

ASSESSING ECONOMIC PROGRESS IN SPAIN, 1850-2000¹

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Accounts of economic performance in modern Spain tell a story of failure and retardation up to mid-twentieth century that led way to fast growth after 1960. Exogenous explanations are provided in which inadequate natural resources, low human capital endowment, foreign 'dependency', and inefficient institutions share the blame for the poor performance prior to the 1960s but that fail to explain why the economic situation was reversed so dramatically thereafter².

My goal in this paper is a more modest and preliminary one: I will try and assess long-run economic progress in modern Spain and place its performance during the Golden Age and its aftermath in historical perspective. In section I economic trends over the long run are described; the contribution of the demographic transition and structural change to growth is discussed in section II; section III offers an international perspective of Spain's performance. Section IV concludes.

I. Phases of long-run performance

Aggregate economic activity multiplied by 40 over one hundred and fifty years at trend growth rate of 2.4 percent per year. If we deduct a population increase of more than two and half times we find that, at the end of the twentieth century, per capita GDP was 15 times larger than at mid-nineteenth century (at a trend annual rate of 1.7 percent). Such a significant improvement did not take place at a steady rate. Spain's GDP series is trend stationary with structural breaks in level (1936) and in trend (1951 and 1975)³. Three main phases: 1850-1950, 1950-1974 and 1974-2000, can be, then, established with a shift to a lower level during the first period resulting from the Civil War (1936-1939)⁴. In the Golden Age (1950-1974) GDP per capita rose seven times more rapidly than during the previous hundred years (1850-1950) and twice as fast as during the last quarter of the twentieth century. Thus the rate of growth experienced between 1850 and 1950 meant that product

² Cf. Tortella (1994b).

³ A change of trend indicates a break in the long-term rate of growth while a change in level represents an increase or, as in the case of the Civil War years, a drop in economic activity which does not alter the established growth rate. Cf. Prados de la Escosura (2003).

⁴ If the slump caused by the Civil War were not taken into account the trend growth rate would reach 2.6 percent. If the difference between these two figures, 0.2 percent, can be interpreted as the reduction in the long run annual growth rate caused by the civil conflict (8 % [=0.2/2.4]). If we consider the effect on product per person, the corresponding figure is 0.25 percent annually which represents a drop of almost 15 percent (Prados de la Escosura (2003, pp. ??).

per person doubled every 99 years while the same increase was achieved every 13 years in 1950-1974 and every 27 years over 1974-2000 (Table 1).

GRAPH 1

The view of continuity in Spain's economic growth between 1850 and 1950 contrasts with the widely held interpretation of the nineteenth century as a period of economic failure and the twentieth century as one of success (Tortella 1994a), while confirms previous findings for the period 1850-1935 by Cubel and Palafox (1998), and Carreras (1987, 1992). Phases or long swings in which growth rates differ from the long-run trend as a result of economic policies, access to international markets and technological change can be established⁵.

TABLE 1

During the first phase, 1850-1883, the rate of growth of product per person was well above the nineteenth century's average. It can be partly attributed to a 'reconstruction effect' after the political instability and social unrest of the early nineteenth century in which demographic expansion would have cancelled out the moderate growth in output⁶. Institutional reforms and opening up to foreign capital and international trade lie beneath the significant growth experienced during the next three decades⁷. Inflows of foreign capital made it possible to break the close connection between investment and savings and contributed to the economic growth (Prados de la Escosura 2006b).

A slowdown in growth took place between the mid 1880s and 1920. This was a period of institutional stability that presumably provided a favourable environment for investment and growth yet both permanent and temporary factors worked against it.

Restrictions on both internal and external competition help to explain sluggish growth despite institutional stability during most of the *Restauración* (1875-1923) (Fraile

⁵ The phases defined in the lower panel of Table 1 correspond with the time division arising from econometrically estimated deviations from the established trend (Prados de la Escosura 2003). Growth rates are measured as average annual logarithmic rates of change over periods delimited by peak years. These rates have a clearer meaning than trend growth rates based on statistical adjustment. In addition, they have additive properties.

⁶ The fact that income per capita hardly improved over 1815-1850 should not obscure the achievement of maintaining the standard of living despite the acceleration in population growth (Cf. Prados de la Escosura 1988 and Rosés 2003). Pérez Moreda (1999: 44) calculates a demographic growth of 0.76 percent between 1821 and 1860 compared with 0.42 percent for the eighteenth century.

Balbín 1998). Increasing tariff protection, together with exclusion from the prevailing international monetary system, the gold standard, represented a major obstacle to Spain's integration in the international economy⁸. The delayed depreciation of the peseta (after ceased its convertibility into gold) had negative consequences for international factor mobility such as the reduction of capital inflows and the slowdown in the emigration of labour to America⁹. The move towards isolation can be seen in the evolution of relative factor prices. The wage/land rent ratio tended to fall between the 1880s and the First World War, while the opposite pattern is observed in open European countries (O'Rourke and Williamson 1999). The Cuban War of Independence, despite the already weakened economic links between the Spain and its colony, caused significant macroeconomic instability that brought forward the fall of the peseta and worsened Spain's international economic isolation¹⁰. Although the loss of Cuba had little direct economic impact, the protectionist and isolationist tendencies of the early twentieth century could have been its political consequence (Fraile Balbín and Escribano 1998).

The pre-1914 years saw a brief period of increased activity coinciding with the peseta's recovery since 1905¹¹. During World War I, instead, economic activity hardly progressed (below 0.6 percent annually) stagnating in per capita terms. This result is in stark contradiction with the conventional view that stresses its stimulating aggregate effects¹².

The most intense growth of the period 1850-1950 was achieved in the 1920s, and as it coincided with the Primo de Rivera Dictatorship (1923-1929) economists and historians have inevitably tended to make connections. Intervention in and regulation of economic activity increased during the Dictatorship (Comín 1987, Fraile 1998). The hypothesis that Government intervention in the form of protectionist measures and regulation and through investment in infrastructure were decisive factors behind this growth has been widely

⁷ Cf. Carreras and Tafunell (2003)

⁸ Cf. Tena (1999), Palafox (1999) and Pardos (1998) on tariff protection and its effects. See Martín Aceña (1994) and Bordo and Rockoff (1996) on the gold standard.

⁹ Cf. Martín Aceña (1999) and Prados de la Escosura (2006b) on mobility of capital and Sánchez Alonso (2000) on emigration.

¹⁰ See the discussion in Fraile and Escribano (1998), Maluquer de Motes (1999) and Prados de la Escosura (2006b).

¹¹ Between 1905 and 1913 absolute GDP grew at a rate of 2.5 percent while GDP per capita did so by 1.8 percent.

accepted (Velarde 1968). The emphasis on tariff protectionism tends to neglect, however, that Spain opened up to international factor flows during the 1920s. Significant inflows of foreign capital allowed the purchase of capital goods and raw materials which contributed to growth acceleration (Prados de la Escosura 2006b)¹³.

Lastly, a fourth long swing took place between 1929 and 1952. The effects of the Depression in aggregate terms were comparatively milder but more persistent¹⁴. The lively performance of the 1920s, with rising GDP and private consumption per capita, does not support the old stereotype that deprivation and poverty, in a context of economic stagnation, led to the Civil War (1936-39). It could be argued that rapid growth led to a 'war of attrition' regarding income distribution that intensified social and political tensions¹⁵. However, the fact that the Civil War (1936-39) broke off after one and a half decades of inequality decline and poverty alleviation demands new explanatory hypotheses. Lagged perceptions of inequality and extreme poverty and unfulfilled expectations by those at the bottom of the distribution might lie at the roots of the civil conflict. Moreover, a process of polarization that triggered social and political conflict is compatible with stable or declining inequality (Prados de la Escosura 2006a).

The weak recovery of the years from 1944 to 1952 stands out in the international context. In spite of World War II, European economies outperformed Spain (achieving an average growth rate of 1.4 compared with Spain's 0.6) during the 1940s (Crafts and Mills 1996: 421). Spain's economy did not recover pre-war GDP levels (1929) in absolute terms until 1951, and 1955, in per capita terms; in Europe, in contrast, it only took an average of 6 years to return to the pre-war level of income per capita and by 1953 all Western European

¹² Cf. Roldán and García Delgado (1973) for the established view on the impact of the Great War.

¹³ It has also been noted that the positive situation of the current account balance of payments during the First World War contributed to the boom of the 1920s (Sudrià 1990).

¹⁴ In comparison with the nations which succeeded in abandoning the Gold Standard early (Eichengreen 1992), Spain did not experience a quick recovery. A restrictive public spending policy and the interruption of public projects in progress, together with political uncertainty has been pointed as the main causes of the 1930s crisis (Palafox 1991). Another view sustains, however, that expansionary monetary and anti-cyclical fiscal policies were tried to compensate for the fall in private investment and exports (Comín and Martín Aceña 1984, García Santos and Martín Aceña 1990).

¹⁵ There are historical examples of a link between relative deprivation and conflict following a period of economic expansion: France at the end of the 18th century (Crouzet 1967), Russia in the early years of the 20th century (Gregory 1994) and Mexico following the Porfiriato (Coatsworth 1990).

countries had done so¹⁶. True that post-bellum Spain was surrounded by countries at war (Velarde 1993), but the fact that its economy only grew at a rate of 2.4 percent between 1944 and 1952 shows that only a slow recovery took place after a relatively mild contraction. Actually, at the trough during the Civil War (1938) Spain's GDP was equal to that of 1920 (and in per capita terms, to that of 1910), while the corresponding year during World War II for France's GDP was equivalent to that of 1891 and for Italy and Germany, to that of 1908 (Crafts and Toniolo 1996: 4).

The war destruction of physical capital was suffered mainly in housing, the transport network and livestock with the effect in industrial areas being limited. The destruction of physical capital can be estimated at around 8 per cent of the existing *stock* of capital in 1935, which would represent an average level of destruction in the context of World War II, although the concentration on productive capital (especially transport material) meant that levels of destruction caused by the conflict in Spain were far from negligible (Prados de la Escosura and Rosés (2006)¹⁷. The exile after the Civil War and, possibly to a larger extent, the internal exile, resulting from political repression of Franco's dictatorship meant the loss of a considerable amount of Spain's limited human capital (Núñez 2003, Ortega and Silvestre 2005)¹⁸.

The change in trend which began in 1951 ushered in an exceptional phase of rapid growth which lasted until 1974. It is worth highlighting the fact that during the Golden Age (1950-1973), the main spurt of economic growth in Spain, as in other countries in the European Periphery, was delayed until the 1960s. (Maddison 2001).

During the 1950s, industrialisation in Spain was largely dependent on internal demand. Import capacity's volatility rendered investment risky and tended to penalise capital accumulation, while inflows of foreign capital and new technology were restricted. In a way, Spain's case supports the *counterfactual* which maintains that without the Marshall Plan, Inter-war commodity and factor markets intervention, quantitative restrictions on international trade and exchange control would have persisted as the main

¹⁶ According to Maddison (1996), Belgium, Holland and France did so in 1949, Italy in 1950 and Germany in 1953.

¹⁷ cf. Barciela (1986), Catalan (1995), Malefakis (1987) and Sánchez Asiaín (1999).

¹⁸ Regarding interior and exterior exile, cf. López (1991, 1996) and Plá (1994, 1999).

economic policies¹⁹. The move towards a pro-market attitude with deregulation and the gradual opening up of the economy which began with the 1959 reforms made it possible to bring about a change of direction that resulted in sustained growth and catching up during the late twentieth century.

II. Demographic transition, structural change, and growth

In developing countries the transition to a modern demographic regime and the reallocation of resources from agriculture towards sectors with higher productivity sectors plays a significant part in accelerating economic growth. How large was their contribution in the historical case of Spain?

During the demographic transition, the increase in the dependency ratio caused by the rise in fertility will tend to reduce the potential workforce compared within the total population²⁰. Later, as those born during the demographic boom reach working age, the relative size of this potential workforce will increase before falling again as population ages. The potential effect of demographic change on per capita GDP is reflected in a time lag between the growth rate of the working-age population and that of the total population (Bloom and Williamson 1998)²¹. Their annual rates of change, once short-term fluctuations were eliminated with a Hodrick-Prescott filter (Graph 2) show that such a time lag is clearly visible, especially around the mid nineteenth century, in the second quarter of the twentieth century and over the last 20 years. Graph 3 shows the relation between the size of the working-age population and the dependent population, with this ratio increasing between 1860 and 1880, between 1920 and 1950, and again between 1980 and 2000.

GRAPHS 2 AND 3

Another way to look at the contribution of the demographic transition to growth can be obtained by breaking down per capita GDP into its components using an identity in which Gross Domestic Product per person (GDP/N) equals product per occupied worker (GDP/L) times the rate of employment (L/EAP), times the activity rate (that is the ratio of

¹⁹ The idea that the Marshall Plan's main contribution was to encourage a pro-market economic policy has been suggested by Eichengreen and Uzan (1992). Calvo (1999, 2001) has shown that in Spain there are similarities between the incentives for the market to operate as a mechanism of resource allocation provided by the USA-Spain agreements of 1953 and the Marshall Plan in Europe.

²⁰ The dependency ratio is the proportion of the total population either under the age of 15 or over the age of 65.

²¹ Cf. Williamson (1998) and Higgins and Williamson (1997).

the economically active population [EAP] to the population ages 15 to 64 or potentially active population, [PAP]) times the ratio between the potential labour force (PAP) and the total population (N):

$$(1) \text{ GDP/N} = (\text{GDP/L}) * (\text{L/EAP}) * (\text{EAP/PAP}) * (\text{PAP/N})$$

and in rates of change expressed in lower case letters,

$$(2) \text{ gdp/n} = (\text{gdp/l}) + (\text{l/eap}) + (\text{eap/pap}) + (\text{pap/n})$$

TABLE 2

Table 2 shows the evolution of product per person and each of its components, expressed in logarithmic rates of growth, for the long swings identified over the last century and a half. A demographic gift –a larger share of working age population- was responsible for a significant part of the per capita GDP growth during 1850-1866 and 1986-2000. The demographic bonus also played a part in mitigating the economic slowdown during the 1930s and 1940s and, again, during the transition to democracy (1978-86). On the contrary, in the Golden Age a negative demographic impact effected per capita income growth.

A raising rate of activity reinforced the demographic gift in 1855-74 and 1986-2000. Employment creation also played a beneficial role during the Golden Age and after Spain's admission into the European Community. The fall in the activity rate proved, however, an obstacle to growth during the Civil War and World War II, and in the transition to democracy when it aggravated the negative impact of unemployment.

Labour productivity appears as the main determinant of per capita GDP growth and shadows it closely. Nonetheless, productivity overcame per capita GDP growth during 1959-74 and the 'transition to democracy' decade (1975-85). Conversely, from 1986 to 2000 productivity change lagged way behind per capita income growth. Employment creation (mostly in services) and productivity seem, thus, to exhibit an inverse relationship during the last quarter of the twentieth century.

The increase in aggregate productivity can be broken down into the part contributed by the increase in output per worker in each economic sector (internal productivity) and the part which is caused by the shift of labour from less productive to more productive sectors (structural change)²². The level of aggregate labour productivity (**A**), which is obtained by

²² As correctly pointed out by Matthews, Feinstein and Odling-Smee (1982: 248-254), structural change is not really exogenous as it is caused by the interaction between the supply and demand of resources. In this sense

dividing product (**O**) by employment (**L**) for the economy as a whole in the year *j*, can be expressed as the result obtained by adding the productivity (**O_i/L_i**) for each economic sector **i** (**i** = 1,2, ..n), weighted according to each sector's contribution to total employment (**L_i/L**)²³.

$$(3) \quad A_j = (O / L)_j = \Sigma (O_i / L_i)_j (L_i / L)_j = \Sigma (A_{ij} U_{ij})$$

where **A_i** is product per worker in sector **i** and **U_i** is the contribution of sector **i** to total employment.

From a temporal perspective, using lower case letters to represent rates of change,

$$(4) \quad a_j = \Sigma a_{ij} U_{ij} + \Sigma A_{ij} u_{ij}$$

The method normally used for this calculation, *shift-share analysis*, involves estimating, in the first place, internal productivity growth (the first item on the right), that is the result obtained by adding the growth of output per worker in each economic sector without varying the initial composition of employment. The difference between aggregate productivity and internal productivity will then provide the contribution of structural change.

This procedure is based on the assumption that, in the absence of labour shift between sectors, the level of productivity and the corresponding growth rate for each sector would have been identical to the actual ones. This assumption is not realistic in a case like Spain's in which if labour is quickly absorbed by industry and services, productivity tends to remain stable or fall²⁴. It would seem more reasonable to assume that agricultural productivity improved between 1950 and 1975 due to the reduction in the number of workers. It is also true that output per worker in industry between 1974 and 1986 would have grown more slowly if the number of workers had not fallen as a result of the industrial

the attempt to establish causal relationships between structural change and growth is flawed. From a historical point of view, however, perfect factor mobility does not exist and, consequently differences of marginal productivity between sectors tend to exist as the movement of resources from one sector to another does not take place automatically. For this reason improvements in resource allocation will contribute to growth during a given period of time. It is also the case that even when marginal productivity is the same in different industries, they will not all grow at the same rate. Growth will depend on their use of technological innovation and the existence of increasing returns.

²³ I follow the procedure exposed by Broadberry (1998) in the subsequent paragraphs.

²⁴ Broadberry (1998) puts forward the idea that if we accept, as proposed by Kindleberger (1967), that labour moving from agriculture to industry and services is surplus labour, then it must be assumed that the hypothetical return of this labour to the agricultural sector would not have a positive effect on output while it would have a negative effect on productivity.

restructuring (*reconversión*) which eliminated less competitive branches reducing both the size of the sector and, consequently, industrial employment²⁵. For this reason the contribution of structural change to the increase in productivity obtained using the conventional *shift-share analysis* is presented as a lower bound in Table 3. An upper bound is obtained using a modified version of the conventional *shift-share analysis* which is obtained by subtracting from aggregate productivity the figure which would result by weighting product per worker growth in each sector according to its contribution to total employment in the initial year. An exception is made, however, for those sectors where contribution to employment falls (for example, agriculture over the whole period considered and industry since 1975); here the difference between the increase in aggregate employment and that of employment in that sector would be subtracted from output per worker growth²⁶. The result obtained using this method has been called an upper bound because it does not take into account differences in levels of physical and human capital per worker across economic sectors²⁷. As Table 3 shows, the differences between upper and lower bounds are considerable with the exception of the periods 1850-1883 and 1929-52.

TABLE 3

According to the upper bound estimate, structural change would account for two-fifths of the aggregate productivity growth achieved over the last 150 years. This figure is in line with Broadberry's findings (1998) for Germany and the United States between 1870 and 1990²⁸. A closer look shows that between 1883 and 1929 structural change accounts for half of the increase in labour productivity and this figure rises to almost three quarters between 1873 and 1913. If we now focus on shorter cycles it can be shown that during periods of deceleration of growth such as 1883-1913, without a shift of agricultural labour towards industry and services, aggregate labour productivity would have grown by just 0.2

²⁵ This is suggested by the calculations of Suárez (1992) and van Ark (1995) regarding total factor productivity and labour productivity respectively.

²⁶ This procedure is suggested by Broadberry (1998). In this case internal productivity would be calculated as $\sum a'_{ij} U_{ij}$, where $a'_{ij} = a_{ij} - (l_j - l_{ij})$, if $u_{ij} < 0$.

²⁷ Actually, the contribution of structural change should be calculated in terms of total factor productivity rather than labour productivity. The available evidence confirms, however, the importance of structural change: between 1965 and 1975, total factor productivity increased by 6.5 percent in industry compared with 2 percent in agriculture and 3.8 percent in aggregate terms (San Juan (1987); Gandoy (1988); Myro (1983); Suárez (1992)). See also the recent research by Sanchis (2001) for 1958-75.

percent whilst the fall in level would have been even sharper in the early 1930s and the post-war recovery (1945-52) would have been even weaker. During the ‘Golden Age’ aggregate labour productivity grew more than eight times faster than over the preceding 100 years and at least one third of this growth was provided by structural change, a proportion which increased to more than a half in the 1950s²⁹. Over the last quarter of the twentieth century structural change has, once more, accounted for one-fourth of the increase in aggregate labour productivity. In this phase, the slow transfer of labour away from agriculture (which still employed one in four workers in 1975) was accompanied by the destruction of employment in less competitive manufacturing industries, a situation which has led to more than a 50 percent increase in employment in the service sector. Much of the explanation for the rapid rise in labour productivity in agriculture since 1975 is to be found in this shift of labour³⁰. Structural change would also play a significant part in the increase in industrial productivity between 1974 and 1986³¹.

To sum up, over 1850-2000, neither the effect of structural change on labour productivity growth nor that of changes in the age composition of the population are negligible³².

III. Spain’s position in the international economic context

Spain’s long term growth appears similar to that of western nations (Table 4). Such a finding lends support to the view that the roots of most of today’s difference in living standards between Spain and other advanced countries should be searched for in the pre-1850 era.

TABLE 4

²⁸ Broadberry (1998: 390) estimates that for the increases in productivity of 1.75 percent and 1.43 percent in Germany and the USA, structural change would account for a maximum of 45.7 percent and 50.3 percent respectively.

²⁹ The contribution of structural change is, it can be seen, far greater than the figure obtained by van Ark (1996: 96), using the conventional *shift-share analysis* method (with 22 percent as the upper limit).

³⁰ In the modified *shift-share analysis* method used here 4.7 percent (that is the difference between the growth of total employment and that of agricultural employment) of the 6.2 percent increase in agricultural labour productivity can be attributed to structural change.

³¹ As explained in the case of agriculture in the previous note, using this calculation method, 2.2 percent of the 5 percent annual growth in industrial labour productivity would be caused by structural change (that is the difference between the growth rate for total employment and that for industrial employment). Between 1986 and 1992, this would represent 1.5 percent of a total of 2.7 percent.

³² Structural change, together with the increase in the working-age [PAP] population, provided around half of GDP per person growth in the period 1855-1866, in the 1920s (mainly due to structural change), in the post Second World War years (1944-52) and between 1978 and 1992.

A closer look shows that long-run growth before 1950 was clearly lower than in the advanced countries, while the opposite was true for the second half of the twentieth century (Table 4, Panel A). Spain fell behind between 1850 and 1950. The second half of the nineteenth century witnessed sustained per capita GDP growth while paradoxically the gap with the industrialised countries widened over 1883-1913. Moreover, Spain did not catch up during the first half of the twentieth century. The progress made in the 1920s and the relatively mild impact of the 1930s crisis were more than outweighed by Spain's exclusion from the late 1930s recovery as a result of the Civil War. In the 1940s, despite being non-belligerent in World War II, she grew more slowly than the warring Western European nations. In the second half of the twentieth century, especially during the Golden Age, Spain outperformed the advanced nations improving her relative international position.

Nonetheless, to be properly assessed growth rates need to be related to the initial level of per capita GDP. Evidence in Table 5 shows that at the beginning of the Golden Age Spain's income per head was way below that of industrial nations. Thus, within a neoclassical growth framework although Spain reached western European pace of growth in the 1950s, a faster one could have been expected from her lower initial per capita income. A similar reasoning can be applied to the mid- or late nineteenth century as Spain exhibited a slower growth than western European countries when the gap was narrower.

TABLE 5

On the whole, Spain's relative position at the end of the twentieth century was worse than it had been in 1850 and hardly improved since the late nineteenth century. In the long run Spain exhibits a tendency to return to a stable position at around three quarters of Western European per capita income (and half that of the USA). In fact, after her relative position collapsing during the first two decades of Franco's dictatorship (1939-59) accelerated growth over 1960-75 allowed Spain to recover the international position she attained at the beginning of the twentieth century. After a worsening during the decade of 'transition to democracy', a lively recovery led to much the same position in the late 1990s as at the time of Franco's death (1975). Does this mean that Spain's steady state is lower than that the advanced European nations?³³.

³³ Since 2000 Spain has improved her position up to the relative level achieved by 1929.

What did determine Spain's position relative to western European economies?. In an attempt to provide an answer I estimated a growth model for modern Europe in which per capita GDP growth is associated to the initial levels of (log of) per capita income and primary and secondary school enrolment (as proxies for initial physical and human capital endowment), the average investment ratio to GDP and the growth of population (as proxies for changes in the stock of physical capital and labour), resource allocation indicators (that include the shift of resources away from agriculture, proxied by the initial share of active population in agriculture and by the (log of) average ratio of agricultural to industrial output), and the change in openness (as measured by the rate of variation of the export share in GDP) (Prados de la Escosura 2006c). A time trend dummy was added to capture temporal changes in the dependent variable not associated with variations in the independent variables (and to eliminate all variation between periods that makes the result correspond to that of a weighted cross section).

Additionally, I allowed for a boost to growth from post-war episodes of reconstruction (in the 1920s and 1950s) in an attempt to clarify the part of growth not easily explained by the conventional variables of the (basic and augmented) neo-classical model. The postwar to prewar ratio of physical capital per person, and changes in the human to physical capital endowment ratio have been used in historical studies of European reconstruction (Crafts 1992, Dumke 1990). In the former case I approximated with the post-war to pre-war income per head ratio (1920/1913 and 1950/1938) and its quadratic term to incorporate its diminishing impact on growth. For the latter, as no data on human and physical capital stocks were available for all countries in the sample I used schooling and investment flows as proxies. Lagged values of the independent variables have been used as instruments to take endogeneity into account. The regression results (Table 6) shows a good fit with only over one-fourth of the variance unexplained. A strong conditional convergence effect appears to exist as measured by the negative and high coefficient of the initial level of income (and shown by the speed of convergence), and the remaining coefficients present the expected relations, positive for accumulation and openness, and negative for tying resources to agriculture.

TABLE 6

Per capita GDP growth for Spain can be predicted using equations alternatively representing the unconditional convergence, the basic and augmented (with human capital) Solow, and structural models, the latter incorporating resource allocation, openness, and a ‘reconstruction’ effect (in the two alternative specifications described above) (Table 7). This way the intuitive interpretation of Spain's historical performance presented earlier in this paper can be tested.

TABLE 7

The predicted rate of per capita GDP growth for Spain represents the "potential" growth within a European historical context under a common set of restrictions. Comparing alternative growth models’ predictions for Spain deserves a few remarks. In the first place, with the exception of the Golden Age, the unconditional convergence forecasts a faster per capita growth than the Solow model, a finding that suggests that the rate of capital accumulation was lower in Spain than in the European case. Prior to 1920, weaker human capital accumulation also contributes to explain the systematically lower growth forecasted by the augmented Solow model relative to the unconditional convergence one. The potential for growth that results from structural change is highlighted by the fact that the predictions of the models including resource allocation, openness, and a ‘reconstruction’ effect are systematically above those of the unconditional convergence model for periods of accelerating growth such as 1850-83 and 1958-74³⁴. In fact, the growth differential in the predictions of the two structural models (equations (4) and (5)) is very revealing, with a lower growth rate cast by the structural model that uses the human capital to physical capital ratio as a proxy for the ‘reconstruction’ effect. Human capital endowment appears to be the key. In Spain, (as opposed to German or Japanese experiences), the destruction of human capital was higher than that of physical capital during the Spanish Civil War and its repressive aftermath (the exile and, especially, the internal exile), and this fact helps explain the weaker performance of Spain’s economy during the 1940s and the early Golden Age.

When the models’ predicted growth are confronted with the actual rates, it clearly appears that Spain underperformed over the long run mostly due to its sluggish growth in

³⁴ And, if the structural model presented in equation (4) is employed, also for the 1920s, the 1950s, and 1974-2000.

the hundred years up to 1950. The Golden Age, especially, the period 1958-74, and the last one and a half decades of the twentieth century stand out as years of outstanding performance (with the 1920s just below it!). A closer look singles out 1866-73, 1964-74, and 1986-92 as cycles of overachievement. The *Restauración* (here restricted to 1883-1920), the 1930s and 1940s, and the transition to democracy after Franco's death (1975-85) stand out, in turn, as those phases responsible for Spain's poorer economic performance relative to western Europe.

How much did structural change contribute to the model's predicted growth can be established, for example, by simulating *ceteris paribus* the impact of maintaining fixed either the sectoral resource allocation, the change in openness, or the rate of capital accumulation of, say, the previous period, on the rate of forecasted growth. Thus, it appears that without the moderate shift of resources away from agriculture that took place in the *Restauración* growth would have been slightly over three-fourths of the model's predicted rate. In the decade of 'transition to democracy' (1976-85) it would have represented two-thirds of the forecasted growth (when the shift away from agriculture and non competitive industry is taken into account). Capital accumulation, in turn, mattered especially during the 1920s and 1950s and the counterfactual growth that would have been achieved with the investment rate of the previous period represents three-fourths and two-thirds, respectively, of the predicted per capita GDP growth. Finally, the increasing openness represented that, in 1958-74, the model's predicted growth practically doubled the counterfactual rate obtained by keeping constant the pace of openness that prevailed in the 1950s.

The change in the rate of forecasted growth between successive long swings can be decomposed, using equation (5) of Table 6, into the contributions of a catching-up effect (which includes the initial values of income, schooling, and the impact of 'reconstruction'), and those resulting from capital accumulation, population growth, sectoral resource allocation, and changes in the degree of openness (Table 8).

TABLE 8

It appears that the deceleration during the *Restauración* (reduced to 1883-1920 here) resulted from a weakening of the catching-up effect and the closing of the economy that offset the timid shift of resources away from agriculture. In the 1920s the increase in capital accumulation was the main element behind growth acceleration and, once again, the mild

reallocation of resources was cancelled out by the lower exposition to international competition. During the 1950s, in turn, growth acceleration was associated to increasing investment and to catching up after the isolation of the previous decades. Nonetheless, lack of openness still represented a brake on growth. It was during the decade and a half of accelerated growth that followed the Stabilization Plan (1958-74) when increasing openness was its main contributor. Spain's poor adjustment to international competition following the oil crises of the 1970s evidenced the delayed negative consequences of Francoist interventionism and protectionism. Shifts of resources away from agriculture and non competitive industry (that had grown under the protectionist umbrella) mitigated the slowdown of the decade of transition to democracy and stimulated growth after Spain's admission in the European Community, to which increasing openness and capital accumulation also contributed.

IV. Concluding Remarks.

Over one and a half centuries, the level of economic activity increased forty times while income per person rose to 15 times its initial level. The distinction of three main phases: 1850-1950, 1950-1974 and 1974-2000 confirms the continuity of growth between 1850 and 1950, in contrast with the widespread view of a nineteenth century characterised by failure and a twentieth century of economic success.

Per capita GDP growth cannot be attributed exclusively to the Golden Age as there is evidence of significant growth during 1850-1883 and in the 1920s. Alternatively, 1883-1920, 1929-1952 and 1974-1986 represent phases of sluggish growth.

Spain underperformed over the long run mostly due to its sluggish growth in the hundred years up to 1950. Higher destruction of human capital than of physical capital during the Spanish Civil War and its aftermath help explain her performance during the 1940s and 1950s. Spain's economy has been catching up with advanced countries over the last fifty years in which 1959-74 stand out as a period of outstanding performance. Structural change appears to have contributed significantly to growth acceleration. While lack of exposition to international competition represents a recurrent element of retardation.

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Table 1

Phases of Growth in Spain, 1850-2000 (%)
(annual average logarithmic rates of change)

	GDP	Population	Per Capita GDP
1850-2000	2.4	0.6	1.8
1850-1950	1.3	0.6	0.7
1950-1974	6.4	1.0	5.4
1974-2000	3.0	0.4	2.6
1850-1883	1.8	0.4	1.4
1883-1920	1.2	0.6	0.6
1920-1929	3.5	1.0	2.6
1929-1952	0.6	0.9	-0.3
1952-1958	4.4	0.8	3.5
1958-1974	6.9	1.1	5.9
1974-1986	2.5	0.7	1.8
1986-2000	3.5	0.2	3.3

Sources: Prados de la Escosura (2003).

Table 2

Decomposing Per Capita GDP Growth, 1850-2000

	Per Capita GDP	GDP/ employee	Employment /EAP	EAP /PAP	PAP/ Population
1850-2000	1.8	1.7	-0.1	0.1	0.1
1850-1950	0.7	0.7		0.0	0.1
1950-1974	5.4	5.3	0.0	0.4	-0.3
1974-2000	2.6	2.6	-0.5	0.2	0.4
1850-1883	1.4	1.3		0.1	0.0
1883-1920	0.6	0.7		0.0	0.0
1920-1929	2.6	2.4		0.0	0.1
1929-1952	-0.3	-0.5		-0.1	0.3
1952-1958	3.5	3.0	0.0	0.8	-0.4
1958-1974	5.9	6.0	-0.1	0.2	-0.3
1974-1986	1.8	4.0	-1.8	-0.8	0.4
1986-2000	3.3	1.4	0.6	1.0	0.3

Sources: Prados de la Escosura (2003).

EAP: Economically Active Population; PAP: Potentially Active Population (15 to 64 years)

Table 3**Structural Change and Labour Productivity Growth, 1850-2000**

	GDP/EAP	Internal Productivity (shift-share)	Structural Change (lower bound)	Internal Productivity (revised)	Structural Change (upper bound)
1850-2000	1.7	1.6	0.1	1.1	0.7
1850-1950	0.7	0.4	0.2	0.3	0.4
1950-1974	5.3	4.9	0.4	3.4	1.9
1974-2000	2.6	3.0	-0.4	1.9	0.7
1850-1883	1.3	1.1	0.2	1.1	0.2
1883-1920	0.7	0.6	0.1	0.4	0.3
1920-1929	2.4	2.1	0.4	1.1	1.3
1929-1952	-0.5	-0.5	0.0	-0.5	0.0
1952-1958	3.0	2.3	0.7	1.3	1.7
1958-1974	6.0	5.4	0.6	3.8	2.2
1974-1986	4.0	3.9	0.1	3.0	0.9
1986-2000	1.4	1.7	-0.3	0.9	0.5

Sources: Prados de la Escosura (2003).

Table 4

Per Capita GDP Growth in Spain: An International Comparison

	Spain	Advanced Europe	Continental Europe	U.K.	U.S.A.
1850-1998	1.8	1.7	1.7	1.4	1.8
1850-1950	0.7	1.2	1.2	1.1	1.7
1950-1998	4.0	2.7	2.8	2.1	2.2
1850-1913	1.0	1.3	1.3	1.2	1.7
1913-1950	0.2	1.2	1.3	0.9	1.6
1950-1974	5.4	3.6	3.7	2.3	2.3
1974-1998	2.5	1.8	1.8	1.9	2.1
1850-1883	1.4	1.2	1.2	1.4	1.8
1883-1913	0.6	1.4	1.4	1.0	1.6
1913-1920	0.8	-1.0	-1.0	-1.1	0.7
1920-1929	2.6	3.3	3.5	1.4	2.4
1929-1952	-0.3	0.9	0.9	0.9	1.3
1952-1958	3.5	3.5	3.6	2.0	0.5
1958-1974	5.9	3.7	3.9	2.5	2.7
1974-1986	1.8	1.9	1.9	1.8	2.1
1986-1998	3.3	0.8	0.8	0.7	0.8

Sources: Maddison (2001, 2003), except for Spain, Prados de la Escosura (2003).

* **Advanced Europe** (population weighted average)

Germany, Austria, Belgium, Denmark, France, the Netherlands, U.K., Sweden, Italy, Finland, Norway, and Switzerland.

Continental Europe (unweighted): Advanced Europe, excluding the U.K.

Table 5

Spain's Relative Levels of Per Capita GDP (%)
(US Current Relative Prices)

	Advanced Europe*		Western Europe **	U.S.A.
	<i>8 countries</i>	<i>12 countries</i>	<i>14 countries</i>	
1850	91.0			64.2
1860	90.5			64.8
1870	75.8			56.0
1880	83.3	88.9	93.8	56.8
1890	79.4	85.1	89.9	56.8
1900	73.1	77.2	82.8	52.5
1913	72.3	75.9	80.8	51.1
1925	76.7	79.1	84.5	46.0
1929	75.1	77.6	82.9	46.2
1933	66.3	68.5	73.7	50.4
1938	46.4	47.8	51.3	33.8
1950	66.0	66.0	70.2	35.2
1955	64.9	64.8	69.0	36.4
1960	52.9	53.7	57.3	33.1
1965	60.9	61.7	65.8	42.1
1970	60.5	61.8	65.8	43.3
1975	71.1	72.0	76.7	57.3
1980	68.7	67.4	72.2	55.9
1985	68.6	67.6	72.1	48.1
1990	70.3	70.1	75.0	56.5
1996	71.7	70.3	74.3	54.7
1999	73.7	72.5	76.4	54.7

Sources: Prados de la Escosura (2000). 1850-1990; OECD (1999). 1996, 1999.

*** Advanced Europe**

8 countries: Germany, Austria, Belgium, Denmark, France, the Netherlands, U.K., and Sweden,

12 countries: 8 countries plus, Italy, Finland, Norway, and Switzerland.

**** Western Europe**

14 countries: 12 Advanced Europe's countries plus Greece and Portugal.

Table 6

Determinants of Growth in Europe, 1820-1990

(TSLS pool regression)

	(1)	(2)	(3)	(4)	(5)
Constant	0.0811 (5.490)	0.1030 (6.296)	0.1064 (6.156)	0.2630 (6.966)	0.2292 (5.141)
LY90	-0.0119 (-5.392)	-0.0157 (-6.597)	-0.0171 (-6.264)	-0.0353 (-7.694)	-0.0307 (-5.594)
SINVT		0.1158 (5.025)	0.1089 (4.233)	0.1074 (4.428)	0.1151 (4.856)
GPOP1		0.1252 (0.548)	0.1685 (0.365)	0.1330 (0.516)	0.0133 (0.042)
ESCOLAR			0.0038 (0.365)	-0.0036 (-0.387)	-0.0021 (-0.215)
AGLAB				-0.0263 (-1.605)	-0.0228 (-1.369)
LSPOI				-0.0075 (-2.825)	-0.0068 (-2.573)
GXB				0.0786 (2.241)	0.1067 (2.814)
TBIAS	0.0003 (8.944)	0.0002 (5.135)	0.0003 (4.831)	0.0003 (4.982)	0.0002 (3.241)
RCNSTRC				-0.0141 (-1.467)	
RCNSTRC2				0.1018 (2.364)	
HPK					0.0053 (2.330)
N° Obs.	163	127	108	89	85
R²	0.364	0.516	0.525	0.722	0.689
S.E.Regression	0.012	0.010	0.010	0.008	0.008
F-Statistic	47.455	34.628	24.615	23.874	21.688
Speed of Convergence	0.0127	0.0170	0.0187	0.0435	0.0359

Instruments: Lagged and initial values of regressors.

(t statistics in brackets)

Dependent Variable: Per Capita GDP growth rate (%)

Constant: Constant term.

LY90: Log of real *per capita* GDP at the beginning of each period, in 1990 US \$, PPP.

SINVT: Ratio of gross domestic investment to GDP, calculated as ten-year averages.

GPOP1: Rate of population of growth.

ESCOLAR: Primary and secondary school enrolment as a ratio to population aged 5 to 19 at the beginning of each period.

AGLAB: Labour force in agriculture as a ratio to total labour force at the beginning of each period.

LSPOI: Index of production orientation (Log of Agricultural-Industrial output ratio), calculated as ten-year averages.

GXB: Growth rate of exports ratio to GDP.

TBIAS: Time trend.

RCNSTRC: Dummy of reconstruction processes. For 1950-1960, it is the log of 1950/1938 *per capita* income ratio; for 1920- 1929, the log of 1920/1913 *per capita* income ratio; otherwise, takes zero value.

RCNSTRC2: Square of RCNSTRC.

HPK: Human Capital to Physical Capital Ratio, proxied by the Post-World War ESCOLAR/SINVT to the to Pre-World War ESCOLAR/SINVT ratio. For 1950-1960, it is the 1950/1938 ratio; for 1920, the 1920/1913 ratio; otherwise takes zero value

Table 7

Per Capita GDP Growth in Spain: Predicted and Actual Rates (%)

	Unconditional convergence	Solow	Augmented Solow	Structural (Include Reconstruction Effect)	Structural (HPK ratio)	Actual growth
<i>Panel A. Long-run trends</i>						
1850-2000	2.7	2.4	3.0	3.4	2.7	1.8
1850-1952	2.4	1.9	2.3	2.7	2.1	0.9
1952-1974	3.7	4.2	5.1	6.4	5.3	5.2
1974-2000	3.1	2.7	3.8	3.7	3.0	2.6
<i>Panel B. Long swings</i>						
1850-1883	1.9	1.6	1.7	2.7	2.3	1.4
1883-1920	2.4	1.7	2.1	2.4	1.7	0.6
1920-1929	2.8	2.5	3.1	3.0	2.7	2.6
1929-1952	3.0	2.4	3.2	3.0	2.1	-0.3
1952-1958	3.5	3.8	4.7	4.5	3.0	3.5
1958-1974	3.6	4.0	4.9	6.6	5.7	5.9
1974-1986	2.9	2.6	3.6	3.3	2.6	1.8
1986-2000	3.0	2.5	3.6	3.6	2.9	3.3

Table 8

Decomposing Changes in Predicted Per Capita GDP Growth

Change in Predicted Growth Rate due to

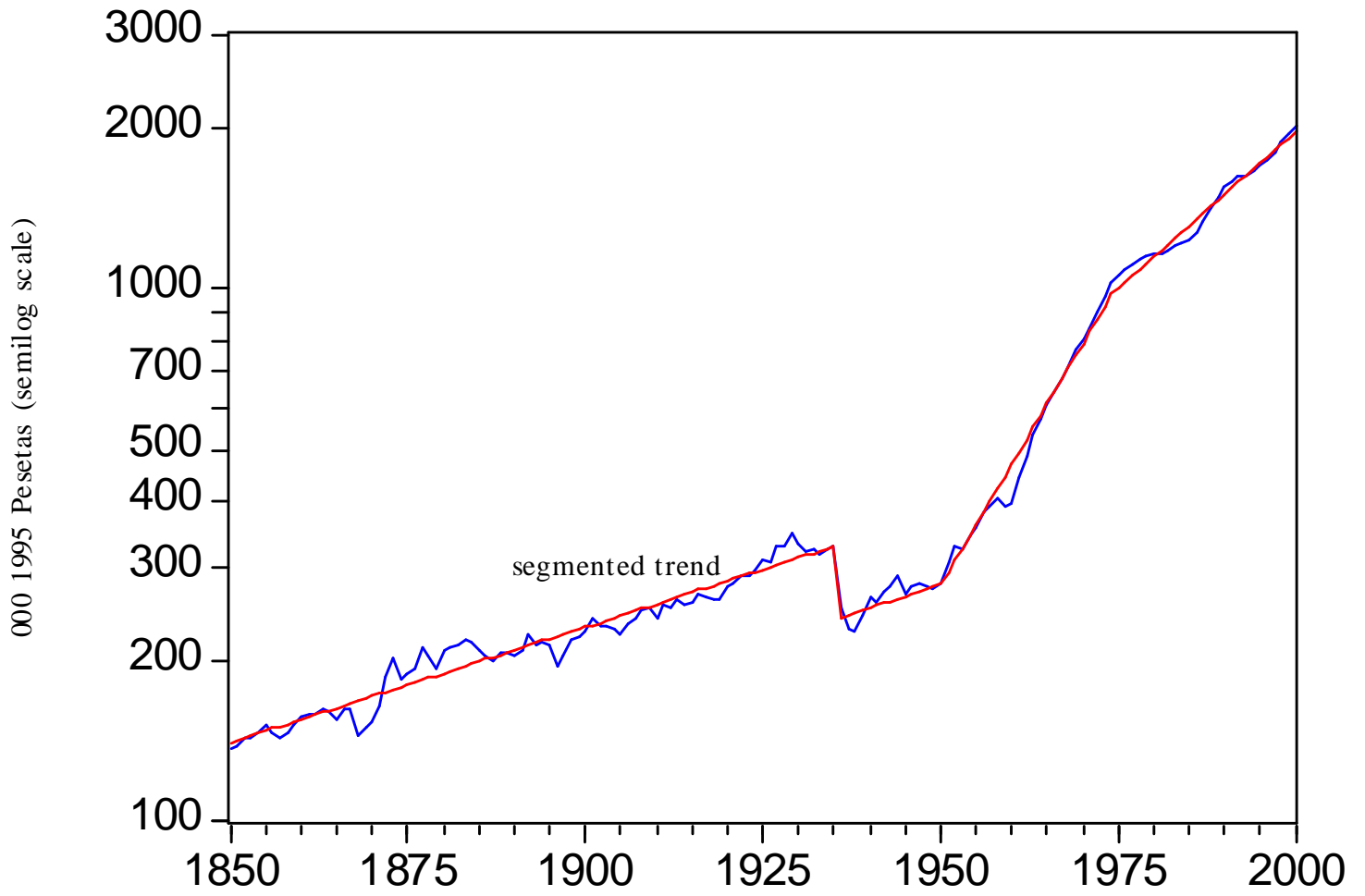
	Catching-up Effect	Capital Accumulation	Population Growth	Resource Allocation	Openness Growth Rate	Predicted Growth
1883/1920-1850/1883	-0.8	0.1	0.0	0.3	-0.3	-0.6
1920/1929-1883/1920	0.3	0.6	0.0	0.4	-0.3	1.0
1929/1952-1920/1929	-0.9	0.0	0.0	0.1	0.2	-0.6
1952/1958-1929/1952	0.8	1.0	0.0	0.2	-1.1	1.0
1958/1974-1952/1958	-0.4	0.2	0.0	0.4	2.5	2.6
1974/1986-1958/1974	-3.0	-0.2	0.0	0.9	-0.9	-3.1
1986/2000-1974/1986	-0.4	0.1	0.0	0.4	0.2	0.3

Percentage Change in Predicted Growth due to

	Catching-up Effect	Capital Accumulation	Population Growth	Resource Allocation	Openness Growth Rate
1883/1920-1850/1883	124.7	-17.9	-0.3	-59.7	53.3
1920/1929-1883/1920	27.6	65.1	0.6	38.9	-32.1
1929/1952-1920/1929	154.7	-2.8	0.3	-14.1	-38.1
1952/1958-1929/1952	82.1	105.4	0.0	24.2	-111.8
1958/1974-1952/1958	-16.5	7.3	0.1	14.2	94.9
1974/1986-1958/1974	95.2	4.7	0.1	-28.7	28.7
1986/2000-1974/1986	-136.5	34.9	-2.5	129.9	74.2

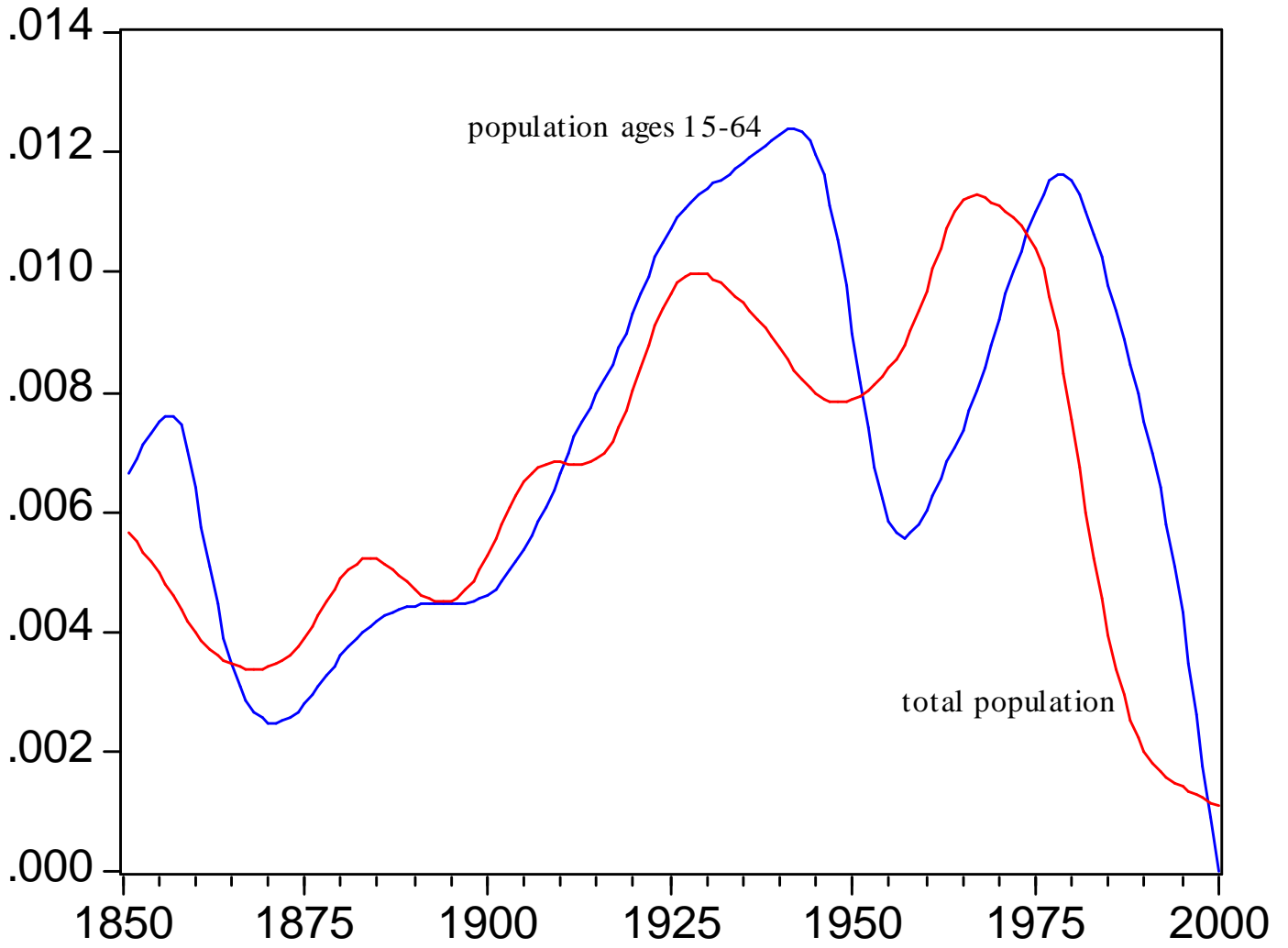
Graph 1

Real Per Capita GDP, 1850-2000



Graph 2

Total Population and Potentially Active Population (Ages 15-64):
Smoothed Rates of Variation



Graph 3

Potentially Active Population to Dependent Population Ratio, 1850-2000

