Considerable time was to elapse before the gap between the two technologies would narrow and, once it began to do so, the process was by no means harmonious. This situation was a powerful source of potential conflict which, sooner or later, would have to be resolved. And thus Spain emerged into the XXth century.

Between 1900 and 1913, Spain fell behind the rest of the European countries. In spite of its political stability and, at least nominally, equivalent institutional structure, the historic delay in near causality indicators showed no sign of improvement, or even of remaining constant, compared to the most representative European countries. Seen from this perspective, Spanish political stability in this period was no more than a mirage of the economic and social reality of the country. The gap between social and material technology consistently increased and, assuming, as we have above, that technological change tends to generate instability, the greater the gap between the technologies, the greater the spectre of future turbulence.

Spain gradually but systematically lagged behind European positions as shown in graph 4 where Spanish GDP per capita increasingly trailed

[6] In 1910, the percentage of school-age children attending school was 36.2% and literacy was at 49.6% (Tortella, 1994).

that of the other countries considered. The general population enjoied little or no improvement in material conditions and the urban industrial population was increasingly frustrated by its lack of preparation for absorbing modest but increasing levels of technology.

Nevertheless, graph 2 shows that participation of the work force in agriculture began to decrease from 1910 on, while graph 5 shows that the industrial output index rose slightly. Although it is true that Spain lagged behind Europe in GDP per capita, the data also reveals that the fundamental tendencies affecting the European economy and its productive forces were also being felt in Spain. Although geographically concentrated, industrialized nuclei had already materialized.

## 5. 1913-1950: On Wars and Recessions

Europe, then, was engaged in a period of "evolutionary accommodation" of industrialization with significant growth rates, as shown by the average European GDP per capita (table 4), and considerable political and social advances, such as universal suffrage, human rights and the birth of the welfare state. This period was abruptly truncated by World War I (Woodruff, 1973). Europe disengaged from these processes and a long period of economic slowdown, interspersed with episodes of general stagnation and even retrocession in particular cases (Bairoch, 1981), began.

From an economic perspective, the war's most perilous consequence was the tendency toward isolationism among states. The politics of autarchy spread throughout the territory in the period between the two world wars (Pelliceli, 1976). This entire whole period may be defined by non-cooperation; protectionism increased, international commerce was debilitated and import quotas were established as an individual solution to problems that were, in fact, common to all. This isolationism, which also occurred in the United States, weakened international relations, financial flow and, even worse, ongoing technological diffusion. It was not an easy task to progress in these circumstances; only a return to normality could generate development.

The peculiar circumstances of the United States led this country to

reach significant (toward 1950, even astounding) levels of labour productivity compared to those of Europe (table 1). However, tables 1, 2 and 3 show values for near causality of growth in the European countries approaching those of the United States. Thus, at the end of the Second World War the most advanced countries had achieved the material foundation necessary to lead them satisfactorily down the road to growth. Their citizens had reached a level of advance similar to that existing in the leading country. The only thing lacking was the opportunity to demonstrate this fact on the job with the incorporation of new technological gains.[7] It is of particular interest to note the synchronization in the trends - rates and levels - of the institutional and technological variables in these advanced European countries.

## 6. The First Spanish Institutional Shock

According to table 5, the decrease in the Spanish GDP index compared to the United Kingdom and the other countries in the sample was significant, although it is true that neither the direction nor the depth would seem to indicate that this decrease was abnormal or out of context. Nevertheless, there were unmistakable indications that the gap existing between social and material technology had increased beyond the threshold of security and threatened to create a cataclysmic social conflict.

The increasing rift between the two technologies generated radical reactions of mutual hostility among the social classes. Although entrepreneurs were guaranteed full freedom of action in their economic relations, workers were unable to take advantage of this social relationship due to lack of training. Some, disregarding the actual level of training of the work force, hoped to take advantage of flexible laws in an attempt to implement the complete gamut of capitalist relations: layoff, shutout, wage flexibility, mobility, etc. At the same time, the initial nuclei of workers, a small but increasingly dogmatic group, was more and more frustrated by poor environments, subsistence salaries and lack of professional

[7] While Henry Ford was able to produce 400 vehicles a day in 1921, it was not until the 1960s that Europe reached these output levels.

qualification and hoped to radically change the system. A more harmonious development of the two forces over time would have required decisive government policy resolutions in the area of education and level of training of the population. The intolerable delay in even the most elementary educational levels had disastrous consequences on the social order which could no longer be contained within the limits of reasonable tension.

As a solution to conflict, civil war is the maximum expression of mutual hostility. The institutional shock inherent in Spain's civil war signified a rupture between ultimate and near causalities of growth. Social expectations were shattered and an utter collapse in the rules of social behaviour took place.

Ironically, the result of the conflict was that of narrowing the gap previously existing between the two forces, allowing them to begin a new process of evolutionary accommodation. Thus war was the instrument that solved the crisis in the system and permitted knowledge, in its dual manifestation, to reinitiate its evolution from a new starting point at more realistic levels of development.

The tendency toward equilibrium between the two technologies was accomplished in Spain by adapting, or rather, reducing the institutional structures to the level of existing technology. In return, the absence of acute tension between the two technologies was guaranteed at least for one generation. However, as a consequence of this adjustment, the technologies had a much greater distance to cover in order to converge with the other nations in the matrix that had not undergone a shock of these dimensions.

Europe was also exposed to the experience of war but, at its conclusion, the two technologies showed a much greater tendency toward equilibrium than in Spain. Europe's institutional structure "matched up" to the technological framework at a higher level of economic evolution and its ability to recuperate was therefore much greater.

## 7. 1950-1973: The Great Escape

In the 1950s, the level of technology embodied in Europe's productive system was much lower than that in the United States (Maddison, 1964).

Nevertheless, as we have mentioned above, neither the institutional framework nor the formation of human capital differed substantially. That is to say that the occupational distribution of Europe's population was similar to that existing in the United States (table 3), although exceptions to this observation justify differences in the performance of the respective economies.

The element lacking in European economic reality was embedded knowledge in the form of applied technology and this problem was to be corrected by the acceleration in the diffusion of technology coming from the United States. The *pax americana* made possible the development of multinational firms and massive technology transfer adapted to the needs of the continent (Nelson and Wright, 1992; Abramovitz, 1986 and 1992).

From 1950 on, Europe attained what has been called "the golden years" of economic growth. In general, growth rates and GDP levels in the respective countries reached levels never seen before. Of course, some incongruities did appear over time but, by and large, the phenomenon was long-lasting and covered the entire continent (table 6 and graph 6). The data show a stage of unconditional convergence of Europe with U.S. levels and even to both groups of countries belonging to the same "convergence club" (Baumol, 1986). The abysmal differences in output per hour worked existing at the beginning of this period diminished until the principal European countries reached values significantly approaching those of the leader (table 7). The process was generalized, as seen in graph 7, in which the 15 most industrialized countries showed unmistakable gains in output per hour worked with respect to the United States.

Convergence was also occurring among the European countries in regard to GDP per capita. In this period of time, the United Kingdom lost ground as the continent's leader, while several countries - among them Germany and France - not only converged with England but also managed to gain both in output per hour worked and in GDP per capita (table 1 and graph 6). Lasting over more than a century, England's position as economic leader finally vanished thus leaving the immutability of economic situations open to question. Growth, convergence and even

changes in leadership are not simple processes but by no means impossible. In this period, the European countries show an unmistakable and generalized tendency toward convergence among themselves and between themselves and the world leader (Abramovitz, 1986).

In Spain, events were not dissimilar. Once the dictatorship was clearly established after some uncertainty in the 1940s, the government's political and economic possibilities were defined by and limited to the matrix composed of the United States and the other European countries. In reality, there was never any alternative to this context. The only unknown was whether growth could occur and, if so, how long Spanish society and economy would take to adjust its approach to the common customs and practices of its milieu.

As regards near causality, gains in life expectancy were dramatic. Improvement could already be noted in the 1940s, gradually progressing over this entire period. In 1950, life expectancy was 62.1 years but by 1970 this figure had risen to 72.4 (Fundación Banco Exterior, 1989). The trend toward levels prevailing in other European countries was obvious.

Nevertheless, the delay in the other two variables considered in the analysis of near causality was still apparent. In effect, Spain showed levels considerably behind the rest of Europe and the United States in both labor participation rates and years of education received by the adult population, a proxy for human capital (graph 2 and table 3). It is here that Spain differed from western Europe. The higher level of human capital the other countries sampled gave them more flexibility in absorbing new technology and they were more likely to create new technological processes. These factors not only transformed the structure of the work force and brought about essential labour mobility, but also led individuals to change their views of society.

Seen in perspective, labour mobility clearly contributed to European and, particularly, Spanish development. Between 1960 and 1970 alone, more than two million people abandoned Spanish rural areas in search of new opportunities (Barciela, 1994). Mobility, change in shared mentalities, scale economies in output and expanding markets define this period of industrialization and economic growth on the continent.

Although Spain clearly lagged behind the European average in the occupational structure of its population, this factor did not prevent the

country from progressively attaining standard technological levels in industry during that period.[8] Productivity measured as output per hour worked, was $2.60 in 1950 but reached $10.86 in 1973 showing the greatest growth rate of all the countries in the sample (table 1). Only Japan grew at a slightly faster rate. Moreover, if more data were available broken down by sectors, the rates would surely prove to be even more spectacular at the end of the 1950s and beginning of the 1960s.

If we consider this data along with GDP per capita (graph and table 6) or the industrial output index (graph 5), there is no doubt that the onset of development in Spain occurred in the 1950s (Alfonso, 1982), thus dismissing the theory that Spanish growth began in the 1960s. It is true that growth in the 1950s did not bring with it an improvement in income distribution but, unfortunately, this is not unusual in capitalist development. Moreover, this initial tendency toward inequality observed in personal income distribution in the first years of economic development gave way to substantial improvement from the 1970s on (Alcaide Inchausti, 1993).

Not only did output increase dramatically in the industrial sector, but agriculture also showed substantial gains in GDP per hour worked. Actually, the agricultural sector, in general and in all countries, a better pattern of growth than the industrial sector (Johnson, 1997). From 1950 to 1973, Spain was able to eliminate the threat of insufficient agricultural production, which had historically caused sequence of scarcity and famine, a great achievement without a doubt.

Excessively high levels of labour employed in the primary sector, as shown in graph 2, and an increase in productivity made this sector a prime candidate for the release of labour. The consequent labor flow should have spread throughout the rest of the economy although, in reality, the greatest displacement occurred toward the industrial sector. In fact, the industrial work force increased by more than one million persons from 1950 to 1970 to which one must add half a million already

[8] Of course, as occurred at first in Europe, technological diffusion was not uniform throughout the Spanish economy. This analysis would require a study at the regional level, a task beyond the scope of this paper.

incorporated into this sector in the 1940s (Fundación Banco Exterior, 1989).

Besides the reciprocal demand for goods between agriculture and industry, the relation between the two sectors led to the inevitable rise of an urban working class that tended to modify the social environment with newly emerging mentalities. Industrialization, as is well known, introduces two critical population groups into the economic and political development of any country: entrepreneurs and industrial workers. So it did in Spain.

However, this period of intense growth and the promise of political and social change simultaneously manifested a dark side in the labour market. The rate of labour absorption into the industrial sector and the level of working population approached values similar to the European sample which forebode significant problems in absorbing new and future flows. At the beginning of the 1950s, the primary sector still sustained more of the working population than the average for the rest of Europe, almost 50% as opposed to an average of 17% for the other countries (table and graph 2). At the same time, the growth rate of Spanish population was higher than the rest of Europe (Carreras, 1993) and, last but not least, the entry of women into the work place was lower but tended to increase in a context of social change. With these factors looming over the Spanish labour market, one can easily imagine the problems on the horizon.

## 8. 1973 - 1992: On Shocks and Decelerations

Over this period, a relative drop in output per hour worked (table 1) and, consequently, a slowdown in output per capita occurred in all the countries listed. Since the decrease in output is more evident in the United States, this period can continue to be considered one of convergence, that is, of European countries catching up with the leader. Moreover, some countries, such as France, the Netherlands, Germany and Belgium reached and even surpass, as did France in 1992, the United States' labour productivity level. Table 1 also reveals that Japan and Spain are, once again, the countries showing the greatest gains in labour

productivity: Japan from $11.15[9] in 1973 to $20.02 in 1992 and Spain from $10.86 to $20.22 over the same period.

Structural change in the European economies continued. Graphs 8, 9 and 10 show the workforce clearly shifting toward the service sector from the 1950s as opposed to stagnation, if not retrogression, in the secondary sector and "free fall" in the primary sector. The fact that industry in all the countries cited no longer absorbed labour alerts us to possible lags in the secondary sector as a net demander of labour. Although this sector maintained its strategic importance in generating embedded knowledge through machinery utilised in all the other, it was no longer the principal generator of employment. Labour productivity gains in the sector were accomplished through labour saving techniques and, therefore, industry's capacity to absorb more labour was limited.

In Spain, the incorporation of labour into the tertiary sector of the economy increased and, although a certain balance was maintained at first, the workforce employed in tertiary activities later surpassed labour in the secondary sector, as can be seen in graph 2. Nevertheless, since labour expansion was not usually accompanied by gains in output per hour worked, the final effect was a tendency to increase the sector's costs. It would be logical to assume that when a sector absorbs the greatest amount of labour but simultaneously shows itself to be rigid in costs, it will exert pressure on the rest of the economic system with its increasing need for resources.

If this sector is also more protected, as occurred and still occurs in Spain and Europe, greater price inflexibility in the tertiary and exchanges among the sectors will add pressure to the absorption of resources from the rest of the economy. The need for resources will tend to be greater than its relative share of output. Deregulation would appear to be an alternative, perhaps the only alternative, in order to increase the rather slow gains in labour productivity in the service sector.

In the first sub-period analyzed, 1974 to 1984, Spain's GDP per capita increased from $9,156 to $9,732, an average increment of 11.36%. Over the same period, the average increase in GDP per capita for the countries

[9] Figures in 1990 dollars.

represented was 17.20% (table 9). That is, Spain once again showed growth rates below the European average as opposed to the tendency observed in the previous period. In the second sub-period, 1985-1994, Spain's average was slightly higher than that observed for the sample, as can be seen in the same table.

Progress in the near causes of development were significant during this period: life expectancy reached 77 years in 1992 and was among the highest in Europe (graph 3), the distribution of labour gradually caught up with the rest of the countries in Europe (graphs 8, 9 and 10) and values for education, resolutely promoted by the government, approach those recorded in Europe for the first time in the century, as can be seen in table 3.

However, unemployment, unknown before this period, increased from 2.9% of the working population in 1950 to 9.1% in 1973 and to 19.0% by 1992 (table 8). The unemployment rate multiplied by 6.5 and over 2.5 million people became unemployed. How had this come about?

We have described above the factors that were inevitably to put pressure on the labour market: population growth rates above the European average, few women in the work force, the continued excess of labour in agriculture and, finally, labour saturation in the secondary sector.

The capital-labour ratio increased considerably throughout this period (table 10) as did estimates for the level of capital stock in the Spanish economy (graph 11). This would suggest that the economy was undergoing an intense process of technological renovation through the incorporation of capital goods with more advanced technology and with a lower age structure. Spain advanced decisively toward the technological frontier existing in European and world economies. Technical adaptation occurred predominantly in industry where, as we have mentioned above, estimations of the industrial output index show momentous growth from 1950 on (graph, 5, Carreras, 1994 and Alcaide Inchausti, 1993).

Moreover, unit labour costs in Spain were on the rise making labour more expensive. If we cross-check data on unit labour costs with output per hour worked, it becomes obvious that salaries increased faster than labour productivity (graph 12), an important cause of the slowdown in job creation (Zabalza, 1996).

Technical change is the logical decision for entrepreneurs who wish

to increase their competitiveness through the greater efficiency of new machinery and substitution of relatively expensive labour. These two components were both present in Spain in this period, but can they alone justify the brutal increase in unemployment? Probably not.

If, as we have proposed, social change is closely related to technological change (Kuznets, 1973; Abramovitz, 1986; North, 1990), the Spanish situation in this period is a good case in point. Since the 1960s, massive technological change had been taking place within a rigid institutional framework increasingly alien to the population. This mismatch gave rise to a contradiction between adapted and diffused material technology and the social technology (institutions) that supported it.

The contradiction was more prevalent in the sectors and urban concentrations most exposed to technical change. Those individuals and groups that first learned about and accepted the new technologies were the first to change their mental attitudes and, therefore, to come into conflict with the existing institutional framework. Urban populations arising from developing industrialization were the first to perceive the growing disparity between an increasingly progressive material foundation and inflexible, out-dated legislation. Laws no longer met the needs of a growing number of urban industrial citizen groups. The question was whether this increasing tension between the technologies was to be solved in a controlled environment or, on the contrary, explosively as occurred in the 1930s.

Then, it had been material technology that lagged behind whereas, in the 1970s, it was the institutional framework that was inadequately adjusted to existing circumstances. The effects of political instability hung over decisions made by economic agents and entrepreneurs reduced their plans for expansion of their firms which, of course, influenced the labour market. Fortunately, Spain was successful in adapting social technology to material technology through a "controlled revolution", although it was unable to create jobs.

All the countries in the sample had been governed by well-consolidated democratic systems since the end of the Second World War. Therefore, Spain's political system, characterized by a lack of freedom but an increasingly open economic system, would necessarily run into

difficulties. In increasing numbers, Spanish entrepreneurs forced the system to move toward greater freedom, particularly in the area of economic activity. Similarly, unions and urban groups, more and more numerous and powerful, also pushed for greater flexibility, specifically in the political arena. Although each group had its own priorities, the existence of a common cause in favour of freedom sponsored a controlled solution by an "invisible hand" to the crisis of the technologies in Spanish society (Alfonso, 1982).

Spain, at last, was no longer "different" from a political point of view and had returned to the democratic path so prevalent and widespread in Europe. Paradoxically, the years of democratic transition coincided with years of economic stagnation. For the first time in the history of Spain in the XXth century, low GDP per capita growth resulted in a revolutionary process for democratic freedom. From 1975 to 1986, Spain underwent a democratic transition, subscribed to a new constitution, became a member of NATO and, finally, entered the European Community. Were these not years of vertigo? Were they not years of revolution?

## 9. Where *we* and *they* stand

In a traditional analysis of the Spanish economy in isolation the results over the entire century show significant increases in real GDP per capita, interspersed with intervals of depression or plateaus, until current levels are reached. From a GDP per capita of $2,040 in 1900, Spain reached $12,544 in 1992, a six-fold increase over the century (graph 13). The economy has shown slightly greater growth than the average of the European countries considered: an average annual growth in real GDP per capita of 2.05% as opposed to 1.87% for the European average. Consistent with the European model of relatively low inequality among the population, the great majority of the Spanish population has benefited from growth with significant improvement in the distribution of income (Alcaide Inchausti, 1994 and Palacio, 1995).

Nevertheless, Spain still found itself behind the rest of the countries in the sample (graph 14). In 1900, its GDP per capita was 64.70% of the

average European GDP while in 1994 it was only 72.61%, which is to say that Spain was barely able to "scrape together" eight percentage points over all those years: almost an entire century of time and growth in absolute terms only to end up in practically the same relative position.

Ultimate and near causes and their evolution over time suggest the reason for the relative lag as well as the line of action prescribed to keep up with the rest of Europe and eventually close the gap still existing in output per hour worked and GDP per capita: the promotion of applied knowledge in both its manifestations - institutional and technological - will be society's most productive task.

An additional explanation for the lag still existing with regard to the European average can be found in the institutional shocks that took place in Spain during the XXth century. Although these shocks alone cannot explain the deviation in values, there is no doubt that they exerted a negative influence and contributed to widening the gap between Spanish and European growth rates. In graphs 13 and 14, we can observe the tendency towards a rupture in growth in the two periods of shock considered here: 1930-40 and 1975-1985.

Although it is not yet possible to directly measure human knowledge nor its accumulation, increase or limits, there would appear to be a plausible relation between the technological-institutional frontier of a country, the ultimate expression of knowledge, and the socio-economic level achieved by that country. High growth rates manifested in some nations are not haphazard but rather directly related to a set of variables describing economic and political environments. The economist's task, then, is to discover and afford proof of these relations. This paper has attempted to demonstrate these interactions and relations in a long-term growth process within a European economy in a European context. If we exempt the institutional shocks described here, Spain's institutional and technological trajectory throughout the XXth century closely conforms to the European model.

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# TABLES

**TABLE 1 - Output per Hour Worked, 1870-1992 *(1990 Dollars)***

| | 1870 | 1913 | 1929 | 1938 | 1950 | 1973 | 1992 |
|---|---|---|---|---|---|---|---|
| France | 1.36 | 2.85 | 4.15 | 5.35 | 5.65 | 17.77 | 29.62 |
| United Kingdom | 2.61 | 4.40 | 5.54 | 5.98 | 7.86 | 15.92 | 23.98 |
| Italy | 1.03 | 2.09 | 2.89 | 3.79 | 4.28 | 15.58 | 24.59 |
| Netherlands | 2.33 | 4.01 | 6.32 | 6.26 | 6.50 | 19.02 | 28.80 |
| Germany | 1.58 | 3.50 | 4.37 | 4.48 | 4.37 | 16.64 | 27.55 |
| Belgium | 2.12 | 3.60 | 4.81 | 5.27 | 6.06 | 16.53 | 28.55 |
| Sweden | 1.22 | 2.58 | 3.29 | 4.27 | 7.08 | 18.02 | 23.11 |
| United States | 2.26 | 5.12 | 7.52 | 8.64 | 12.66 | 23.45 | 29.10 |
| Japan | 0.46 | 1.03 | 1.78 | 2.19 | 2.03 | 11.15 | 20.02 |
| Spain | - | - | - | - | 2.60 | 10.86 | 20.22 |

*Source*: Data provided by Maddison (1997).

**TABLE 2 - Work Force by sectors, 1820-1992**

AGRICULTURE

| | United States | France | Germany | Netherlands | United Kingdom | Japan |
|---|---|---|---|---|---|---|
| 1820 | 70.0% | - | - | - | 37.6% | - |
| 1870 | 50.0% | 49.2% | 49.5% | 37.0% | 22.7% | 70.1% |
| 1913 | 27.5% | 41.1% | 34.6% | 26.5% | 11.7% | 60.1% |
| 1950 | 12.9% | 28.3% | 22.2% | 13.9% | 5.1% | 48.3% |
| 1992 | 2.8% | 5.1% | 3.1% | 3.9% | 2.2% | 6.4% |

INDUSTRY

| | United States | France | Germany | Netherlands | United Kingdom | Japan |
|---|---|---|---|---|---|---|
| 1820 | 15.0% | - | - | - | 32.9% | - |
| 1870 | 24.4% | 27.8% | - | 29.0% | 42.3% | - |
| 1913 | 29.7% | 32.3% | 44.1% | 41.1% | 33.8% | 17.5% |
| 1950 | 33.6% | 34.9% | 44.9% | 43.0% | 40.2% | 22.6% |
| 1992 | 23.3% | 28.1% | 26.2% | 37.8% | 24.3% | 34.6% |

SERVICES

| | United States | France | Germany | Netherlands | United Kingdom | Japan |
|---|---|---|---|---|---|---|
| 1820 | 15.0% | - | - | - | 29.5% | - |
| 1870 | 25.6% | 23.0% | 21.8% | - | 35.0% | - |
| 1913 | 42.8% | 26.6% | 24.3% | 39.7% | 44.2% | 22.4% |
| 1950 | 53.5% | 36.8% | 34.8% | 45.9% | 50.0% | 29.1% |
| 1992 | 74.0% | 66.8% | 59.1% | 71.8% | 71.6% | 59.0% |

*Source*: Data extracted from Maddison (1997).

**TABLE 3 - Years of Education (population aged between 15 and 64), 1820-1992**

| | 1820 | 1870 | 1913 | 1950 | 1973 | 1992 |
|---|---|---|---|---|---|---|
| Belgium | - | - | - | 9.83 | 11.99 | 15.24 |
| France | - | - | 6.99 | 9.58 | 11.69 | 15.96 |
| Germany | - | - | 8.37 | 10.40 | 11.55 | 12.17 |
| Italy | - | - | - | 5.49 | 7.62 | 11.20 |
| Netherlands | - | - | 6.42 | 8.12 | 10.27 | 13.34 |
| Sweden | - | - | - | 9.50 | 10.44 | 14.24 |
| United Kingdom | 2.00 | 4.44 | 8.82 | 10.60 | 11.66 | 14.09 |
| Spain | - | - | - | 5.13 | 6.29 | 11.51 |
| United States | 1.75 | 3.92 | 7.86 | 11.27 | 14.58 | 18.04 |
| Japan | 1.50 | 1.50 | 5.36 | 9.11 | 12.09 | 14.86 |

* Figures given by Maddison (1989 and 1995b) and estimates provided by Andres Hofman. Primary education was assigned a weight of 1, secondary education, 1.4, and higher education, 2 according to evidence on relative income associated with the various educational levels.

*Source*: Developed from Maddison (1997).

**TABLE 4 - Index of European GDP (Average), 1900-1913 (1913 = 100)**

| | European average |
|---|---|
| 1900 | 74.6 |
| 1901 | 74.5 |
| 1902 | 75.3 |
| 1903 | 77.7 |
| 1904 | 78.7 |
| 1905 | 80.9 |
| 1906 | 83.8 |
| 1907 | 86.8 |
| 1908 | 86.7 |
| 1909 | 89.4 |
| 1910 | 90.2 |
| 1911 | 94.1 |
| 1912 | 97.5 |
| 1913 | 100.0 |

*Source*: Elaborated from Maddison (1997). The European average included the United Kingdom, Germany, France, Italy, Belgium, the Netherlands and Sweden.

**TABLE 5 - Index of GDP per Capita (U.K. = 1.00)**

| | Germany | United Kingdom | France | Belgium | Italy | Netherlands | Sweden | Spain |
|---|---|---|---|---|---|---|---|---|
| 1930 | 0.78 | 1.00 | 0.86 | 0.94 | 0.55 | 1.05 | 0.76 | 0.54 |
| 1940 | 0.85 | 1.00 | 0.61 | 0.68 | 0.52 | 0.72 | 0.74 | 0.35 |
| 1950 | 0.63 | 1.00 | 0.76 | 0.78 | 0.50 | 0.85 | 0.98 | 0.35 |
| 1960 | 0.99 | 1.00 | 0.87 | 0.79 | 0.68 | 0.94 | 1.01 | 0.40 |

*Source*: Developed from Maddison (1997). The United Kingdom was the base and each level of European GDP per capita was divided by the corresponding figure for the UK for each year considered in the temporal horizon studied.

**TABLE 6 - Rate of Growth of GDP, 1951-1973**

| | U.K. | European Average | United States | Japan | Spain |
|---|---|---|---|---|---|
| 1951 | 2.5% | 4.5% | 7.9% | 10.6% | 9.7% |
| 1952 | -0.4% | 2.3% | 2.4% | 9.8% | 6.9% |
| 1953 | 3.6% | 4.5% | 2.0% | 5.9% | 0.3% |
| 1954 | 3.6% | 4.6% | -2.4% | 4.1% | 4.8% |
| 1955 | 3.3% | 5.4% | 3.7% | 7.3% | 4.3% |
| 1956 | 0.8% | 3.6% | 0.2% | 6.4% | 6.0% |
| 1957 | 1.1% | 3.4% | 0.1% | 6.3% | 3.2% |
| 1958 | -0.6% | 0.8% | -2.1% | 4.8% | 3.4% |
| 1959 | 5.7% | 3.6% | 3.7% | 8.0% | -2.8% |
| 1960 | 3.0% | 5.9% | 0.4% | 12.1% | 1.2% |
| 1961 | 2.4% | 3.8% | 0.8% | 11.0% | 10.6% |
| 1962 | 0.1% | 4.7% | 4.5% | 7.8% | 8.4% |
| 1963 | 3.1% | 3.6% | 2.8% | 7.3% | 7.7% |
| 1964 | 4.5% | 5.5% | 4.5% | 10.5% | 5.1% |
| 1965 | 1.9% | 3.2% | 4.9% | 4.6% | 8.5% |
| 1966 | 1.3% | 2.5% | 5.2% | 9.6% | 9.1% |
| 1967 | 1.6% | 3.1% | 1.4% | 9.9% | 5.2% |
| 1968 | 3.5% | 4.7% | 3.4% | 11.5% | 7.4% |
| 1969 | 1.6% | 5.5% | 2.0% | 11.1% | 10.1% |
| 1970 | 1.9% | 4.4% | -1.1% | 9.5% | 5.6% |
| 1971 | 1.4% | 2.1% | 2.0% | 2.9% | 4.2% |
| 1972 | 3.1% | 2.9% | 4.5% | 6.7% | 7.4% |
| 1973 | 7.1% | 4.6% | 4.8% | 6.1% | 7.0% |
| Period Average | 2.4% | 3.9% | 2.4% | 8.0% | 5.8% |

*Source*: Developed from Maddison (1997).

**TABLE 7 - Output per Hour Worked 1870-1992 (1990 Dollars)**

| | 1870 | 1913 | 1929 | 1938 | 1950 | 1973 | 1992 |
|---|---|---|---|---|---|---|---|
| European Average | 1.75 | 3.29 | 4.48 | 5.11 | 5.55 | 16.29 | 25.80 |
| United States | 2.26 | 5.12 | 7.52 | 8.64 | 12.66 | 23.45 | 29.10 |
| Japan | 0.46 | 1.03 | 1.78 | 2.19 | 2.03 | 11.15 | 20.02 |

*Source*: Elaborated from Maddison (1997). France, the United Kingdom, Italy, the Netherlands, Germany, Belgium, Sweden and Spain made up the European average.

**TABLE 8 - Unemployment (1950-1993)**

| | 1950 | 1973 | 1992 |
|---|---|---|---|
| France | 2.0% | 5.7% | 10.0% |
| United Kingdom | 2.8% | 7.0% | 9.6% |
| Italy | 5.5% | 7.2% | 11.1% |
| Netherlands | 2.2% | 7.3% | 8.9% |
| Germany | 2.5% | 4.1% | 6.2% |
| Belgium | 3.0% | 8.2% | 9.6% |
| Sweden | 1.8% | 2.3% | 3.2% |
| United States | 4.6% | 7.4% | 6.4% |
| Japan | 1.6% | 2.1% | 2.5% |
| Spain | 2.9% | 9.1% | 19.0% |

Source: Unemployment rates taken from Maddison (1991), various editions of Labour Force Statistic and OCDE, *Economic Outlook*, December, 1994.

**TABLE 9 - GDP per Capita, 1974-1994 *(Rate of Growth)***

| | United Kingdom | European Average | United States | Japan | Spain |
|---|---|---|---|---|---|
| 1974 | -1.7% | 2.7% | -1.4% | -1.9% | 4.7% |
| 1975 | -0.7% | -0.8% | -1.8% | 1.6% | 0.0% |
| 1976 | 2.7% | 4.2% | 4.4% | 3.0% | 2.0% |
| 1977 | 2.7% | 1.5% | 4.1% | 3.6% | 2.0% |
| 1978 | 3.5% | 2.4% | 4.0% | 3.9% | 0.4% |
| 1979 | 2.7% | 3.3% | 1.7% | 4.6% | -0.9% |
| 1980 | -2.3% | 1.8% | -1.1% | 2.8% | 0.5% |
| 1981 | -1.3% | -0.2% | 1.6% | 2.8% | -1.2% |
| 1982 | 1.8% | 0.2% | -2.9% | 2.4% | 0.6% |
| 1983 | 3.6% | 1.0% | 2.8% | 1.9% | 1.2% |
| 1984 | 2.2% | 2.6% | 5.6% | 3.6% | 1.3% |
| Average 74-84 | 1.17% | 1.71% | 1.55% | 2.60% | 0.99% |
| 1985 | 3.2% | 2.2% | 2.3% | 4.3% | 1.8% |
| 1986 | 4.0% | 1.6% | 1.8% | 2.0% | 2.8% |
| 1987 | 4.4% | 1.9% | 2.2% | 3.5% | 5.2% |
| 1988 | 4.7% | 3.1% | 2.7% | 5.7% | 4.9% |
| 1989 | 1.8% | 2.8% | 1.4% | 4.2% | 4.3% |
| 1990 | 0.0% | 2.4% | 0.3% | 4.4% | 3.5% |
| 1991 | -2.6% | 0.9% | -2.2% | 3.7% | 1.9% |
| 1992 | -0.8% | 0.0% | 0.8% | 0.9% | 0.7% |
| 1993 | 1.1% | -1.6% | 1.9% | -0.2% | -1.1% |
| 1994 | 2.8% | 1.7% | 2.7% | 0.6% | 1.5% |
| Average 85-94 | 1.89% | 1.53% | 1.43% | 2.95% | 2.58% |
| Average 74-94 | 1.51% | 1.62% | 1.49% | 2.77% | 1.75% |

*Source*: Developed from Maddison (1997).

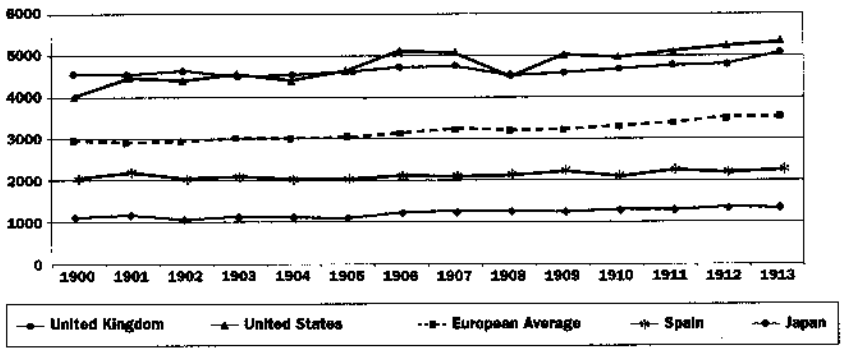
**TABLE 10 - Growth of Stock of Capital per Worker (Spain)**
**(1985 International Prices)**

| | Spanish Stock of Capital per Worker |
|---|---|
| 1965 | 5912 |
| 1966 | 6616 |
| 1967 | 7400 |
| 1968 | 8150 |
| 1969 | 8916 |
| 1970 | 9994 |
| 1971 | 10958 |
| 1972 | 11857 |
| 1973 | 12888 |
| 1974 | 14074 |
| 1975 | 15309 |
| 1976 | 16333 |
| 1977 | 17240 |
| 1978 | 18052 |
| 1979 | 18775 |
| 1980 | 19428 |
| 1981 | 19854 |
| 1982 | 20199 |
| 1983 | 20922 |
| 1984 | 21475 |
| 1985 | 21831 |
| 1986 | 22296 |
| 1987 | 23037 |
| 1988 | 24088 |
| 1989 | 25516 |
| 1990 | 27300 |
| 1991 | 29168 |
| 1992 | 30888 |
| Average 65-73 | 10.24% |
| Average 74-84 | 4.78% |
| Average 85-92 | 4.67% |

*Source*: Elaborated from the WEB page "The Penn World Table". Robert Summers and Alan Heston, 1997.

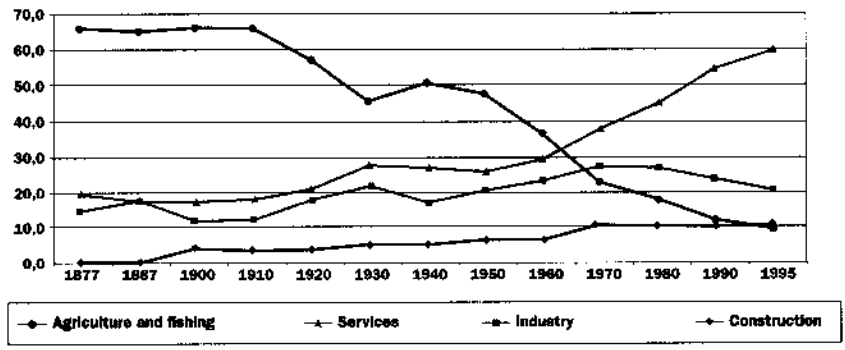
# GRAPHS

## GRAPH 1 - GDP per Capita 1900-1913



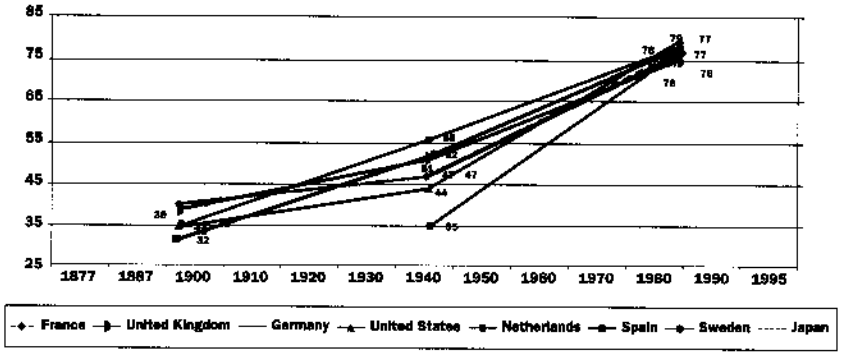

*Source:* Developed from data provided by Maddison (1997). The European average includes: Germany, France, Belgium, Italy, Netherlands and Sweden.

## GRAPH 2 - Labour Force by Sectors in Spain 1877-1995



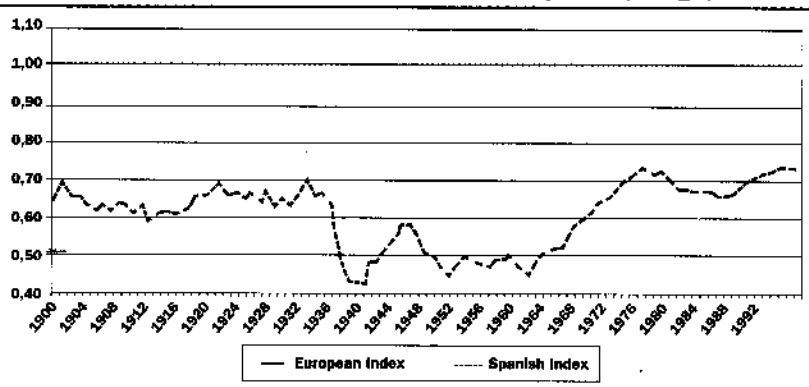

*Source:* Elaborated from data in Fundación Banco Exterior (1989) and the National Institute of Statistic (INE), 1997.

**GRAPH 3 - Life Expentancy, 1820-1992**



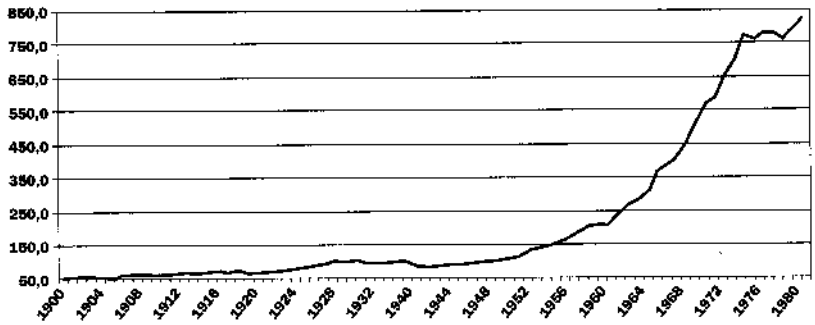

*Source:* Provided by Maddison (1991 and 1995), World Bank, Social indicators of development 1991-92, Washington D.C., and national indicators.

**GRAPH 4 - Spanish GDP per Capita versus European Average, 1900-1994**



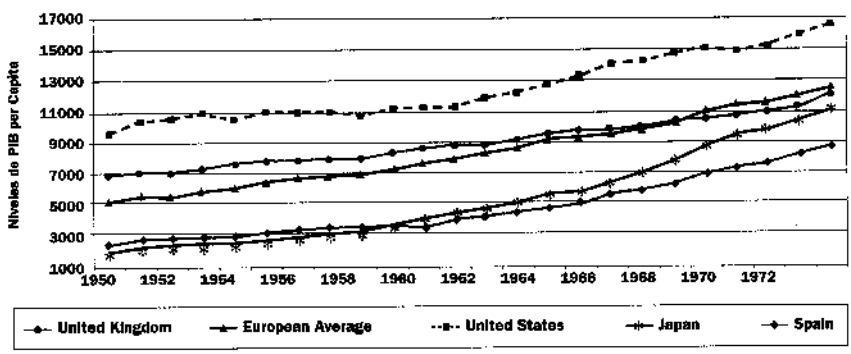

*Source:* Elaborated from Maddison (1997). The European Average includes the Uk, Germany, France, Italy, Belgium, Netherlands and Sweden. The index for Spain was determined by dividing its GDP per capita by the GDP per capita of the European Average for each year included in the sample. The European index was reached by dividing GDP per capita levels of the European Average by itself. Therefore the value for this index will always be equal to the unit.

**GRAPH 5 - Spanish Industrial Production Index, 1900-1980**




*Source:* Composed from data provided by the Fundación Banco Exterior (1989). Estimates made by Albert Carreras.

**GRAPH 6 - GDP per Capita 1950-1973**

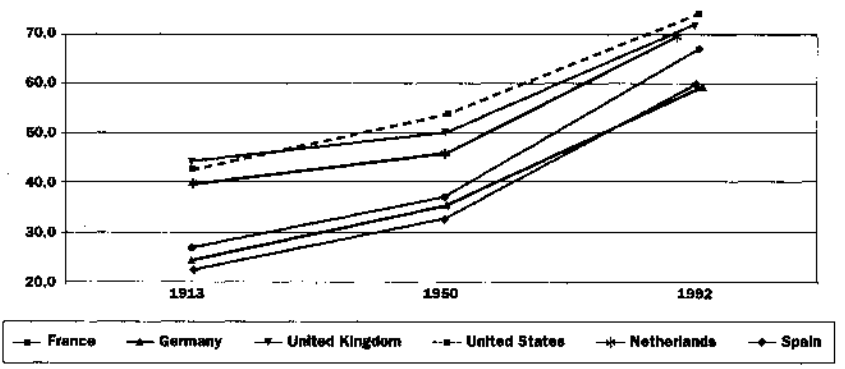



*Source:* Developed from data provided by Maddison (1997). The European Average includes: Germany, France, Belgium, Italy, Netherlands and Sweden.

**GRAPH 7 - Productivity in OECD Countries (USA = 100)**

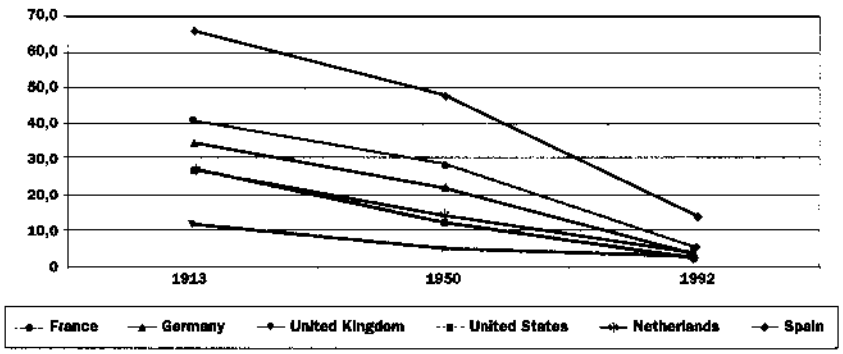

*Source:* Jan Fagerberg (1994).

**GRAPH 8 - Service Sector (1913-1992)**



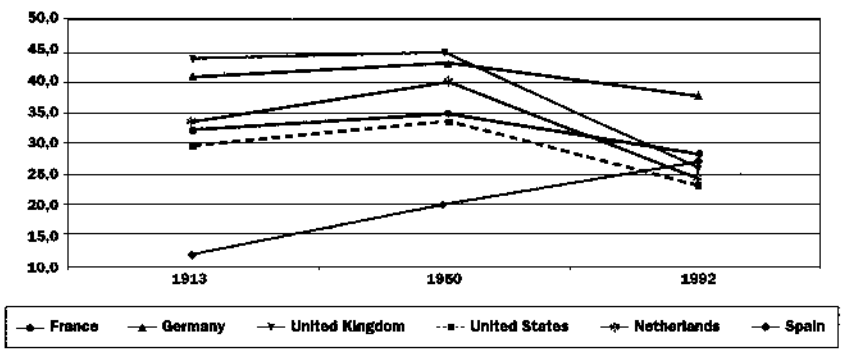

*Source:* Fundación Banco Exterior (1989). Europe, Spain and the United States: Maddison (1997).

**GRAPH 9 - Agricultural Sector (1913-1992)**



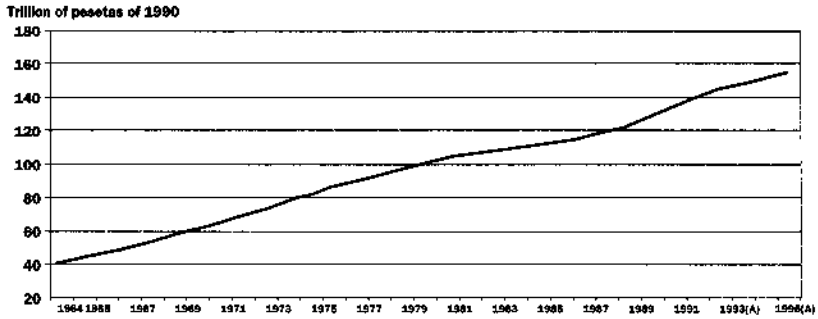

*Source:* Fundación Banco Exterior (1989). Europe, Spain and the United States: Maddison (1997).

**GRAPH 10 - Industrial Sector (1913-1992)**



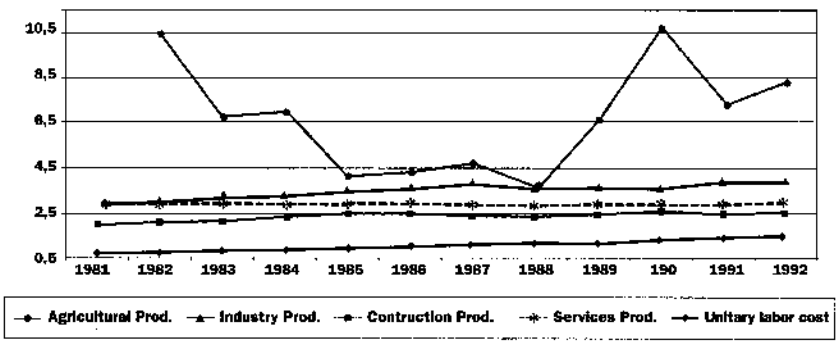

*Source:* Fundación Banco Exterior (1989). Europe, Spain and the United States: Maddison (1997).

**GRAPH 11 - Spanish Capital Stock**



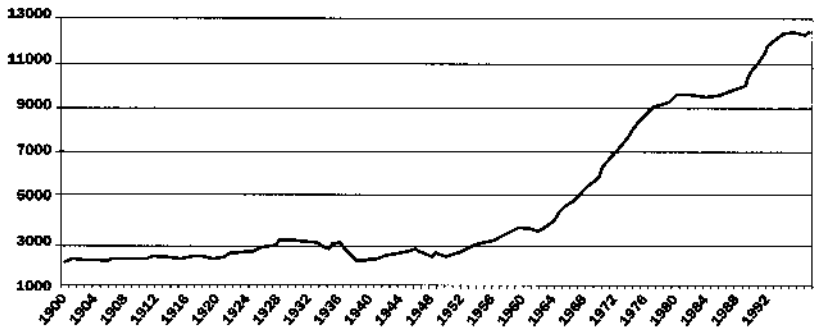

*Source:* Fundación Banco Bilbao Vizcaya (1996).

**GRAPH 12 - Sector Productivity and Labor Unit Cost 1981-1992**



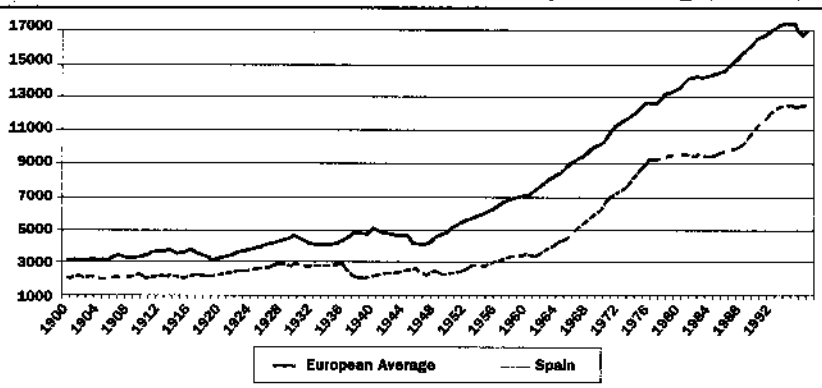

*Source:* Composed from data provided by the TEMPUS database of the National Institute of Statistics, 1998.

**GRAPH 13 - Spanish GDP per Capita**




*Source:* Elaborated from Maddison (1997).

**GRAPH 14 - Spanish GDP per Capita and European Average, 1900-1994**




*Source:* Composed from data provided by Maddison (1997). The European Average included the United Kingdom, France, Germany, Sweden, Belgium, Italy and the Netherlands.