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# Economic Reforms and Growth in Franco's Spain

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### Abstract

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**JEL Classification:** E65, F43, N14, N44, O43.

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## Economic Reforms and Growth in Franco's Spain \* †

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### Abstract

This paper is an attempt at assessing the economic impact of market-oriented reforms undertaken during General Franco's dictatorship, in particular, the 1959 Stabilization and Liberalization Plan. Using an index of macroeconomic distortions (*IMD*) the relationship between economic policies and the growth record is examined. Although a gradual reduction in macroeconomic distortions was already in motion during the 1950s, the 1959 Plan opened the way to a new institutional design that favoured a free-market allocation of resources and allowed Spain to accelerate growth and catch up with Western Europe. Without the 1950s reforms and, especially, the 1959 Plan, per capita GDP would have been significantly lower in 1975.

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## Introduction

Economic policy varied substantially over the years that General Franco remained in power (1939-75). During its early years, the new regime introduced a set of anti-market policies that altered the previous behaviour of the Spanish economy dramatically. These measures resulted in high inflation rates, the development of ‘black’ markets, and a contraction in international trade. In a subsequent phase, during the 1950s, the most extreme interventionist policies were relaxed while the Spanish economy benefited from a (military and technological) cooperation agreement with the US government. A critical economic situation by mid-1959, in particular, a shortage of foreign reserves, induced more drastic economic reforms. The authorities presented this set of reforms as a package, the Liberalization and Stabilization Plan (hereafter *PSL*). Simultaneously, Spain joined major international organizations increasingly committing the government to the free-market discipline. As a consequence, inflation decreased, ‘black’ markets disappeared, foreign investment increased, and international trade flourished.<sup>1</sup>

Our main goal is to test the impact of Franco’s economic policies on Spanish economic growth quantitatively. In particular, we will re-visit the widespread claim that the new policies associated with the 1959 *PSL* had a dramatic impact on Spain’s growth performance and explore the effects on growth of the previous tentative steps to soften regulation and intervention. A market-oriented reform is a policy measure that favours the competitive participation of private agents in economic activity, so assessing the impact of policy reforms is not an easy task and there are many ways to go about it.<sup>2</sup> Our choice has been to construct an index of macroeconomic distortions (hereafter *IMD*) and analyse its impact on growth in several counterfactual scenarios.

In a nutshell, our results confirm the important role played by the *PSL* and the subsequent reforms in promoting sustained economic growth while, at the same time, stressing the permissive role played by the gradual and moderate reduction of macroeconomic distortions during the 1950s. According to our calculations, without these successive

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<sup>1</sup> From our point of view, the Spanish Plan of Stabilization and Liberalization of 1959 could be considered, to some extent, as a forerunner of the policy measures associated with the ‘Washington Consensus’ (Williamson, 1990). These reforming programmes usually include measures conducive to trade and capital account liberalization, macroeconomic policies to reduce inflation and the size of the fiscal imbalances, and other reforms to protect private property rights and to reduce the activity of the government. See Fischer (2003) and, more recently, Schleifer (2009) and Edwards (2009).

<sup>2</sup> See Loayza and Soto (2003).

economic policy reforms, GDP would have been significantly lower at the time of Franco's death in 1975.

The rest of the paper is organized as follows. The next section reviews the Franco's regime growth record and its economic policy. In section 3 we introduce the *IMD* which allows us to determine major economic policy changes in Spain.<sup>3</sup> Then, in section 4, we examine, with the help of a structural model, the main determinants of growth, highlighting the deterrent role played by macroeconomic distortions. As a sensitivity test, in section 5 we investigate the economic impact of macroeconomic restrictions using a VAR approach. In both sections 4 and 5 the economic cost of early *Francoism* anti-market policies is assessed by exploring alternative counterfactual scenarios. The last section concludes.

### **Economic Performance and Policy during Franco's Regime**

Economic performance during General Franco's dictatorship represents an exception in the economic history of Modern Spain (Figure 1). Franco's regime covered the period from the end of the Civil War (1936-39) to the dictator's death in 1975. A closer look reveals that, after the contraction that resulted from the Civil War and a very slow recovery during the 1940s, per capita GDP growth intensified in the 1950s and accelerated dramatically from the 1959 *PSL* up to 1974.

#### **[FIGURE 1]**

In comparative perspective, during the early phase of Franco's dictatorship Spain's growth record was highly disappointing. Spain did not recover its pre-Civil War per capita GDP peak levels (1929) until 1955, while Western European countries reached, on average, 1938 levels of GDP per head by 1950. Such a difference is more striking given that the destruction of lives and physical capital as a consequence of the Spanish Civil War was lower than in most of Western European countries involved in World War II.<sup>4</sup> However, an intense destruction of human capital occurred as a result of political exile and post-war political repression.<sup>5</sup> The situation began to change in the 1950s when, in per capita terms, the Spanish economy grew at a similar rate to the Western European average but with the significant

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<sup>3</sup> Previous studies have employed similar indicators of macroeconomic policy. Cf. Fisher (1993). Barro (1996) Durlauf *et al.* (2008), Prados de la Escosura and Sanz-Villarroya (2009).

<sup>4</sup> See quantitative assessments in Catalan (1995), Reher (2003), Ortega and Silvestre (2006), Prados de la Escosura and Rosés (2010a), and Rosés (2009).

<sup>5</sup> See López (1991), Prados de la Escosura (2007), Prados de la Escosura and Rosés (2010b)

difference that Spain started from a substantially lower level.<sup>6</sup> It was during the last period of Franco's rule (1959-1975) when per capita GDP growth reached an unprecedented intensity in Spain, not far behind that of 1950s Germany and significantly above Western Europe and the U.S.

At first sight, significant differences in the forces behind economic growth can be observed between the three periods mentioned above (Table 1). In the earlier period, 1939-51, per capita income growth (2.1 percent) depended, almost equally, on the increase in GDP per hour worked (0.9 percent per year) and on the rise in hours worked per person (1.1 percent). Efficiency gains explained, in turn, all the improvement in labour productivity. In the second period, 1952-58, per capita GDP growth accelerated (4.4 percent) depending exclusively on the increase in labour productivity (4.2 percent), which largely resulted from efficiency gains (2.6 percent), but also from broad capital deepening. The pattern initiated in the 1950s intensified during 1959-75, with labour productivity (6.4 percent) accounting for all the improvement in per capita GDP (5.6 percent) while the rise in total factor productivity (4.2 percent) accounts for two-thirds of the increase in output per hour worked.

Why was the economic growth record so disappointing during the early period of Franco's rule? Why did the economy grow during the 1950s with no apparent significant transformation of the political regime? What does account for the acceleration in Spain's pace of growth since 1960?

The early years of the dictatorship -from the Civil War up to the early 1950s- represented a dramatic rupture with the economic policies prevalent in Spain from the mid-19<sup>th</sup> century. Effective possession of legislative and judicial powers gave Franco's dictatorship the ability to alter economic and political rights discretionally. The dictatorship did not reassure economic agents of the New State's commitment to private property and the free market. Quite the contrary, the new authorities shared a strong anti-market attitude and their economic policy often threatened private initiative and investment (Fraile Balbín 1998). Severe market controls aimed at economic autarchy were implemented (Barciela 2002). The

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<sup>6</sup> Spain and Western Europe grew at 4.4 and 3.9 percent yearly during the period 1952-58. However, countries that experienced a reconstruction process grew at much faster pace. For example, Italy grew at 4.9 percent and Germany at 6.5 percent. Growth rates computed from Prados de la Escosura (2003) for Spain and Maddison (2009) for the rest of countries. Western Europe is a population weighted average of Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, and United Kingdom.

new state-owned enterprises began by controlling ‘strategic’ industries seeking technical solutions to maximize the amount of production, bypassing the opportunity cost of their decisions (Martín Aceña and Comín 1991). Labour relations were subordinated to the ‘national interest’ and employers and workers incorporated into a single ‘vertical’ union in an attempt to harmonize diverging social and economic interests (González 1979). This economic policy provided, in turn, an advantageous position to those small groups and coalitions which, in exchange for support to the dictatorship, would derive rents from the public sector and even control the state’s economic decisions (Fraile Balbín 1999). To make the economic situation even worse, economic agents were uncertain about how long the regime would last (Calvo-González 2001, 2007a).

Although the size of the government increased (Figure 2), no tax reform to boost its revenues was introduced until 1957 as apparently a clash with interest groups supporting the regime was feared (Díaz Fuentes 1994, Comín 1996). Thus, a large amount of debt was issued while a policy of low nominal interest rates was implemented. In addition, limits to fiduciary circulation were suspended and the Bank of Spain was given full power for proceeding with debt monetization. Under these circumstances, monetary policy succumbed to the demands of the government budget (Martin Aceña 1994). Clearly, the potential inflationary risks of this new monetary management were very high, since any increase in public debt could determine a monetary expansion. In consequence, inflation rates were comparatively high during the early years of Franco’s rule even though inflation was repressed through officially established prices (Figure 3). The inflation rate was, on average, 10 percent higher than that of the 1940s. It decreased to 8 percent in the 1950s and, after the Stabilization measures, inflation rates practically halved, falling below 6 percent, on average, during 1959-73, and only went up to 12 percent after the 1973 oil shock.<sup>7</sup>

### **[FIGURES 2 and 3]**

Franco’s regime also represented an exception from the point of view of Spain’s integration in the international economy as it started with a dramatic closing down followed, after the stabilization plan of 1959, by opening up to a historical maximum (Figure 4). The new regime strongly regulated foreign currency markets aiming at having absolute control of foreign trade (Martínez Ruiz 2003). The private possession of foreign currency was prohibited and exporters forced to hand it over to the Spanish Institute for Foreign Currency

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<sup>7</sup> See the discussion on inflation tendencies in González (1979).

(IEME) at the official, overvalued exchange rate.<sup>8</sup> The overvaluation of the exchange rate, a matter of national pride for the Franco regime, harmed exports and fed the desire to import. To avoid collapse, the regulation and control of currency trade was very strict. The outcome of all these policies was a strong premium for currency exchange in the ‘black market’ and, thus, a substantial deviation between the official and the free market exchange rate of the peseta.<sup>9</sup>

#### [FIGURE 4]

During the 1950s, economic interventionism was relaxed, but not suppressed, and the international isolation Spain had suffered since 1945, due to Franco’s alignment with the Axis powers during World War II, began to decrease. Thus, the centralized allocation of scarce goods, namely food rationing and quotas for raw materials and energy, was abolished (Barciela 2002). Yet foreign investment continued to be harshly restricted (Martínez Ruiz 2003, Viñas *et al.* 1979, Barciela 2002). The new international context dominated by the Cold War helped decisively to rehabilitate the regime of General Franco in the international community. In November 1950, the United States supported a vote in the U.N. General Assembly invalidating the 1946 resolution which excluded Spain from this organization, while the Pact of Madrid (September 1953) committed the U.S. to provide an unspecified amount of aid in return for the right to establish four military bases in Spain (Calvo-González 2006).<sup>10</sup> In the 1950s fast and intensive growth was apparently facilitated by the increasing confidence of economic agents derived from the greater political stability that followed the U.S.-Spain cooperation agreements (Calvo-González 2007a).

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<sup>8</sup> The creation of the IEME, which monopolized the deposit of and trade in all currencies, deprived the Bank of Spain of the exchange rate policy control, separating artificially the management of internal and external monetary policy (Martínez Ruiz 2003)

<sup>9</sup> For example, in 1941, the official exchange rate was 10.95 pesetas per U.S. dollar but the free exchange rate in Tangiers was 24.49 pesetas per dollar.

<sup>10</sup> According to Guirao (1998) U.S. financial support during the 1950s under the Pact of Madrid was largely aimed at building U.S. military bases. However, Calvo-González (2007a) points out that U.S. financial support was extremely important because it solved one of Spain’s main bottlenecks: the lack of hard currency with which to finance. In any case, aid received by Spain did not have comparable effects to those derived by Western European countries foreign trade from the Marshall Plan. (Prados de la Escosura and Sanz 1996). Furthermore, Spain did not benefit from externalities which were associated with the U.S. aid to Western Europe (De Long and Eichengreen 1991) and was excluded from the multilateral institutions that managed economic cooperation, trade and financial imbalances.

## [FIGURE 5]

Reforms also arrived to the foreign exchange market. In an attempt to dampen the negative effects of the prevalent exchange rate policy, the authorities adopted a system of multiple exchange rates in 1948 which lasted until July 1959 (Figure 5). This new system, designed to facilitate exports and imports of certain goods by applying favourable exchange rates has been accused of hindering foreign trade and increasing corruption (Donges 1976, de la Dehesa *et al.* 1991). Yet, the multiple exchange rate system allowed the authorities to devalue the peseta surreptitiously (Serrano Sanz and Asensio Castillo 1997). Thus, when computed with the official -and practically fixed- exchange rate, the ‘black market’ premium increased between 1948 and 1956. However, when an “effective” official exchange rate - derived by weighting different official exchange rates by its relative importance within the balance of payments on current account- is considered, a gradual convergence is found between the free and the “effective” official exchange rate, with a subsequent contraction in the ‘black market’ premium.<sup>11</sup>

In the late 1950s, there were clear signs of economic over-heating such as growing inflation and increasing external deficit. In particular, foreign exchange reserves were exhausted by mid-1959. In such circumstances, a complete economic policy reorientation, represented by the Stabilization and Liberalization Plan, took place. Spain opened up to major international organizations and committed to gradual liberalization.<sup>12</sup> Spanish presence in major international organizations was an implicit guarantee of the definitive abandonment of isolationist options, legitimized the change in economic policy, facilitated the arrival of foreign technical assistance, and reduced the opposition to economic reforms from within Franco’s regime (Sardá 1970, Varela Parache 2004, Fuentes Quintana 1984, González 1979).<sup>13</sup>

The 1959 *PSL* marked the beginning of a new era in the Spanish economy as the country entered a process of economic liberalization and international market integration. Measures in three main areas deserve highlighting. Firstly, a classical stabilization operation

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<sup>11</sup> See Serrano Sanz and Asensio Castillo (1997) and, especially, Martínez Ruiz (2003).

<sup>12</sup> Spain integrated successively in the International Monetary Fund (1958), the World Bank (1958), the Organization for European Economic Cooperation (1959) and the General Agreement on Tariffs and Trade (1963).

<sup>13</sup> Historians have usually claimed that these measures were influenced by IMF and OEEC (a forerunner of the OECD) advice (González (1979) although discrepant views have been expressed (Calvo-González 2007b).



was executed with the objective of reducing inflation, which was mainly due to a lack of monetary discipline. Public spending was controlled, the issue of new public debt limited, and the Bank of Spain's discount rate increased. Secondly, domestic markets were partly liberalised by suppressing regulations and simplifying administrative procedures. Prices of goods (petrol, tobacco) and services (telephone, transport) supplied by state monopolies were adjusted upwards in an attempt to close the gap between official prices and their real provision costs. Lastly, a liberalization of foreign economic relations was implemented (Fuentes Quintana 1984, de la Dehesa *et al.* 1991). In July 1959, Spanish authorities liberalized 50 percent of the nation's trade. Eventually the recurrent financial problems due to monetary isolation also persuaded the authorities to rethink the exchange rate policy. In July 1959, and following the convertibility of major European currencies in December 1958 (Toniolo 2005), the peseta became convertible with major European currencies and integrated into the Bretton Woods system. This monetary integration was accompanied by a more realistic exchange rate and the adherence to the exchange rate discipline of the IMF.<sup>14</sup> As a consequence, the 'black market' premium for currency exchange disappeared abruptly. Also, restrictions on foreign direct investment were relaxed (Serrano Sanz and Pardos 2002).<sup>15</sup>

All major contingency measures contained in the 1959 Plan were successful: inflation declined, the budget deficit disappeared, and an inflow of foreign capital took place (Prados de la Escosura and Sanz 1996). By implementing the new policy, Franco's regime showed its commitment to orthodox macroeconomic policies and offered a precedent of responsible behaviour to domestic and foreign investors.

After the 1959 Plan, and accompanying the integration of Spain into international organizations, a liberalization of foreign economic relations was implemented. Quantitative restrictions on foreign trade were replaced by more flexible and less distorting tariffs. Still in early 1959, liberalized trade (that is, imports entering with the only requirement of satisfying the tariff) was only 9 percent of total trade, while the remainder was subject to quotas, special trade or bilateral agreements. By 1973, liberalized trade reached 80 per cent of the total, while quotas and special trade had almost disappeared (Serrano Sanz and Pardos 2002).

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<sup>14</sup> The national currency devalued to 60 pesetas per U.S. dollar, a rate slightly higher than the one prevailing on the black market (Martínez Ruíz 2003).

<sup>15</sup> The IMF, the OEEC, the Bank for International Settlements and several U.S. private banks provided financial coverage for the operation of the Stabilization Plan through grants and loans in hard currency, its total estimated at \$544 million (Guirao 1998).

Spain's commitment to openness continued during the remaining years of Franco's dictatorship (1960-1975). Integrating the peseta in the Bretton Woods system led to its convertibility at a more realistic exchange rate. This was completed with a moderate financial liberalization on the capital inflows in the long term, while short-term outflows were restricted.<sup>16</sup> Trade liberalization was gradual since the rapid decrease of quantitative restrictions was partly counterbalanced by an increase in tariff rates (Donges 1976).<sup>17</sup> The preferential agreements with the European Economic Community in 1970 resulted in a new decrease in tariffs and increases in trade quotas with member countries. Large trade imbalances were financed by foreign investment, tourism and emigrant remittances (Prados de la Escosura and Sanz 1996, Serrano Sanz and Pardos 2002).

### **Measuring Macroeconomic Distortions**

Can these policy reforms and their impact on long-run growth be assessed quantitatively? To meet this challenge we investigate the extent to which these policies affected broad capital accumulation and efficiency gains.

A fundamental problem in analysing the impact of economic reforms is that the different policies were not independent from each other and were often implemented simultaneously. From an econometric point of view, this may mean that the different explanatory variables are correlated. Therefore, we need to capture those features of macroeconomic policies that could influence economic performance while avoiding cross-correlation between different policy indicators. The solution is provided by an Index of Macroeconomic Distortions (*IMD* hereafter).<sup>18</sup>

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<sup>16</sup> This was quite common in western countries at the time and consistent with the scarce presence of foreign banks in Spain. In addition, the system of fixed exchange rates seemed to require, in the peripheral countries, tight exchange controls to prevent potentially destabilizing short-term speculative operations. See, for example, Eichengreen *et al.* (2003).

<sup>17</sup> International commitments forced Spain to attend the GATT negotiating rounds. For example, in the Kennedy Round of GATT (1964-1967), Spain agreed tariff reductions introduced between 1968 and 1972 (Serrano Sanz and Pardos 2002).

<sup>18</sup> Our index is related to the index of economic freedom published by the Fraser Institute since 1996 (Gwartney *et al.* 1996) and to the 'reduced' index of economic freedom developed by Prados de la Escosura and Sanz-Villarroya (2009).

The selection of the variables compounding the *IMD* is not *ad hoc* since we have considered those variables which seem more representative of *Francoist* economic policies.<sup>19</sup> In the construction of the *IMD* we have employed factorial analysis based on Principal Component Analysis (PCA hereafter) which assigns weights on the basis of the distributions and interrelations between the various underlining components.<sup>20</sup> The results obtained from the application of this methodology are presented in Appendix 2. After exploring different alternative components for the index of macroeconomic distortions, we reached the conclusion that the ‘best’ index combines three macroeconomic variables: the rate of inflation, the differential between the official and the free market exchange rates (the ‘black market’ premium) and the share of government consumption within total consumption.<sup>21</sup> Thus, *IMD* has been obtained as a linear combination of these variables in which the values assigned by PCA to each component, expressed as a proportion of their total value, are used as their respective weightings.

The inclusion of these variables can be justified in economic terms. A high (and volatile) rate of inflation implies an absence of sound money and undermines gains from trade

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<sup>19</sup> Furthermore, our variables closely resemble those employed by Fisher (1993), Barro (1996) and Durlauf *et al.* (2008) to account for the impact of macroeconomic policy on cross-country differences in GDP growth.

<sup>20</sup> Some critics stress that the PCA fails to reflect a conceptual link between the theory behind the choice of elements and the index itself. Others observe that the results are sensitive to the scale of measurement of the different variables under consideration and highlight the ambiguity involved in the interpretation of the results. Finally, it is argued that this methodology assigns lower weights to variables which are highly correlated with others (Heckelman and Stroup, 2005, p. 957). It should be noted, however, that in this particular case the problems derived from applying this methodology appear to be minor.

<sup>21</sup> Government consumption covers government spending on goods and services (administration, military, judicial system, etc.) while it excludes, in addition to health and education expenditure, public transfers (such as social security, unemployment benefits, and retirement pensions) and gross fixed capital formation. In other words, it measures the part of government spending that not directly devoted to productive activities or to increasing private consumption.

and has, therefore, a negative impact on economic growth.<sup>22</sup> Moreover, it alters the fundamental terms of long-term contracts leading to a decrease in economic confidence.<sup>23</sup>

Exchange rate controls, insofar as they reduce the convertibility of currency, hold back international trade, foreign investment and private confidence in government behaviour. In particular, capital controls do have an important negative effect on economic growth (Chanda 2005). In countries with powerful interest groups, capital controls lead to greater inefficiencies and lower economic growth.

Finally, as regards the share of public consumption in total consumption, it is generally accepted that the government should provide public goods for which free markets do not produce efficient results (De Haan et al. 2006). However, when public spending increases its share of total spending political decision-making is substituted for personal choice and, consequently, economic freedom declines.

### [FIGURE 6]

The years 1936-1958 appear to be as an exceptional period in the evolution of *IMD* with only the milder precedent of World War I (Figure 6). A significant increase took place from 1936 up to 1947 where it stayed at a high level until a gradual decline started in 1951 and was sustained during the 1950s. A merely episodic reversal took place between 1956 and 1959 that could be associated with populist policies implemented by the Ministry of Labour which led to a substantial pay rise across the board in 1956 and a subsequent inflation upsurge (Barciela 2002). Then, the *IMD* remained stable at low values until it rose again after the 1973 oil shock.

### Assessing the Impact of *IMD* on Growth: A Structural Model

Per capita income differences across countries are often explained as a result of differences in broad capital endowments and TFP.<sup>24</sup> Economic policies under Franco's Regime may have had considerable influence on the sources of economic growth.

Our starting point is a conventional augmented-Solow model *à la* Mankiw, Romer and Weil (1992) in which GDP (in logs) is dependent on the quantity of labour, in logs,

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<sup>22</sup> We have followed the Fraser Institute's Index of Economic Freedom (IEF) in computing the variable Inflation as  $\text{inflation rate}/(100 + \text{inflation rate})$ . See Gwartney *et al.* (1996).

<sup>23</sup> The relationship between inflation and growth has provoked an intense debate since Barro's (1995) seminal contribution.

<sup>24</sup> Cf. Hall and Jones (1999).

(measured by the number of hours worked, *LAB* hereafter), the rate of investment (the ratio of gross capital formation to GDP at current prices, *INVT*), the quality of labour (improvements in labour's skills as a measure of human capital, *HK*, in logs), and total factor productivity (*TFP*, in logs).<sup>25</sup> GDP is not fully defined because we do not include land in our calculations and TFP is not a combination of the *INVT*, *HK* and *LAB* variables.<sup>26</sup>

$$(1) \log GDP = a_0 + a_1 \log LAB + a_2 \log INVT + a_3 \log HK + a_4 \log TFP + \varepsilon$$

The hypothesis is that macroeconomic distortions, as measured by *IMD*, decreased efficiency gains and disrupted capital accumulation. For this reason, *TFP*, *HK*, and *INVT* have been endogeneized so the impact macroeconomic distortions have on them is taken into account and, at the same, we allow for additional exogenous variables.<sup>27</sup>

There are several channels through which macroeconomic policy may have affected TFP growth, because this is the result of both efficiency gains and technological changes (Harberger 1998). We postulate that TFP (in logs) depends on *IMD*, the degree of openness (measured as the ratio of exports plus imports to GDP, *OPEN*, in logs) and previous levels of human capital and GDP, which are proxies for the actual technological capability.<sup>28</sup>

$$(2) \log TFP = b_0 + b_1 IMD + b_2 \log OPEN + b_3 \log HK + b_4 \log GDP + \varepsilon$$

In order to explain investment rates we have related the share of capital formation in GDP to the relative price of capital, the degree of financial development, the level of GDP, and the degree of income inequality. Thus, the rate of capital accumulation has been

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<sup>25</sup> Other studies show that per capita income differences across countries are explained taking into account differences in capital endowments and TFP (Hall and Jones, 1999). The sources for the data used in this section are detailed in Appendix 3. See also Table 2.

<sup>26</sup> TFP is drawn from the growth accounting exercise in Prados de la Escosura and Rosés (2009).

<sup>27</sup> However, we have not followed the same procedure with *LAB* because we assume that is mainly driven by exogenous demographic forces and unexpected shocks such as wars (which are independent from macroeconomic policies).

<sup>28</sup> Anti-trade policies decrease TFP as international trade is a significant carrier of R&D knowledge (Coe and Helpman 1995, Madsen 2007). Similarly, policies limiting FDI investment may also damage TFP gains (Haskel et al. 2007). In consequence, we introduce *OPEN* as a control variable because some changes in trade policy (like modifications in quotas) could not be well captured by *IMD*.

associated with the relative price of capital goods (Taylor 1998). Here, instead of the relative price of capital goods, we employ the user cost of capital, since it is a more accurate measure as it includes the price of capital goods, the interest rate, and the depreciation rate, relative to the consumption deflator (hereafter, *RUCK*). In addition, we expect financial development (measured as M2 over GDP, *DEPTH*, thereafter) to encourage, *ceteris paribus*, investment. As regards the role of inequality in capital accumulation, there are competing views: on the one hand, the negative connection between inequality and investment, as a result of social instability, has been stressed (Alesina and Perotti 1996), but a positive link associating, at low levels of per capita income, inequality with increased saving and investment has been claimed, on the other (Kaldor 1955-6). We employ the Gini coefficient as our income inequality measure (*GINI*, hereafter). Specifically, the share of investment in GDP (*INVT*) is related to (the logs of) *RUCK*, *DEPTH*, *GDP*, and *GINI*.

$$(3) \text{INVT} = c_0 + c_1 \log \text{RUCK} + c_2 \log \text{DEPTH} + c_3 \log \text{GDP} + c_4 \log \text{GINI} + \varepsilon$$

Furthermore, it should be taken into account that price distortions, caused by factors ranging from taxes on capital goods and barriers to capital goods imports, to monopoly rights for domestic capital good producers, play a prominent role in explaining the relative price of capital goods (Jones 1994, Collins and Williamson 2001, Eaton and Kortum 2001, Restuccia and Urrutia 2001). For these reasons, the relative user cost of capital (*RUCK*) is assumed to depend on *IMD* and also on GDP level.

$$(4) \log \text{RUCK} = d_0 + d_1 \text{IMD} + c_2 \log \text{GDP} + \varepsilon$$

Lastly, the quality of labour, or human capital, depends on the level of development (GDP) and past levels of TFP.<sup>29</sup> In the structural model, *IMD* affects TFP and TFP affects Labour Quality.

$$(5) \log \text{HK} = e_0 + e_1 \log \text{GDP} + e_2 \log \text{TFP} + \varepsilon$$

To investigate the relationship between *IMD* and *GDP*, we have constructed a structural model as a system of simultaneous equations (Equations 1 to 5) We have employed

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<sup>29</sup> Cervellati and Sunde (2005) have shown that this relation exists.

Three Stages Least Squares (3SLS) in the estimate that solves the problem of contemporary correlation between the equations' residuals and deals with the endogeneity problem often present in this kind of exercise (See Appendix 3 for a detailed exposition of the econometric procedure). The results are presented in Table 3.

### [TABLE 3]

The results are in line with our predictions and all variables have the expected sign at the conventional levels of significance. Not surprisingly, we found that *IMD* had a negative impact on GDP levels channelled through factor accumulation (via the relative price user cost of capital) and TFP levels. The results from equations 2 to 5, help us to establish the relationship between *IMD* and GDP determinants. Equation (2) shows that a lower degree of macroeconomic distortions, a higher degree of openness and a higher level of human capital and GDP, in previous periods, guarantee a higher TFP level. In fact, a 10 percent increase in *IMD* leads to a decrease of about 6 percent in the TFP level.

Equations 3 and 4 analyse the impact of distortions on physical capital investment. We found that *IMD* influenced *RUCK* positively which, in turn, influenced investment negatively. In other words, macroeconomic distortions reduced investment by increasing the user cost of capital (note that the partial elasticity of *RUCK* with respect of *IMD* is 0.18). Results from equation 3 lend support to the view that attributes lower rates of capital accumulation to higher *RUCK*. The estimates also suggest that the degree of financial development (*DEPTH*), inequality (*GINI*), and the level of GDP are associated to an increase in the rate of investment (*INVT*). In sum, investment is negatively correlated with distorting policies and positively correlated with inequality and financial development. Why inequality is associated to a higher rate of capital accumulation deserves further research.

Lastly, equation 5 discusses the underlining determinants of human capital levels. No clear-cut evidence of *IMD* impact on human capital (*HK*) seems to exist since it is determined by GDP and TFP levels. However, as discussed earlier, *IMD* may influence *HK* indirectly by reducing both TFP and GDP levels.

How does the structural model perform? In order to find out we have used its parameters with the historical values of the exogenous variables to predict the value of each dependent variable (GDP, investment, human capital, and TFP) and, then, confront this baseline with its actual value. In Figures 7-10 we observe that the simulated values track the actual values of the endogenous variables reasonably well over the long run and, in particular, during the period considered, 1939-1975, both before and after the 1959 Stabilisation Plan.

More specifically, the evolution of GDP and human capital is tracked closely by the model simulations and that of the TFP and the investment rate to a lesser extent. Predictions over shorter periods, however, are less accurate (see, for example, how the model fails to capture the volatility of the actual investment rate as well as the productivity collapse during the early 1930s).

#### [FIGURES 7-10]

In order to estimate the economic impact of macroeconomic distortions, as captured by the *IMD*, during the early phase of Franco's dictatorship (1939-1959) and, thus, weighing up the contribution of the 1959 *PSL* to economic growth, we have carried out a counterfactual exercise.<sup>30</sup>

We propose two counterfactual scenarios, in which the estimated coefficients in Table 3 together with the values of each variable may be used to explore some hypothetical alternatives. Firstly, we consider a hypothetical situation in which the average value of *IMD* during 1939-51 would have been retained during the period 1952-75 (*Scenario I*). This is an extreme situation that simulates autarchy throughout the entire Franco regime. Then, a less astringent assumption is made in *Scenario II*: the *IMD* average value for 1952-58 would have remained in place until 1975, that is, had the *PSL* failed to be implemented. This seems a plausible scenario if the reformists' advice had been rejected by Franco and his closest advisers at the conjuncture of acute lack of foreign reserves faced by Spain in 1959. In *Scenarios I* and *II* we expect lower values than those actually observed.

#### [TABLE 4]

#### [FIGURES 11-14]

The outcomes of these counterfactual exercises are compared to the baseline results of the structural model for each dependent variable in Figures 11-14, as well as to their baseline and actual values in Table 4. These results lend strong support to the hypothesis that macroeconomic policy conducted during the early part of Franco's regime damaged the Spanish economy severely. For each variable, absolute and per capita GDP, investment, human capital, and TFP, the impact of Franco's economic policy was damaging. More prominently, the major channel by which *IMD* affected economic growth was through TFP. In other words, bad policies translated into lower TFP growth.

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<sup>30</sup> Carreras (1982, 1992) and Martín Aceña (2004) investigated a counterfactual scenario but did not carry out any formal quantitative estimation of the impact of Franco's economic policies.



However, non-negligible differences are observed between the hypothetical results cast by *Scenarios I* and *II*. To be more precise, for the period 1959-75, real GDP per head would have grown at 60 percent of its actual rate under *Scenario I* and at 75 percent under *Scenario II*.

What would have been, then, Spain's relative position at the end of Franco's dictatorship if pre-1959 macroeconomic distortions had remained in place? Spain's counterfactual position relative to Western Europe shows that catching up to Western Europe would have been deferred until the early 1970s under *Scenario I*, and until the mid-1960s under *Scenario II* (Figure 15). Comparative levels of GDP per head in 1975 for actual and counterfactual Spain (resulting from *Scenarios I* and *II*) are presented in Table 5. Spain, already at the bottom of Western Europe, would have fallen further: below Argentina, Greece, and Ireland, and close to Portugal, in the relatively benign *Scenario II*, and below Poland, Hungary and Uruguay, and close to Mexico, in *Scenario I*.

[TABLE 5]

[FIGURE 15]

To sum up, these counterfactual exercises lend strong support to the hypothesis that macroeconomic policies conducted during the early Franco regime seriously damaged the Spanish economy. Furthermore, the view of the first two decades of Franco's dictatorship (1939-59) as a monolithic autarchic era is challenged by these results.<sup>31</sup> Our results stress that the (de facto) mild and gradual liberalization occurred during the 1950s -which translated into lower inflation and a convergence between the official and the free market exchange rate-, helped improving economic performance and portrays the 1959 structural reforms as the response to a growth crisis rather than the reaction to a collapsing economy. As in other historical experiences (i.e. Latin America in the period 1940-80), in Spain inward-looking policies did not preclude growth but set limits to its sustainability over the long run.

### **Assessing the Impact of IMD on Growth: A VAR Approach**

How robust might our results be? In the absence of a theoretical model a complementary way of assessing the impact of *IMD* on growth can be obtained through the estimation of vector autoregressive models (VAR), which have the advantage over the

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<sup>31</sup> González (1979), among others, had stressed the differences between the 1940s and 1950s. Nonetheless, such differences are often neglected in the literature when it comes to discussing the impact of the *PSL*.

previous approach, based on a structural model, of not assuming any *a priori* causal link among the considered variables. At the same time, a VAR approach provides a sensitivity test to the results obtained with the structural model in the previous section.

Our empirical goal is to find a stable long-run relationship between *IMD* and a set of variables which constitute the immediate determinants of growth and to test for causality, that is, for the direction in which these variables influence each other. Due to the fact that all the variables are integrated of order one (as shown in Appendix 3), we have carried out a stationary VAR analysis between *IMD* and the relevant variables affecting growth (that is, human and physical capital and TFP), all of them in differences, for the period 1850-1975.<sup>32</sup>

The results are provided in Tables A4.1-A4.4 of Appendix 4. In all cases *IMD* is statistically significant. We can observe that the growth rates of physical and human capital and labour quantity, as well as TFP, are negatively affected by *IMD*. Furthermore, a bi-directional causality between physical capital, on the one hand, and *IMD*, on the other, has been found. Thus, macroeconomic distortions reduced physical capital accumulation which led, in turn, to inefficient policies and new distortions. However, between *IMD* and human capital, and *IMD* and TFP, respectively the causality is unidirectional, so macroeconomic distortions result in lower human capital accumulation and efficiency, but lower growth rates of human capital and TFP do not imply macroeconomic distortions. Our results also confirm a not statistically significant association between *IMD* and the growth rate of labour quantity.

As with the structural model, we explore two different hypothetical scenarios in an attempt to assess the economic impact of macroeconomic distortions during early *Francoism* (1939-1959).

Firstly, the individual impact of *IMD* on broad capital and TFP in *Scenario I* (in which the average value of *IMD* during 1939-51 would have remained unaltered for the period 1952-75) and *Scenario II* (in which *IMD* average value for 1952-58 would have been unchanged until 1975) have been estimated. The next step has been to simulate the impact on absolute and per capita GDP of these counterfactual values for labour quantity, broad capital, and TFP using the factor shares and the values for land and labour quantity in the Prados de la Escosura and Rosés (2009) growth accounting exercise. The results are presented in Table 6, along with the model simulated (baseline) and actual values.

#### [TABLE 6]

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<sup>32</sup> We have estimated the VARs for the period 1850-1975 in order to consider the long-run dimension of the relationship between each pair of variables.

Our results suggest that, had the macroeconomic distortions of the period 1939-51 continued throughout the 1950s (*Scenario I*), the growth rate of per capita income would have shrunk to less than half, and that of TFP to two-thirds, while the human capital contribution to growth would have collapsed. The comparison between the outcome of *Scenarios I* and *II* during the years 1959-75 allows us to stress the difference the *PSL* and the subsequent reforms made for Spain's economic performance, while simultaneously underlining the impact of changes in policies and context operated throughout the 1950s.. Specifically, under *Scenarios I* and *II*, per capita income growth would have withered to less than one- and two-thirds, respectively, of the actual figures.

What would have been, then, Spain's relative position at the end of Franco's dictatorship had pre-1959 macroeconomic distortions remained in place? Counterfactual levels of real GDP per head suggest that had pre-1951 economic policies remained in place (*Scenario I*), Spain would have fallen behind Western Europe steadily until 1970, while in the alternative counterfactual hypothesis in which the 1959 *PSL* would not have been implemented (*Scenario II*), no catching up to Western Europe would have occurred before 1975. The outcome of these simulations shows a deep contrast with the actual (and baseline) catching up taking place between 1959 and 1975, as Spain went up from having less than half of Western European income per head in the 1950s to reaching two-thirds by the time of Franco's death (Figure 16). In Table 7 levels of GDP per head in 1975 for actual and counterfactual Spain are compared to those in OECD, Central and Eastern Europe, and Latin America. In these counterfactual simulations Spain would have fallen behind Portugal, Poland and Hungary in the relatively benign *Scenario II*, and below Romania and Colombia in *Scenario I*. We can conclude, then, that the counterfactual results derived from the VAR approach accentuate those obtained with the structural model.

[TABLE 7]

[FIGURE 16]

### **Concluding remarks**

This paper has analysed the impact of Franco's economic reforms on Spanish economic growth. The important role played by the new economic policy during the 1950s, particularly the 1959 Stabilization and Liberalization Plan, in promoting sustained economic growth is confirmed by our results.

A response to an inward-looking growth crisis, the 1959 Stabilization Plan, gave way to a new institutional set of policies which favoured the allocation of resources along

comparative advantage and allowed sustained and faster growth, as well as catching up. Without the *PSL*, per capita GDP would have been significantly lower at the time of Franco's death, in 1975. However, considerable differences in counterfactual outcomes emerge depending on whether pre-1951 macroeconomic economic distortions had remained in place (that is, with no economic reforms at all), or whether the 1950s restrictions had been maintained until 1975 (namely, without the *PSL* being implemented).

Thus, our quantitative results qualify a popular view that depicts the first two decades of Franco's dictatorship as a homogeneous autarchic era and portrays the 1959 Stabilization and Liberalization Plan as a major discontinuity between two opposite worlds. Without the policy reforms and economic growth of the 1950s it seems unlikely the *PSL* would have succeeded.<sup>33</sup>

Several suggestions for further research can be extracted from our historical investigation. The advantage of case studies is the first one. Then, in order to analyse historical episodes of major policy reforms, an index of macroeconomic distortions could be a useful tool. Our investigation also indicates that a detailed analysis of the various channels through which the dictatorship could impact on economic growth seems necessary. Lastly, the experience of Franco's Spain confirms that successful stabilization programs can take place under authoritarian political regimes.

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<sup>33</sup> In this regard it is worth pointing out interesting similarities between the 1959 Stabilization Plan and the Marshall Plan. In both cases success depended on the fact that the countries involved were growing already and their governments had opened up their economies, reassuring economic agents about their commitment to free markets and international integration (De Long and Eichengreen (1991)).

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**Table 1**  
*Spain's Economic Growth and its Sources*

	GDP Growth Decomposition			Per Capita GDP Growth Decomposition		Sources of Labour Productivity Growth			
	GDP	Population	Per Capita GDP	Hours worked per person	GDP per hour worked	Land	Capital Input	Labour Quality	TFP
<b>1939-1951</b>	2.9	0.8	2.1	1.1	0.9	0.0	0.1	-0.4	1.2
<b>1952-1958</b>	5.2	0.8	4.4	0.2	4.2	-0.3	1.2	0.8	2.6
<b>1959-1975</b>	6.7	1.1	5.6	-0.8	6.4	0.0	1.3	0.9	4.2

Sources: Prados de la Escosura and Rosés (2009).

**Table 2**  
*Summary Statistics*

	Mean	Standard Deviation
<b><i>GDP</i></b>	5.653	0.736
<b><i>INVT</i></b>	11.84	6.753
<b><i>TFP</i></b>	4.911	0.288
<b><i>LAB</i></b>	5.038	0.309
<b><i>HK</i></b>	4.704	0.105
<b><i>RUCK</i></b>	4.400	0.409
<b><i>DEPTH</i></b>	-1.053	0.466
<b><i>GINI</i></b>	-0.982	0.173
<b><i>IMD</i></b>	1.545	1.033
<b><i>OPEN</i></b>	-2.032	0.413
<b><i>INTEREST</i></b>	1.874	0.256
<b><i>CIM</i></b>	-1.124	0,894

Notes: All the variables are expressed in logs except *INVT* and *IMD*.

Sources:

*Real GDP*, Prados de la Escosura (2003), Table A.11.7.

*INVT* (investment rate): Prados de la Escosura (2003) Table A.13.3.

*TFP* (total factor productivity): Prados de la Escosura and Rosés (2009).

*LAB* (labour quantity): Prados de la Escosura and Rosés (2009).

*HK* (labour quality): Prados de la Escosura and Rosés (2009).

*RUCK* (relative user's cost of capital): user's cost of capital, Prados de la Escosura and Rosés (2009); GDP deflator, Prados de la Escosura (2003), Table A.11.9.

*DEPTH* (M2/GDP), M2, Martín Aceña and Pons (2005), Table 9.16; *GDP*, Prados de la Escosura (2003), Table A.13.1.

*GINI*, Prados de la Escosura (2008).

*IMD*, See the text.

*OPEN* (openness measured as % (Exports + Imports)/ GDP, Prados de la Escosura (2003), Table A.13.1.

*INTEREST* (nominal interest rate): Martín Aceña and Pons (2005), Table 9.17.

*CIM* (contract-intensive money, (M2-Cash)/M2), Prados de la Escosura estimates (unpublished).

**Table 3**  
*Econometric Model: Structural Estimation (1850-1975)*

<i>Dependent Variable</i>	<i>GDP</i> (Equation 1)	<i>TFP</i> (Equation 2)	<i>INVT</i> (Equation 3)	<i>RUCK</i> (Equation 4)	<i>HK</i> (Equation 5)
<i>Constant</i>	-8.527 (-9.349)			2.585 (13.644)	3.332 (21.619)
<i>INVT (-1)</i>	0.0078 (2.975)				
<i>TFP (-3)</i>	0.936 (13.626)				
<i>TFP (-10)</i>					0.158 (3.679)
<i>LAB</i>	1.331 (13.670)				
<i>HK</i>	0.598 (1.878)				
<i>HK (-6)</i>		0.709 (26.337)			
<i>RUCK</i>			-3.117 (-3.546)		
<i>DEPTH</i>			4.689 (6.249)		
<i>GINI</i>			6.058 (3.142)		
<i>GDP</i>			6.436 (9.968)	0.271 (7.782)	0.107 (10.649)
<i>GDP (-1)</i>		0.323 (20.728)			
<i>IMD (-1)</i>				0.179 (7.088)	
<i>IMD (-3)</i>		-0.060 (-4.526)			
<i>OPEN</i>		0.068 (2.069)			
<b>Adjusted R<sup>2</sup></b>	0.990	0.936	0.769	0.567	0.947
<b>No. observations</b>	123	115	118	122	116

*Sources:* Appendix 3.

*Notes:* See Appendix 1 for the independent variables' definition.

Method 3SLS; t-ratios in brackets; the number of lags appears in brackets.

GDP, TFP, HK, OPEN, LAB and RUCK are in logs. Instrumental variables are:

Equation (1): constant, INVT (-2). TFP (-2). TFP (-3). LAB (-1). RUCK, IMD, OPEN, OPEN (-1) OPEN (-2) and HK.

Equation (2): constant, LAB(-1). HK(-1). GDP(-2). OPEN(-2). OPEN(-3). CIM(-1). CIM, contract-intensive money, [M2-C]/M2, C being currency outside banks See Clague et al. (1999). INTEREST, real interest rate.

Equation (3): constant, INTEREST (-1). INTEREST (-3). IMD, IMD (-1). DEPTH, OPEN (-1). OPEN (-2). GDP (-1). GDP (-2).

Equation (4): constant, IMD (-2). IMD (-3). OPEN (-4). GDP (-1).

Equation (5): constant, GDP (-1). GDP (-2). TFP (-1). TFP (-2). TFP (-3). IMD, IMD (-1). OPEN, OPEN (-1).

**Table 4**  
*Structural Model: Growth in Actual and Simulated Economic Policy Scenarios*

	1939-51	1952-58	1959-75	1939-58	1939-75
<b>Per Capita GDP Growth (%)</b>					
<i>Actual</i>	2.1	4.4	5.6	2.9	4.2
<i>Baseline*</i>	1.9	5.5	5.7	3.2	4.4
<i>Scenario I</i>		3.0	3.4		2.9
<i>Scenario II</i>			4.2		3.5
<b>GDP Growth (%)</b>					
<i>Actual</i>	2.9	5.2	6.7	3.7	5.1
<i>Baseline*</i>	2.7	6.3	6.7	4.0	5.3
<i>Scenario I</i>		3.9	4.4		3.8
<i>Scenario II</i>			5.3		4.5
<b>Investment (% GDP)</b>					
<i>Actual</i>	14.3	21.3	24.1	16.7	20.1
<i>Baseline*</i>	15.4	17.7	22.7	16.3	19.4
<i>Scenario I</i>		15.9	18.9		16.7
<i>Scenario II</i>			20.7		18.6
<b>Human Capital Growth (%)</b>					
<i>Actual</i>	-0.6	1.3	1.2	0.1	0.6
<i>Baseline*</i>	0.1	0.7	1.3	0.3	0.8
<i>Scenario I</i>		0.9	0.7		0.3
<i>Scenario II</i>			0.8		0.5
<b>TFP Growth (%)</b>					
<i>Actual</i>	1.2	2.7	4.1	1.7	2.9
<i>Baseline*</i>	0.3	4.0	3.5	1.7	2.5
<i>Scenario I</i>		1.3	2.5		1.8
<i>Scenario II</i>			2.6		2.1

*Sources:* Computed with parameters from Table 3. See the text and Appendices 1 and 3.

*Notes:*

**\*Model Simulation**

*Scenario I:* assumes 1939-51 IMD average value was maintained over 1952-75;

*Scenario II:* assumes 1952-58 IMD average value was maintained over 1952-75.

**Table 5**  
*Spain's Relative Per Capita GDP in 1975 (1990 Geary-Khamis \$):*  
*Actual and Structural Model Simulated Scenarios*

<b>United States</b>	16284
<b>Western Europe (12)</b>	12228
<b>Italy</b>	10742
<b>Venezuela</b>	10472
<b>Spain (<i>baseline</i>)</b>	<b>9164</b>
<b>Spain (<i>actual</i>)</b>	<b>8357</b>
<b>Argentina</b>	8122
<b>Greece</b>	7722
<b>Czechoslovakia</b>	7399
<b>Ireland</b>	7316
<b>Spain (<i>Scenario II</i>)</b>	<b>6586</b>
<b>Portugal</b>	6517
<b>Bulgaria</b>	5831
<b>Poland</b>	5808
<b>Hungary</b>	5805
<b>Uruguay</b>	5421
<b>Spain (<i>Scenario I</i>)</b>	<b>5205</b>
<b>Mexico</b>	5158
<b>Yugoslavia</b>	4836

*Sources:* Spain, Prados de la Escosura (2003) and see text. For other countries, Maddison (2010).

*Note:* Western Europe (12) is a population weighted average of Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, and United Kingdom.

**Table 6**  
**VAR: Growth in Actual and Simulated Economic Policy Scenarios**

	1939-51	1952-58	1959-75	1939-58	1939-75
<b>Per Capita GDP Growth (%)</b>					
<i>Actual</i>	2.1	4.4	5.6	2.9	4.2
<i>Baseline*</i>	3.2	3.9	4.8	3.5	4.1
<i>Scenario I</i>		1.8	1.7		1.8
<i>Scenario II</i>			3.2		3.0
<b>GDP Growth (%)</b>					
<i>Actual</i>	2.9	5.2	6.7	3.7	5.1
<i>Baseline*</i>	4.0	4.8	5.8	4.3	5.0
<i>Scenario I</i>		2.7	2.7		2.8
<i>Scenario II</i>			4.3		4.0
<b>Physical Capital Input Growth (%)</b>					
<i>Actual</i>	2.3	4.7	7.5	3.2	5.2
<i>Baseline*</i>	2.1	4.2	6.6	2.9	4.7
<i>Scenario I</i>		2.3	2.9		2.6
<i>Scenario II</i>			5.1		4.0
<b>Human Capital Growth (%)</b>					
<i>Actual</i>	-0.6	1.3	1.2	0.1	0.6
<i>Baseline*</i>	0.2	0.5	0.9	0.3	0.6
<i>Scenario I</i>		-0.1	0.0		-0.2
<i>Scenario II</i>			0.4		0.3
<b>TFP Growth (%)</b>					
<i>Actual</i>	1.2	2.7	4.1	1.7	2.9
<i>Baseline*</i>	1.9	2.8	3.6	2.2	2.9
<i>Scenario I</i>		1.7	1.9		1.6
<i>Scenario II</i>			2.7		2.2

*Sources:* Prados de la Escosura and Rosés (2009) and Appendix 4. See the text.

*Notes:*

**\*Model Simulation**

*Scenario I:* assumes 1939-51 IMD average value was maintained over 1952-75;

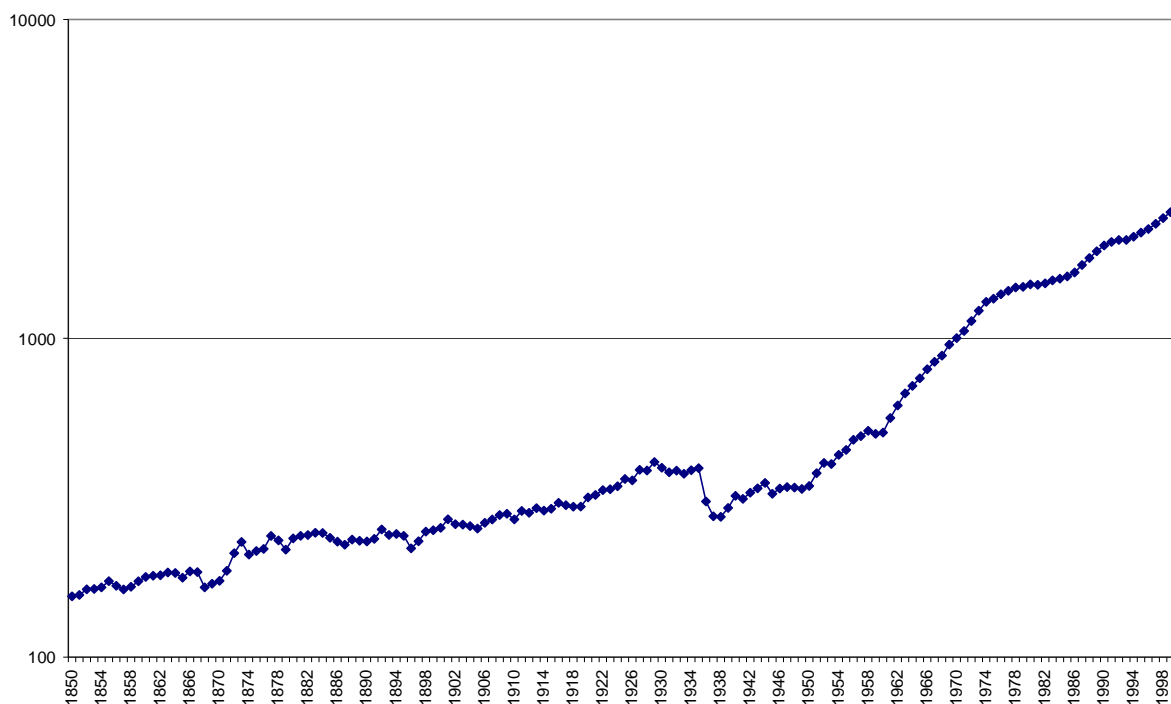
*Scenario II:* assumes 1952-58 IMD average value was maintained over 1952-75.

**Table 7**  
***Spain's Relative Per Capita GDP in 1975 (1990 Geary-Khamis \$):***  
***Actual and VAR Simulated Scenarios***

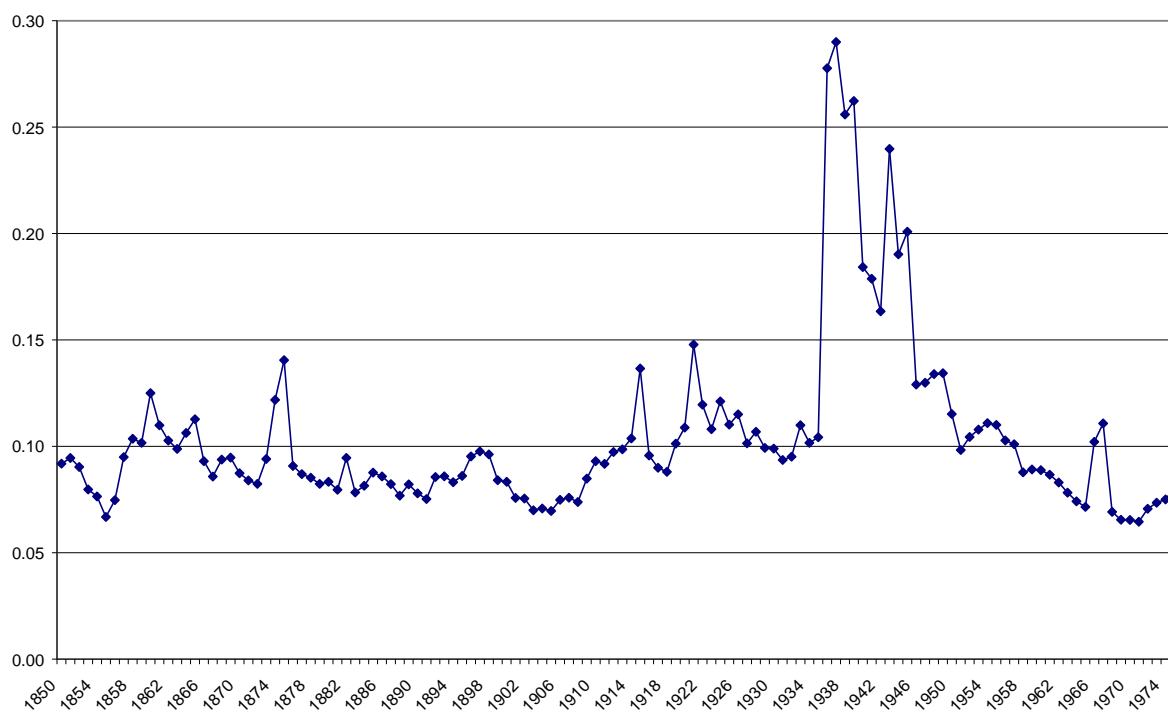
<b>United States</b>	16284
<b>Western Europe (12)</b>	12228
<b>Italy</b>	10742
<b>Venezuela</b>	10472
<b>Spain (<i>actual</i>)</b>	<b>8357</b>
<b>Argentina</b>	8122
<b>Spain (<i>baseline</i>)</b>	<b>8004</b>
<b>Greece</b>	7722
<b>Czechoslovakia</b>	7399
<b>Ireland</b>	7316
<b>Portugal</b>	6517
<b>Bulgaria</b>	5831
<b>Poland</b>	5808
<b>Hungary</b>	5805
<b>Spain (<i>Scenario II</i>)</b>	<b>5498</b>
<b>Uruguay</b>	5421
<b>Mexico</b>	5158
<b>Yugoslavia</b>	4836
<b>Romania</b>	3761
<b>Colombia</b>	3622
<b>Spain (<i>Scenario I</i>)</b>	<b>3567</b>

*Sources:* Spain, Prados de la Escosura (2003) and see text. For other countries, Maddison (2010).

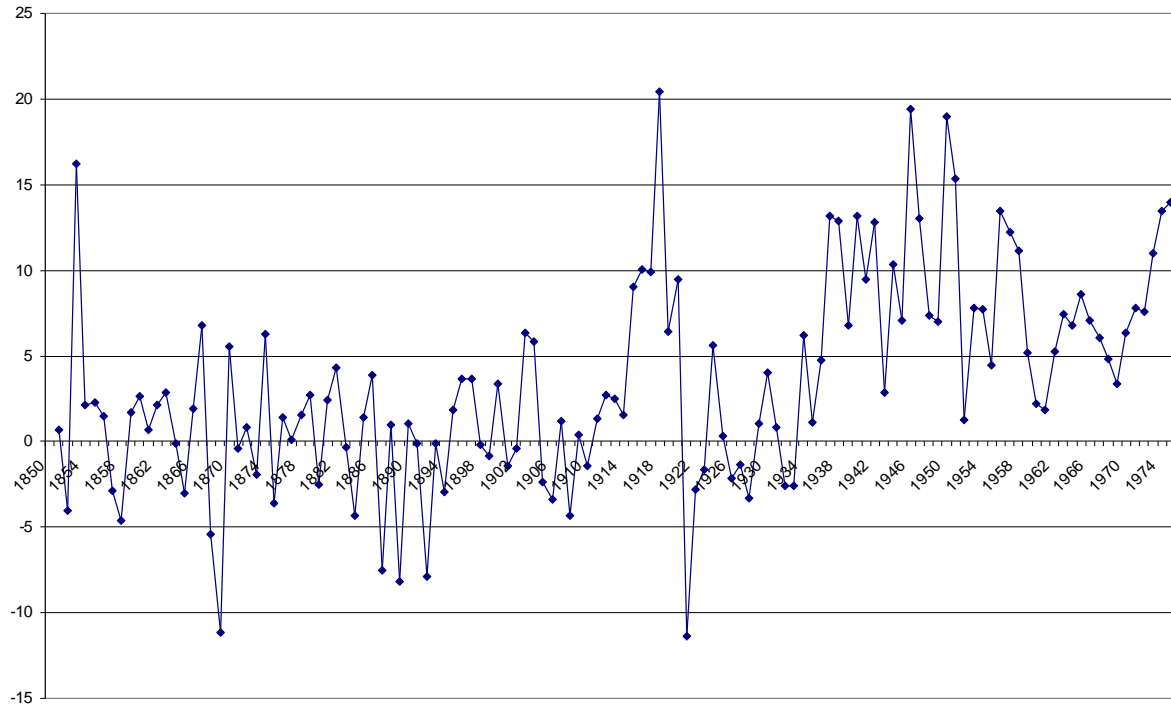
*Note:* Western Europe (12) is a population weighted average of Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, and United Kingdom



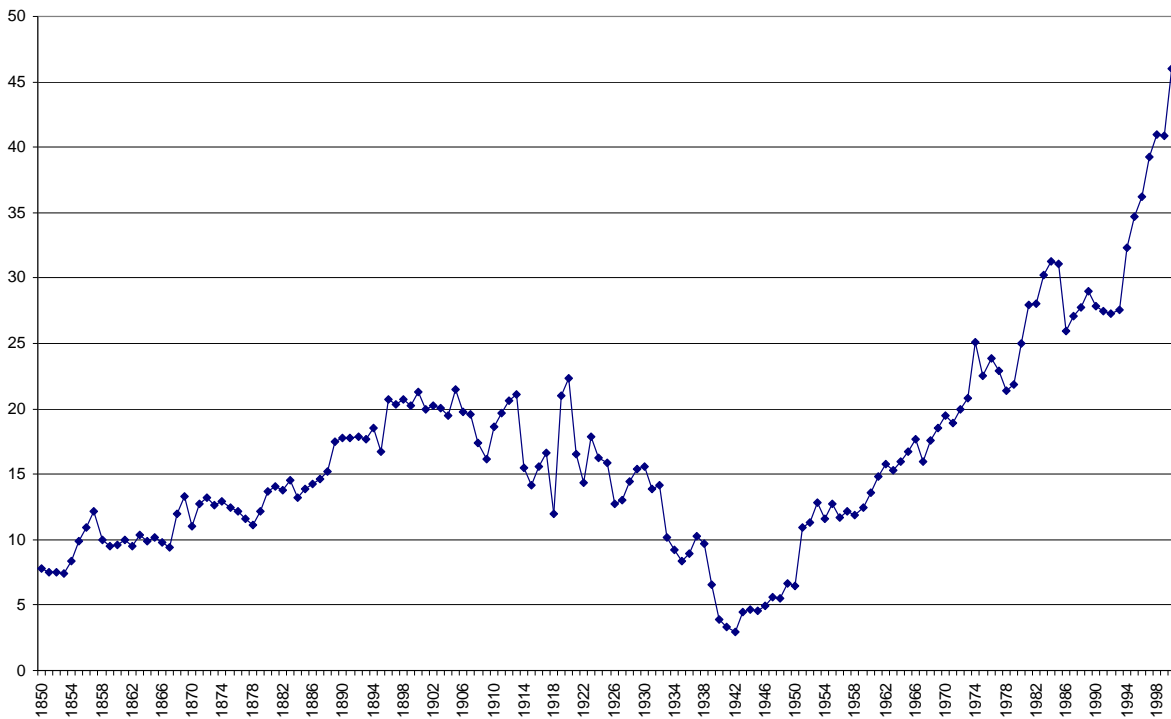
**Figure 1 Real Per Capita GDP, 1850-2000 (000 Pesetas) (2000 Prices)**  
*Sources:* Prados de la Escosura (2003, updated).



**Figure 2 Share of Government Consumption in Total Consumption, 1850-1975**  
*Sources:* Prados de la Escosura (2003) and see the text.

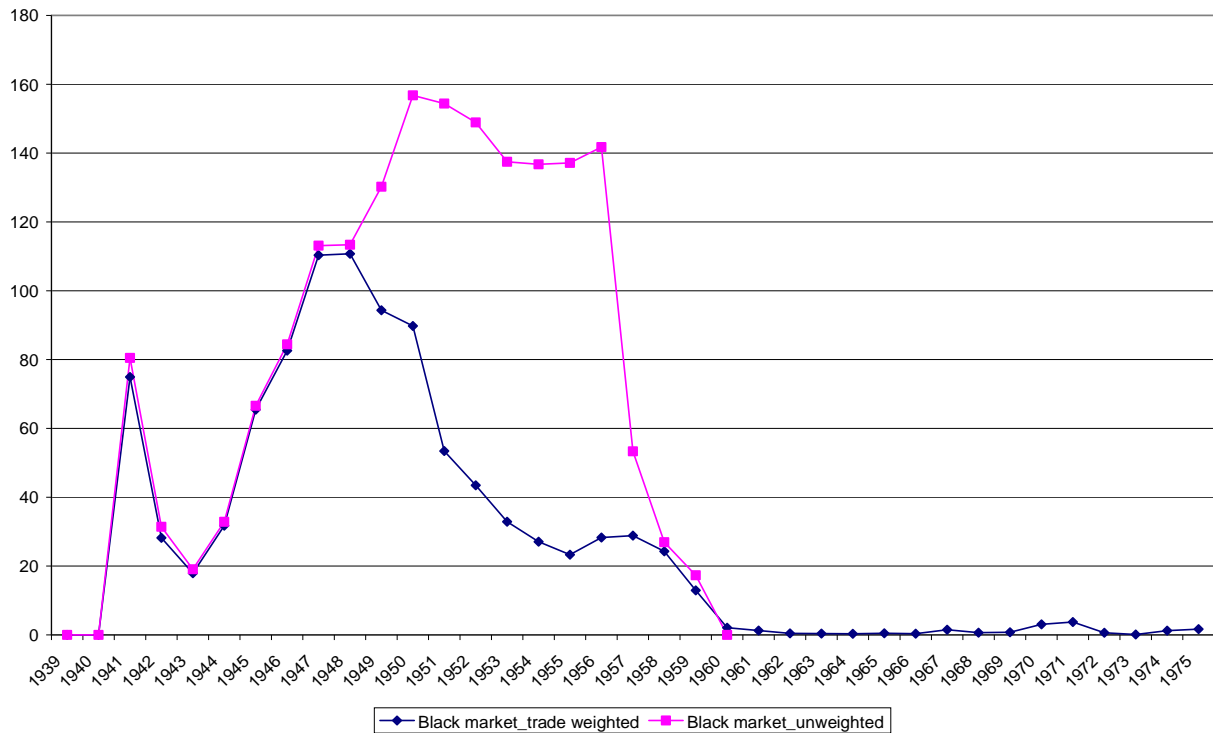


**Figure 3 Inflation Rate, 1850-1975 (%)**  
 Sources: Prados de la Escosura (2003) and see the text.

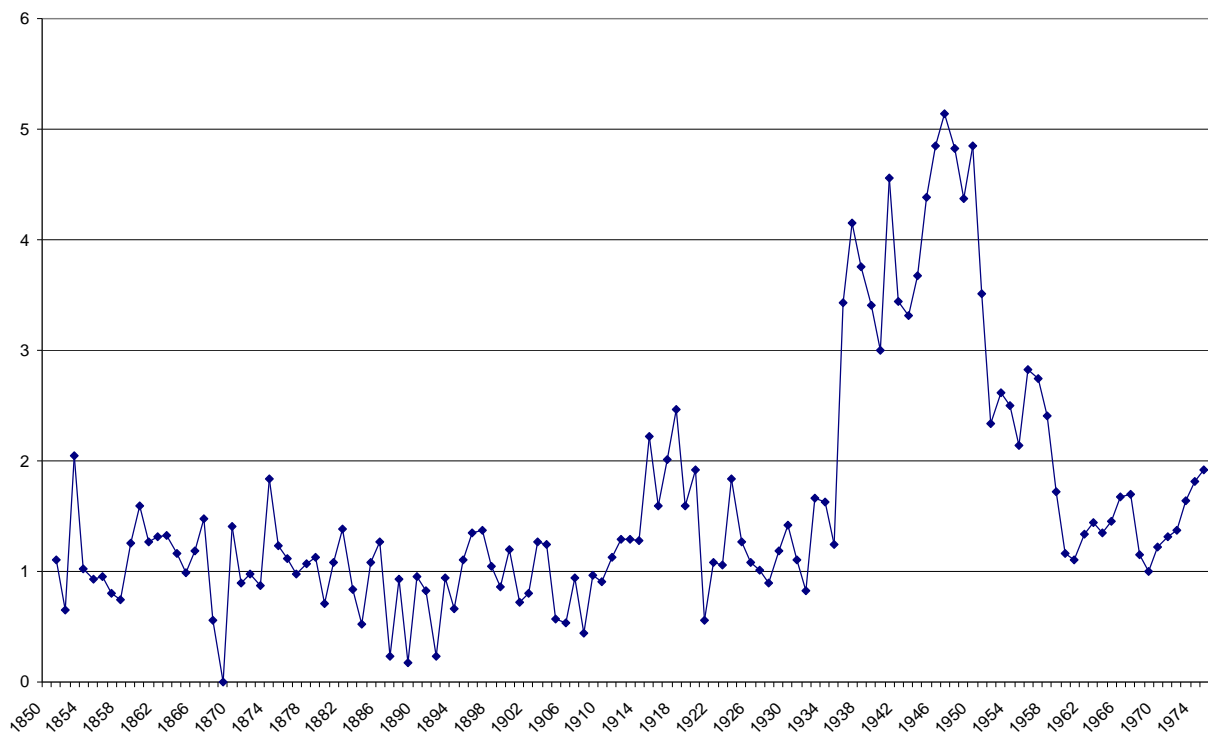


**Figure 4 Openness, 1850-2000 (exports and imports as % of GDP)**  
 Sources: Prados de la Escosura (2003).

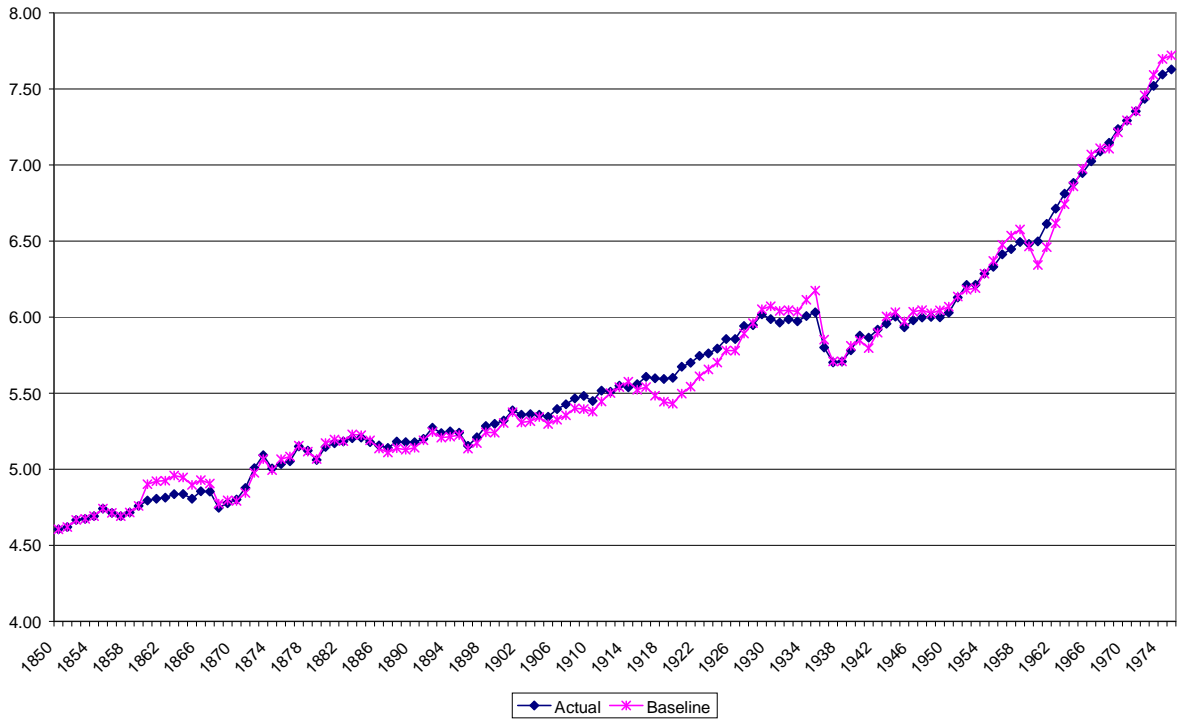




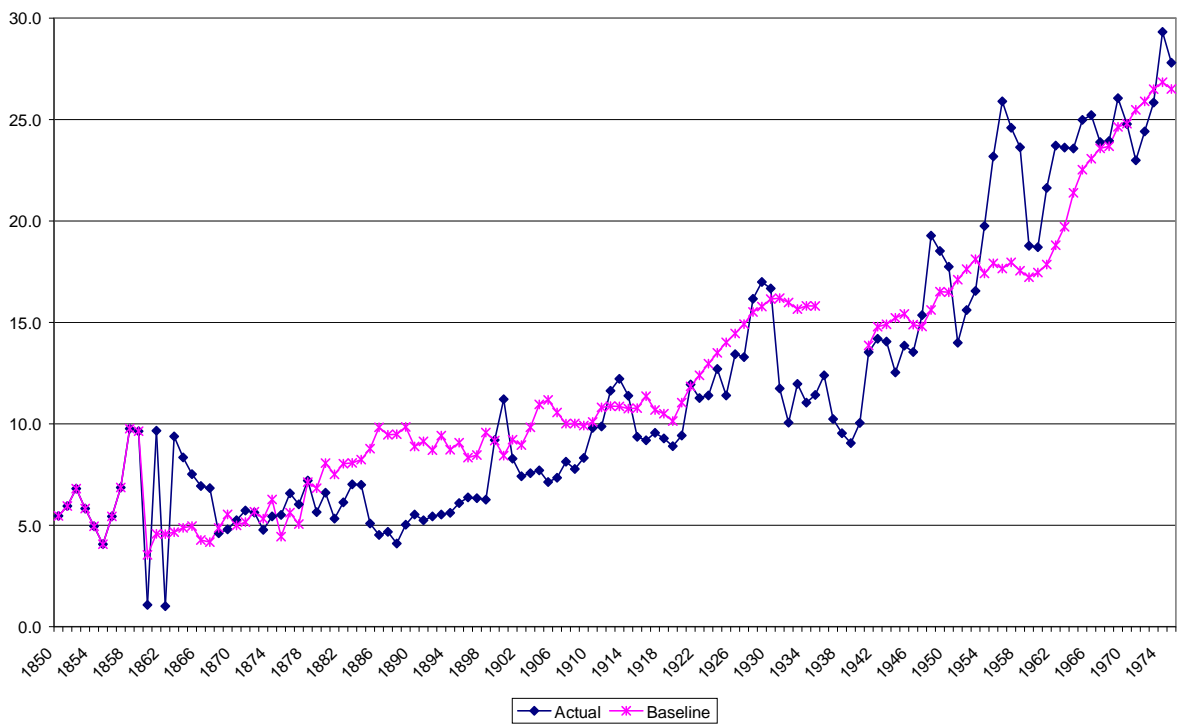
**Figure 5 “Black Market” Premium 1939-75: Trade-Weighted and Unweighted**  
 Sources: Computed from Martínez Ruiz (2003), Martín Aceña and Pons (2005), Serrano Sanz and Asensio Castillo (1997) and Reinhart and Rogoff (2004).



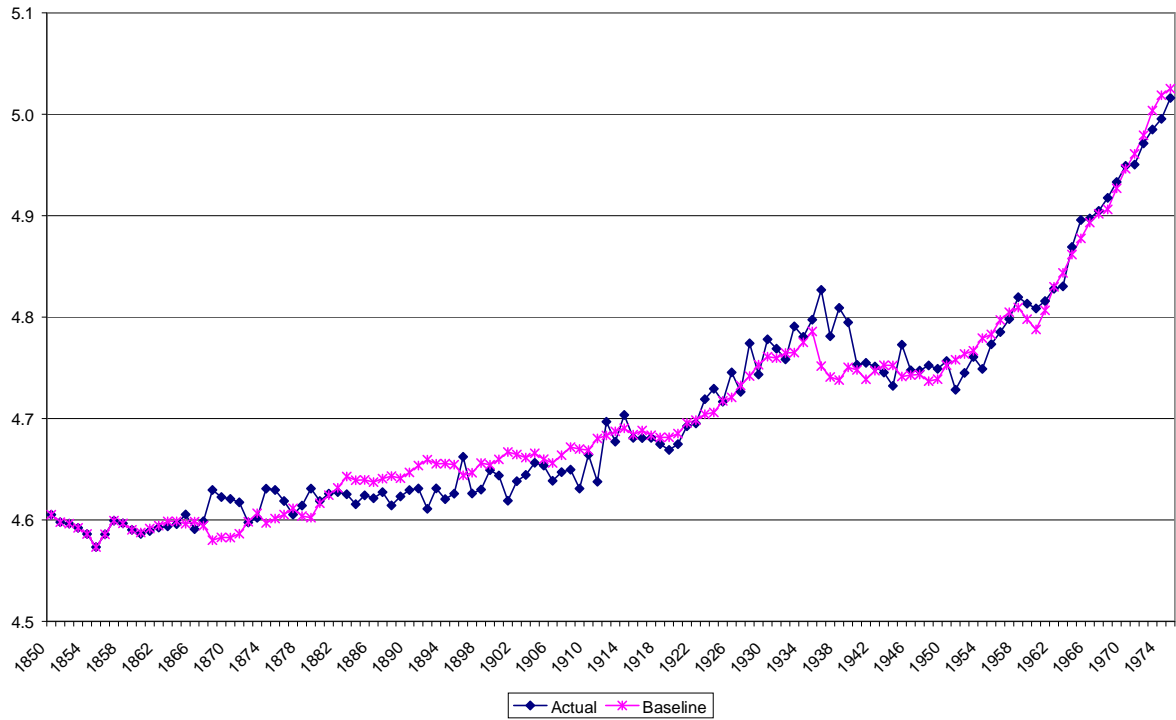
**Figure 6 Index of Macroeconomic Distortions (IMD) 1850-1975**  
 Sources: See Appendix 1 and the text.



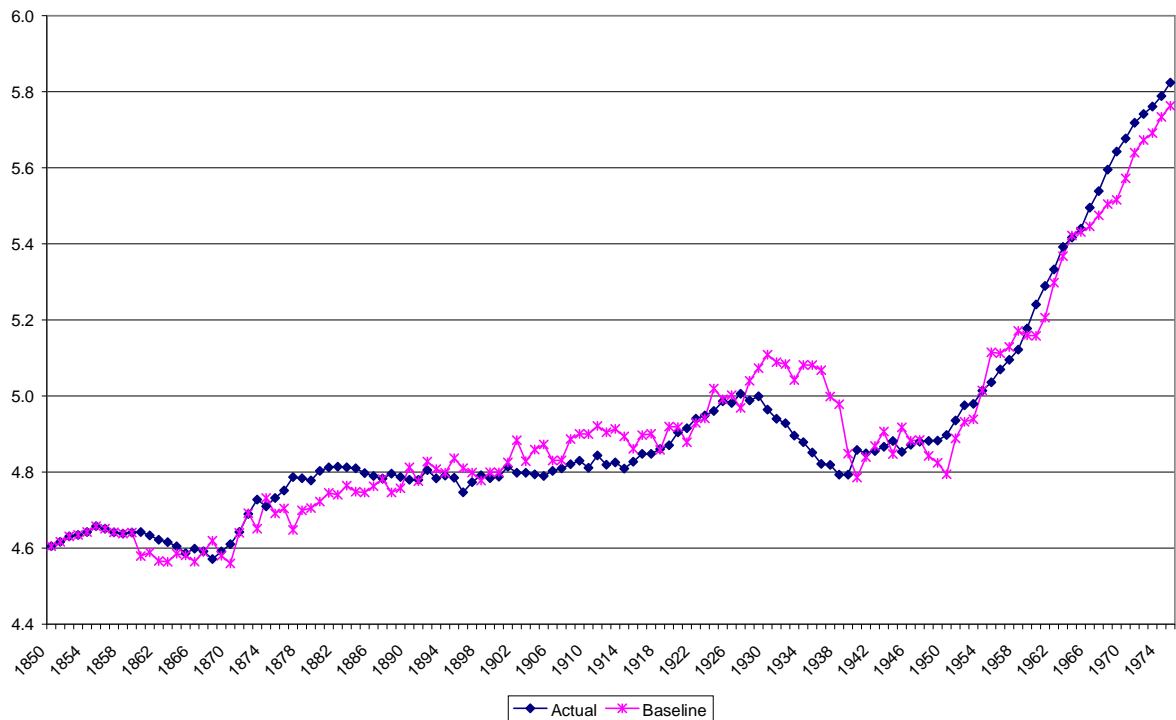
**Figure 7 Real GDP, 1850-1975 (logs): Actual and Model Simulation (Baseline)**  
 Sources: Table 3. See the text.



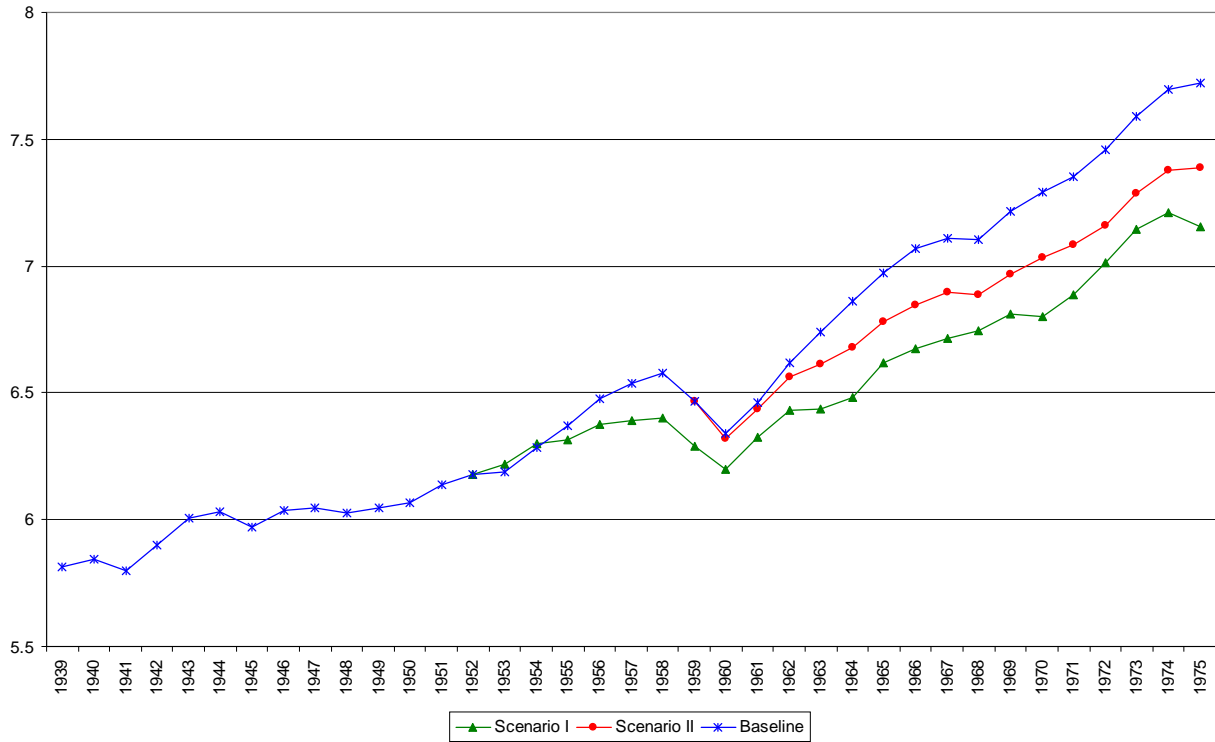
**Figure 8 Investment Rate (% GDP), 1850-1975: Actual and Model Simulation (Baseline)**  
 Sources: Table 3. See the text.



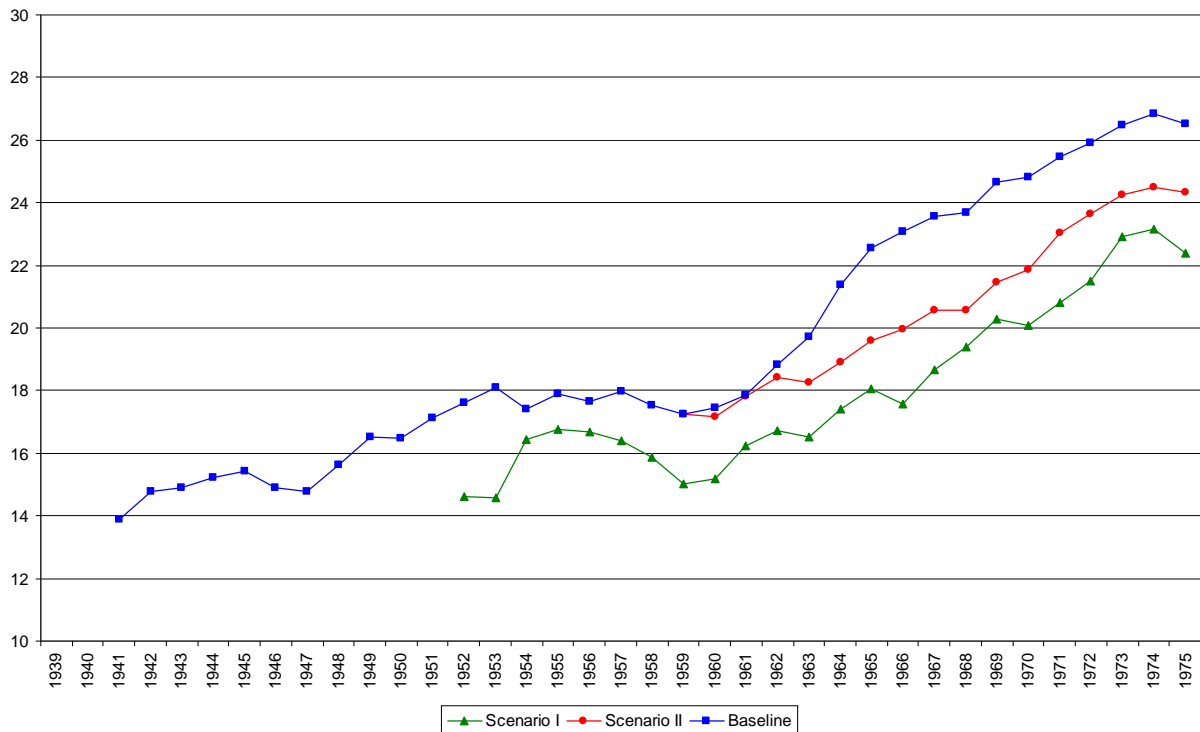
**Figure 9 Human Capital, 1850-1975 (logs): Actual and Model Simulation (Baseline)**  
 Sources: Table 3. See the text.



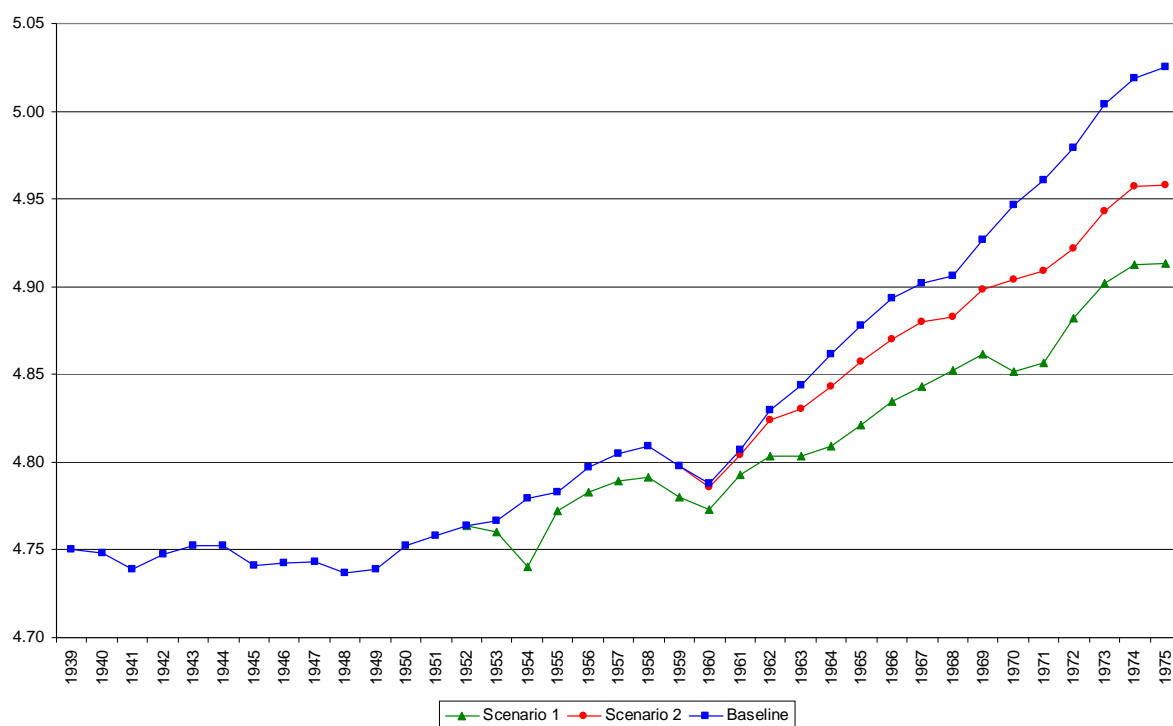
**Figure 10 Total Factor Productivity, 1850-1975 (logs): Actual and Model Simulation (Baseline)**  
 Sources: Table 3. See the text.



**Figure 11 Real GDP, 1939-1975 (logs). Structural Model Simulations: Baseline and Counterfactual Scenarios**  
 Sources: Table 3. See the text.

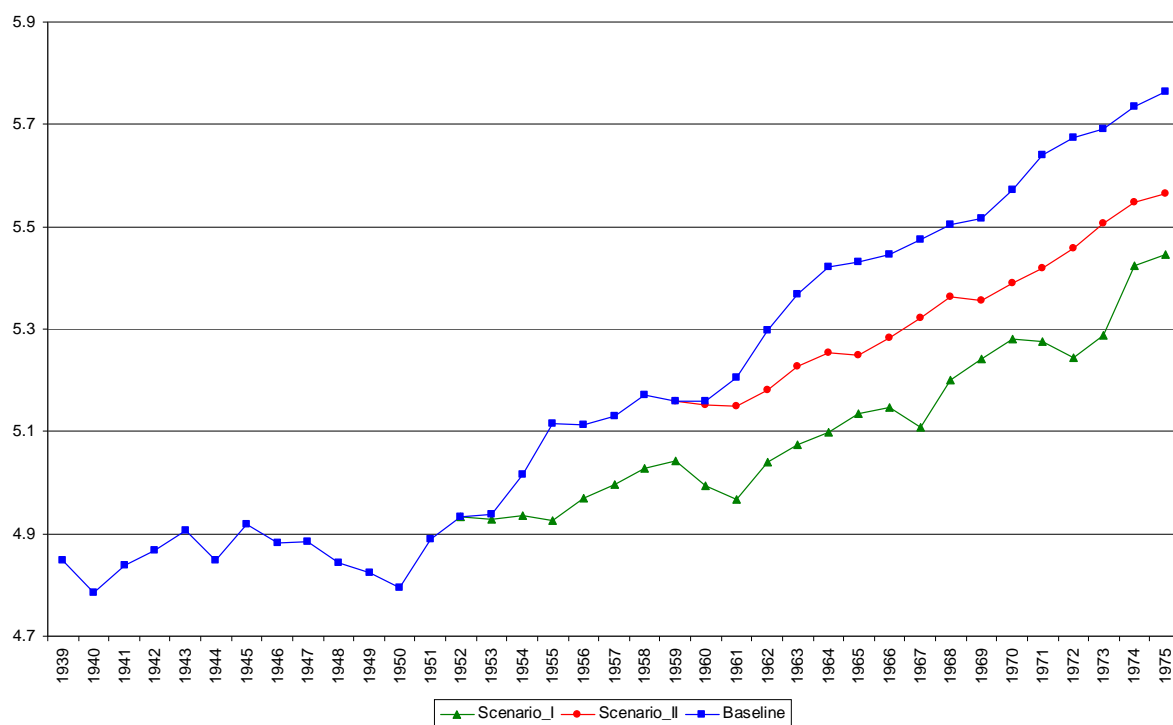


**Figure 12 Investment Rate (% GDP), 1939-1975. Structural Model Simulations: Baseline and Counterfactual Scenarios**  
 Sources: Table 3. See the text.



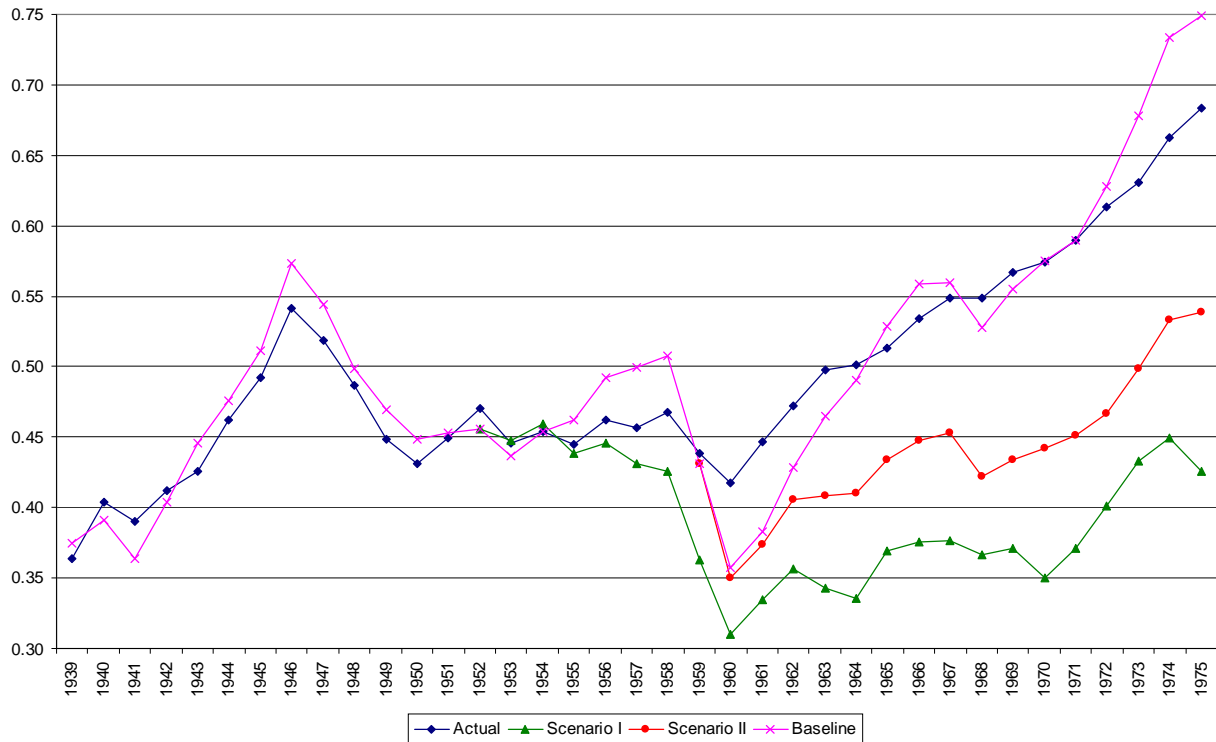
**Figure 13 Human Capital, 1939-1975 (logs). Structural Model Simulations: Baseline and Counterfactual Scenarios**

Sources: Table 3. See the text.

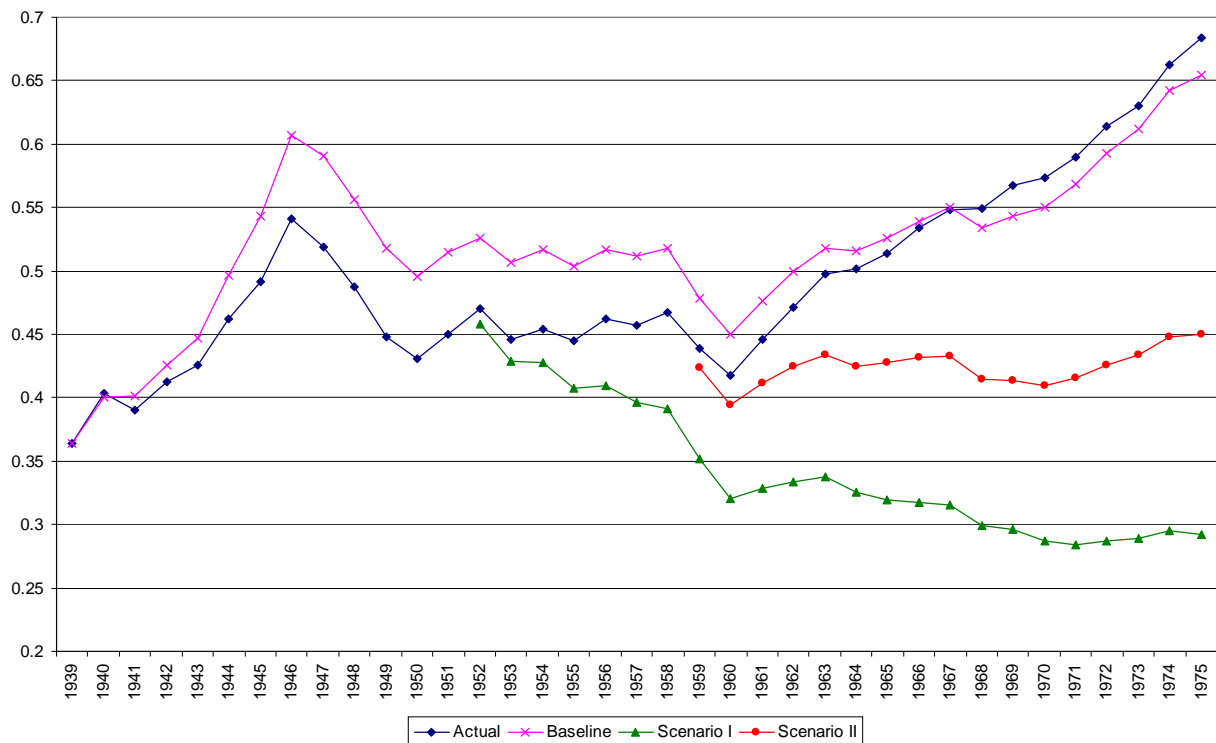


**Figure 14 Total Factor Productivity, 1939-1975 (logs). Structural Model Simulations: Baseline and Counterfactual Scenarios**

Sources: Table 3. See the text.



**Figure 15 Spain's Relative Real Per Capita GDP, 1939-75. Actual and Structural Model Simulations (Western Europe 12 = 1)**  
 Sources: See Table 5 and the text.



**Figure 16 Spain's Relative Per Capita GDP: Actual and VAR Simulations, 1939-75 (Western Europe 12 = 1)**  
 Sources: See Table 7 and the text.

## **Appendix 1: Data sources**

**'Black market' premium**, computed from Martínez Ruiz (2003), Serrano Sanz and Asensio Castillo (1997), Reinhart and Rogoff (2004), and Martín Aceña and Pons (2005), Table 9.19.

**Budget Balance (% GDP)**, budget balance, Comín and Díaz Fuentes (2005), Table 12.24; GDP, Prados de la Escosura (2003), Table A13.1

**CIM (contract-intensive money)**, Prados de la Escosura (unpublished estimates).

**Financial Depth (M2/GDP)**, M2, Martín Aceña and Pons (2005), Table 9.16; GDP, Prados de la Escosura (2003), Table A13.1.

**GINI**, Prados de la Escosura (2008).

**Government Consumption (% Total Consumption) ( $G/G+C$ ) and (% GDP) ( $G/GDP$ ):** Prados de la Escosura (2003). Table A.13.3.

**HK (labour quality)**, Prados de la Escosura and Rosés (2009).

**IMD**, See the text.

**Inflation rate** (derived from GDP implicit deflator), Prados de la Escosura (2003), Table A.11.9.

**Interest (interest rate)**: Martín Aceña and Pons (2005), Table 9.17.

**Investment rate**: Prados de la Escosura (2003), Table A.13.3.

**K Input (physical capital input)**, Prados de la Escosura and Rosés (2010a).

**LAB (labour quantity)**, Prados de la Escosura and Rosés (2009).

**OPEN (openness)**, (Exports + Imports)/GDP, Prados de la Escosura (2003). table A.13.3.

**RUCK** (relative user's cost of capital), user's cost of capital, Prados de la Escosura and Rosés (2009); GDP deflator, Prados de la Escosura (2003), A11.9.

**TFP (Total factor productivity)**: Prados de la Escosura and Rosés (2009).

## Appendix 2: The Construction of *IMD*

In this appendix we will discuss several alternative compositions for our *IMD*. In order to include variables into the index, we employ Principal Component Analysis. The results are presented in Tables A2.1 to A2.9. The variables considered are: inflation, black market premium, Government consumption (excluding health and education) over total consumption or GDP, budget balance over GDP, M2/GDP, rate of openness, and the degree of financial depth (M2/GDP). Although the rationale for including a new variable in the index is that it increases the percentage of the variance explained, we decided to include the variables “black market”, inflation, and the share of government consumption in total consumption, and not just the first two, because the last one is relevant for the whole considered period, 1850-1975.

**Table A2.1: *IMD* 1**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,708	-0,530	Factor 1	50,129	50,129
<b>Black Market</b>	0,777	-0,117	Factor 2	27,979	78,129
<b>G/G+C</b>	0,632	0,738			

**Table A2.2: *IMD* 2**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,788	-0,398	Factor 1	47,454	47,454
<b>Black Market</b>	0,671	0,068	Factor 2	25,141	72,594
<b>M2/GDP</b>	0,851	-0,033			
<b>G/GDP</b>	0,323	0,917			

**Table A2.3: *IMD* 3**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,803	0,235	Factor 1	48,891	48,891
<b>Black Market</b>	0,650	0,136	Factor 2	22,347	71,238
<b>M2/GDP</b>	0,830	0,147			
<b>Budget Bal/GDP</b>	-0,447	0,894			

**Table A2.4: *IMD* 4**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,828	0,167	Factor 1	46,192	46,192
<b>Black Market</b>	0,679	-0,569	Factor 2	33,216	79,409
<b>M2/GDP</b>	0,836	0,337			
<b>Openness</b>	-0,037	0,929			



**Table A2.5: IMD 5**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,757	-0,257	Factor 1	38,359	38,359
<b>Black Market</b>	0,561	-0,574	Factor 2	31,720	70,079
<b>M2/GDP</b>	0,869	-0,007			
<b>Budget bal/GDP</b>	0,451	0,624			
<b>Openness</b>	0,269	0,895			

**Table A2.6: IMD 6**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,777	0,334	Factor 1	38,880	38,880
<b>Black Market</b>	0,745	-0,355	Factor 2	28,960	67,840
<b>M2/GDP</b>	0,738	0,519			
<b>Openness</b>	-0,201	0,855			
<b>G/G+C</b>	0,448	-0,459			

**Table A2.7: IMD 7**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,804	0,104	Factor 1	39,114	39,114
<b>Black Market</b>	0,647	-0,605	Factor 2	26,750	65,864
<b>Budget Bal/GDP</b>	-0,447	-0,147			
<b>M2/GDP</b>	0,831	0,279			
<b>Openness</b>	0,01	0,928			

**Table A2.8: IMD 8**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,831	-0,329	Factor 1	61,573	61,573
<b>Black Market</b>	0,667	0,745	Factor 2	24,425	85,999
<b>M2/GDP</b>	0,844	-0,264			

**Table A2.9: IMD 9**

Variables	Factor 1	Factor 2		Percentage of variance	Accumulated Percentage of variance
<b>Inflation</b>	0,813	-0,582	Factor 1	66,164	66,164
<b>Black Market</b>	0,813	0,582	Factor 2	33,836	100,000

Sources: Appendix 1.

### Appendix 3: Econometrics of the Structural Model

We develop a set of econometric tests over our data before to proceed with estimation of equations 1 to 5 (model of table 3). Our initial empirical goal is to find a stable long run relationship between each pair of relevant variables which will permit us to test for causality. First, we investigate the order of integration of different variables (see Table A3.1).

#### [TABLE A3.1]

Due to the fact that all these variables are integrated of order one, we test the null hypothesis that there is a co-integration relation between *IMD* and *RUCK*, *RUCK* and *INVT*, *IMD* and TFP. The results obtained are presented in Table A3.2

#### [TABLE A3.2]

A co-integration relationship has been found between these four pairs of variables, each of these have a common trend and, hence, a stable short-run relationship. *IMD* is affecting positively *RUCK*, which in turn affects negatively *INVT*, and negatively to TFP and GDP (as we have predicted earlier). These results lead us to develop a Granger causality test between each variable pair using the residuals from the estimation of the long-run equilibrium relationship.

#### [TABLE A3.3]

Granger causality tests of Table A3.3 suggest causality from *IMD* to *RUCK* rather than the other way round. Applying a similar approach, we also find that *IMD* Granger-causes TFP. Therefore, after conducting these co-integration and Granger tests, we are able to confirm that the *IMD* is behind *RUCK* and TFP.

**Table A3.1**  
*Variables in the Structural Model: Order of Integration*

Variables (logs)	ADF Test Level	ADF Test First Differences	Order of Integration
<i>GDP</i>	1.299	-9.333	I(1)
<i>INVT</i>	-2.292	-8.881	I(1)
<i>TFP</i>	-0.477	-3.233	I(1)
<i>LAB</i>	-2.215	-9.792	I(1)
<i>IMD</i>	-2.047	-14.520	I(1)
<i>OPEN</i>	-1.815	-10.555	I(1)
<i>RUCK</i>	-1.845	-12.014	I(1)
<i>HK</i>	0.144	-17.387	I(1)
<i>GINI</i>	-2.463	-13.353	I(1)
<i>DEPTH</i>	-2.452	-13.353	I(1)

Sources: See the text.

*Notes:* All the variables are expressed in logs except *INVT* and *IMD*. The ADF level tests have been considered with constant and trend in all cases except for *RUCK* and *IMD* which have been considered with only constant and without constant and trend respectively. The level of significance is in all cases at 1%, except for *TFP* which is at 10%

**Table A3.2**  
*Long-run Relationship between Variable Pairs*

<b>Pairs of Variables</b>	<b>ADF Test over the residuals of the Long-run Relationship</b>
<i>IMD</i> and <i>RUCK</i>	-4.22**
<i>IMD</i> and <i>TFP</i>	-2.48**
<i>RUCK</i> and <i>INVT</i>	-3.420***

*Sources:* See the text.

*Notes:* All the variables are expressed in logs except *INVT* and *IMD*. The ADF level tests have been considered with constant and trend in all cases except for the relationship between *IMD* and *TFP* which have been considered without constant and without trend. The level of significance is at 5% (\*\*), and at 10% (\*\*\*).

**Table A3.3**  
*Granger Causality between IMD, RUCK, and TFP*

<b>Pairwise Granger Causality test</b>			
	<b>Null Hypothesis:</b>	<b>F-statistic</b>	<b>Chi-square</b>
<b>Row 1</b>	<i>IMD</i> does not Granger cause <i>RUCK</i>	6.39	12.79
	<i>RUCK</i> does not Granger cause <i>IMD</i>	2.91	5.81
<b>Row 2</b>	<i>RUCK</i> does not Granger cause <i>INVT</i>	5.89	17.67
	<i>INVT</i> does not Granger cause <i>RUCK</i>	3.09	9.28
<b>Row 3</b>	<i>IMD</i> does not Granger cause <i>TFP</i>	6.09	18.27
	<i>TFP</i> does not Granger cause <i>IMD</i>	0.79	2.37

*Sources:* See the text.

*Note:* The critical values are 2.29 for F-statistic and 11.07 for Chi-square.

## Appendix 4: Vector Auto Regression Estimates

*Table A4.1: Vector Auto Regression Estimates between Physical Capital Growth and IMD*

	<b>log Capital Input</b>	<b>IMD</b>
<b>log Capital Input (-1)</b>	0.777144 (0.05332) [ 14.5751]	-4.544382 (2.33417) [-1.94690]
<b>IMD (-1)</b>	-0.003633 (0.00144) [-2.52669]	0.758758 (0.06294) [ 12.0558]
<b>C</b>	0.004350 (0.00192) [ 2.26691]	0.052301 (0.08400) [ 0.62260]
<b>Dummy 1940</b>	0.011921 (0.00348) [ 3.42639]	0.342067 (0.15231) [ 2.24590]
R-squared	0.760904	0.761801
Adj. R-squared	0.754927	0.755846
Sum sq. resids	0.018175	34.82962
S.E. equation	0.012307	0.538746
F-statistic	127.2970	127.9271
Log likelihood	371.3881	-97.21994
Akaike AIC	-5.925615	1.632580
Schwarz SC	-5.834638	1.723556
Mean dependent	0.034282	-0.031924
S.D. dependent	0.024860	1.090316
Determinant Residual Covariance		4.37E-05
Log Likelihood (d.f. adjusted)		270.5266
Akaike Information Criteria		-4.234300
Schwarz Criteria		-4.052346

*Sources:* See the text.

*Notes:* standard errors in parenthesis and t- statistics in brackets.

Variables expressed in differences.

Dummy 1940 is a variable that takes value zero before 1940 and value one after 1940.

**Table A4.2: Vector Auto Regression Estimates between Human Capital Growth and IMD**

	<b>log Labour Quality</b>	<b>IMD</b>
<b>log Labour Quality (-1)</b>	-0.439345 (0.08058) [-5.45211]	0.386691 (2.77287) [ 0.13946]
<b>IMD (-1)</b>	-0.005519 (0.00165) [-3.35228]	0.818352 (0.05665) [ 14.4463]
<b>C</b>	0.000769 (0.00185) [ 0.41588]	-0.057176 (0.06365) [-0.89825]
<b>Dummy 1940</b>	0.012991 (0.00394) [ 3.29524]	0.192640 (0.13566) [ 1.42003]
R-squared	0.242014	0.754317
Adj. R-squared	0.223064	0.748175
Sum sq. resids	0.030339	35.92395
S.E. equation	0.015901	0.547144
F-statistic	12.77140	122.8116
Log likelihood	339.6182	-99.13798
Akaike AIC	-5.413197	1.663516
Schwarz SC	-5.322220	1.754493
Mean dependent	0.003373	-0.031924
S.D. dependent	0.018039	1.090316
Determinant Residual Covariance		7.55E-05
Log Likelihood (d.f. adjusted)		236.5887
Akaike Information Criteria		-3.686914
Schwarz Criteria		-3.504960

*Sources:* See the text.

*Notes:* standard errors in parenthesis and t- statistics in brackets.

Variables expressed in differences.

Dummy 1940 is a variable that takes value zero before 1940 and value one after 1940.

**Table A4.3: Vector Auto Regression Estimates between Total factor Productivity Growth and IMD**

	<b>log TFP</b>	<b>IMD</b>
<b>log TFP (-1)</b>	0.135529 (0.09509) [ 1.42527]	-3.671434 (2.80841) [-1.30730]
<b>IMD (-1)</b>	-0.004878 (0.00209) [-2.33840]	0.783041 (0.06161) [ 12.7093]
<b>C</b>	-0.000482 (0.00215) [-0.22433]	-0.064355 (0.06340) [-1.01500]
<b>Dummy 1940</b>	0.030082 (0.00583) [ 5.15924]	0.337519 (0.17221) [ 1.95995]
R-squared	0.355266	0.757728
Adj. R-squared	0.339147	0.751671
Sum sq. resids	0.040613	35.42525
S.E. equation	0.018397	0.543333
F-statistic	22.04107	125.1036
Log likelihood	321.5369	-98.27125
Akaike AIC	-5.121564	1.649536
Schwarz SC	-5.030587	1.740513
Mean dependent	0.009736	-0.031924
S.D. dependent	0.022630	1.090316
Determinant Residual Covariance		9.00E-05
Log Likelihood (d.f. adjusted)		225.6467
Akaike Information Criteria		-3.510431
Schwarz Criteria		-3.328477

Sources: See the text.

Notes: standard errors in parenthesis and t- statistics in brackets.

Variables expressed in differences.

Dummy 1940 is a variable that takes value zero before 1940 and value one after 1940.

**Table A4.4: Vector Auto Regression Estimates between Labor Quantity Growth and IMD**

	<b>D log Labour Quantity</b>	<b>IMD</b>
<b>D log Labour Quantity (-1)</b>	0.174008 (0.09367) [ 1.85764]	0.987282 (1.24007) [ 0.79615]
<b>IMD (-1)</b>	0.000649 (0.00437) [ 0.14846]	0.828784 (0.05783) [ 14.3308]
<b>C</b>	0.005772 (0.00479) [ 1.20489]	-0.056854 (0.06342) [-0.89651]
<b>Dummy 1940</b>	0.006202 (0.01051) [ 0.58987]	0.165360 (0.13919) [ 1.18800]
R-squared	0.039370	0.755569
Adj. R-squared	0.015354	0.749458
Sum sq. resids	0.203936	35.74098
S.E. equation	0.041225	0.545749
F-statistic	1.639319	123.6451
Log likelihood	221.4860	-98.82139
Akaike AIC	-3.507839	1.658410
Schwarz SC	-3.416862	1.749386
Mean dependent	0.009173	-0.031924
S.D. dependent	0.041545	1.090316
Determinant Residual Covariance		0.000452
Log Likelihood (d.f. adjusted)		125.5502
Akaike Information Criteria		-1.895971
Schwarz Criteria		-1.714018

*Sources:* See the text.

*Notes:* standard errors in parenthesis and t- statistics in brackets.

Variables expressed in differences.

Dummy 1940 is a variable that takes value zero before 1940 and value one after 1940.