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Keywords: macroeconomic policy, stabilization, liberalization, growth, dictatorship, anti-market policies, Spain.

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

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Stabilization and Growth under Dictatorship: The Experience of Franco's Spain

Introduction

Since the early 1980s, many developing countries have undergone major economic policy reforms following the so-called “Washington Consensus”. 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.¹ Until recently, most academics and policy-makers would agree that such economic policies have the potential to be growth-promoting and alleviate poverty. What the historical experience has shown, however, is that in many occasions such major political changes had failed in their ultimate objectives causing weak, unintended, or negative outcomes. Empirical studies, based on cross-country regressions, offer, also, contradictory results on the alleged benefits of the implementation of these reforms.² Different initial conditions and circumstances provoked disparate results of apparently identical policies.³

The Spanish stabilization programme of 1959 could be considered as an historical precedent of the measures contained in the Washington Consensus. After the Civil War, the new authorities relied on the coercive power of the state and tried to guide the economy through the enactment of widespread controls. In the early 1950s after the U.S.-Spanish agreements, many of the previous regulations were relaxed and the government began a cautious liberalization process. During the 1950s, growth rates accelerated on the basis of capital accumulation and efficiency gains.⁴ Nonetheless, it is commonly recognized that, by

¹ This set of policies was labelled by Williamson (1990) the “Washington Consensus”. See Fischer (2003) and, more recently, Schleifer (2009) and Edwards (2009).

² In the assessment of the impact of policy reforms on growth an alternative approach, to cross-country panel regressions is provided by individual country studies in which major policy reforms are identified and economic performance before and after they were implemented, examined. See, for example, Fisher (1993). Sachs and Warner (1995) and Easterly (2005).

³ The literature analysing the consequences of national economic policies on growth and poverty is substantial. See, recent reviews, of Easterly (2005) and De Haan *et al* (2006).

⁴ See Prados de la Escosura and Rosés (2009). Calvo-González (2007) has underlined the importance of the improvement in economic agents' expectations, resulting from the U.S.-Spain cooperation agreements of 1953, for growth recovery during the 1950s. See also, Guirao (1998).

the late 1959, an untenable economic situation, in particular, the shortage of foreign reserves, forced the dictatorship to renew its economic policy drastically. A new government of technocrats introduced a simultaneous liberalization of domestic markets and international economic relations. Following IMF and OEEC advice, a conventional stabilization programme was enforced containing measures on inflation, public spending, and market liberalization.⁵ Soon macroeconomic stability was achieved by reducing inflation and the budget deficit. In addition to a more orthodox macroeconomic policy, Spain adhered to major international organizations constraining government's ability to violate international commitments to economic liberalization. Apparently, economic agents reacted positively to the new stimulus and economic growth accelerated dramatically up to 1975.

Spanish experience provides a good historical test for the effectiveness of the 'basic' set of Washington Consensus' policies under dictatorship, adding a long-run dimension which is missing in the ongoing debate on the consequences of liberalization and stabilization programs.⁶ Our main goal is, then, to test the widespread claim that the new policies associated to the 1959 Plan of Stabilization and Liberalization had a dramatic impact on Spain's growth performance. To do so, we construct a new 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 1959 Plan and the subsequent reforms in promoting sustained economic growth while, at the same time, the role played by the gradual reduction of macroeconomic distortions during the 1950s is emphasized. Without the previous wave of moderate reforms, the Stabilization Plan might have failed to be implemented. According to our calculations, without these successive economic policy reforms GDP would have been significantly lower at the time of Franco's death, in 1975. More specifically, without any change in economic policy (that is, had government maintained the distortions enforced after the Civil War). GDP per head in 1975 would have been two-thirds of its actual level (lower than in Portugal, Bulgaria, Hungary, or

⁵ OEEC was OECD's forerunner. Similar stabilization plans were carried out at the time in other European countries such as France, Portugal, or Ireland under the advice of the international organizations See, for example, Boltho (1996).

⁶ See Przeworski *et al.* (2000) and Doucouliagos and Ulabaşoğlu (2008). The fact is that the beneficial consequences of many policy interventions are not observable in the short-run. For example, episodes of fiscal stabilization may cause an immediate contraction of the economy but favoured investment and innovation in the long-run.

Poland). and without the Stabilization Plan (but with the 1950s reforms). would have only reached 85 percent of its actual level (still lower than in Greece, Czechoslovakia, and Ireland).

The rest of the paper is organized as follows. Next section reviews Franco's regime growth record and its economic policy. In section 3 we introduce our *IMD* which allows us to determine major economic policy changes in Spain.⁷ Then, in section 4, we examine the main determinants of growth highlighting the deterrent role played by macroeconomic distortions. The economic costs of anti-market policies in early Francoism are considered in section 5 by exploring alternative counterfactual scenarios. The last section concludes and suggests some avenues for further research and policy implications.

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 slow recovery during the 1940s, per capita GDP growth intensified in the 1950s, and accelerated dramatically from the 1959 Stabilization and Liberalization Plan up to 1974.

[FIGURE 1]

In comparative perspective Spanish growth record was highly disappointing during the early phase of Franco's dictatorship. Per capita GDP growth between the eve of the Civil War (1935) and 1952 was much slower (0.2 percent) than in the United States and Western Europe between a comparable period, 1938-52 (where it grew at 3.7 and 0.9 percent, respectively). In Spain, pre-war per capita GDP peak levels (1929) were only recovered in 1955, while by 1950 Western Europe had recovered, on average, its 1938 level of GDP per head. Such a difference deserves to be explored in depth because, on the one hand, there was less destruction of lives and physical capital as a consequence of Spanish Civil War than in Western Europe during World War II (Catalan 1995, Reher 2003, Ortega and Silvestre 2006, Prados de la Escosura and Rosés 2010a, Rosés 2009) but, on the other, an intense destruction of human capital occurred as a result of political exile and post-war political repression (Prados de la Escosura 2007, Prados de la Escosura and Rosés 2010b). The situation began to change in the 1950s when the economy grew, in per capita terms, at a similar rate to the

⁷ 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).

Western European average but with the significant difference that Spain started from a substantially lower level.⁸ It was during the last period of Franco's rule (1959-1975) when growth per head reached an unprecedented intensity in Spain, not far behind 1950s Germany and way 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.⁹ 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 one, 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 (2.7 percent), but also from 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 (4.1 percent) accounts for two-thirds of the increase in output per hour worked.

Why the economic growth record was so disappointing during the early Franco's rule? Why the economy grew during the 1950s without apparently a significant transformation of the political regime? What does account for the acceleration in Spain's pace of growth since 1960? A casual observation underlines the relation between growth rates and the Regime's economic policy.

The early years of the Dictatorship -since the Civil War up to the early 1950s- represented a dramatic rupture with economic policies prevalent in Spain since mid-19th century. Effective possession of legislative and judicial powers gave Franco's dictatorship the ability to alter economic and political rights discretionally. Furthermore, the dictatorship did not reassure economic agents of the New State's commitment to private property and free market. Quite the contrary, the new authorities shared a strong anti-market attitude and proposed the subordination of the economy to politics. Not only the rhetoric of the new

⁸ In fact countries that experienced a reconstruction process grew at much faster pace. Such was the case of Italy (4.9 percent) and, especially, Germany (6.5 percent). Growth rates for Spain and Western Europe and the U.S. are computed from Prados de la Escosura (2010) and Maddison (2009), respectively. Western Europe is a population weighted average of Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, and United Kingdom.

⁹ The following discussion relies on estimates from Prados de la Escosura and Rosés (2009) and background computations for this paper.

regime was against free market but its economic policy often threatened private investment and the development of private business (Fraile Balbín 1998). Severe market controls aiming at economic autarky were implemented (Barciela 2002). The 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 would the regime last (Calvo-González 2001, 2007).

[FIGURE 2]

Apparently, these new economic goals required the development of a strong public sector and an increasing budget (González 1979). However, in comparative terms, the share of government consumption in total consumption was not particularly high during this period, except during World War II years when military spending upsurge.¹⁰ As shown in Figure 2, the share of government consumption had an average value of 20 percent during the early 1940s, it began to decrease during the second half of the 1940s and fell further down during the 1950s reaching an average level of 10 percent, similar to the one prevalent before the Civil War.

[FIGURE 3]

Although the size of the state increased, the government left public finances to languish. Treasury did not introduce a tax reform to increase its revenues until 1957 because a clash with interest groups supporting the Regime was feared (Díaz Fuentes 1994, Comín 1996). So, 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 from government budget, losing their autonomy (Martín Aceña 1994). Clearly, the potential inflationary risks of this new

¹⁰ For example, in 1944 military expenditure was more than ten times that on education (Comín and Díaz Fuentes, 2005, table 12.18).

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 Franco's rule even though inflation was repressed through officially established prices (Figure 3). Inflation rate was, on average, 10 percent over the 1940s, 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 went up to 12 percent after the 1973 oil shock.

[FIGURE 4]

The Franco's Regime also represented an exception from the point of view of Spain's integration in the international economy as it was initiated by a dramatic closing down followed, then, by opening up to a historical maximum, after the stabilization plan of 1959 (Figure 4). In accordance with the new anti-trade policy, the new regime strongly regulated foreign currency markets aiming at having absolute control of foreign trade (Martínez Ruiz 2003). The creation of the Spanish Institute for Foreign Currency (IEME), which monopolized the deposit 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. The private possession of foreign currency was prohibited and exporters forced to hand it over to the IEME at the official, overvalued exchange rate. 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.¹¹

During the 1950s, economic interventionism was relaxed, but not suppressed, and the international isolation Spain suffered since 1945, due to Franco alignment with the Axis powers during World War II, began to breakdown. On the one hand, General Franco formed a new government by July 1951 that rectified the economic strategy followed in the 1940s (Barciela 2002). The most extreme interventionist measures on commodity markets were relaxed and corrected. Thus, the centralized allocation of scarce goods, namely food rationing and quotas for raw materials and energy, was abolished. Yet foreign investment continued 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

¹¹ For example, in 1941, the official exchange rate was 10.95 Peseta per U.S. Dollar but the free exchange rate in Tangiers was 24.49 Peseta per Dollar.

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).¹² 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 2007) but also by a cautious and moderate economic liberalization.

[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. This new system was designed to facilitate exports and imports of certain goods by applying favourable exchange rates, hindered foreign trade and gave rise to corruption (Donges 1973, de la Dehesa 1991). However, the multiple exchange rate system allowed the authorities to devalue surreptitiously the peseta (Serrano Sanz and Asensio Castillo 1997). In fact, a glance at Figure 5, allows one to observe that while the ‘black market’ premium increased between 1948 and 1956 when the official, and practically fixed, exchange rate is considered, however, when an “effective” official exchange rate -obtained by weighting different official exchange rates by its relative importance within the balance of payments on current account- is used, a gradual convergence is found between the free and the “effective” official exchange rate, with the subsequent contraction in the ‘black market’ premium.¹³

In the late 1950s, clear signs of economic over-heating manifested in growing inflation and increasing external deficit. Foreign exchange reserves, in particular, were exhausted by mid-1959. In such circumstances, a complete economic policy reorientation represented by

¹² 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 (2007) 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 foreign trade. In any case, aid received by Spain did not have comparable effects to be derived from the Marshall Plan to Western European countries (Prados de la Escosura and Sanz 1996). Furthermore, Spain did not benefit of externalities which were associated to 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.

¹³ Serrano Sanz and Asensio Castillo (1997) and, especially, Martínez Ruiz (2003).

the Stabilization and Liberalization Plan in 1959 was forced in order to prevent the collapse of the economy. Spain opened up to major international organizations and committed to gradual liberalization.¹⁴ 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).

The 1959 Stabilization and Liberalization Plan marked the beginning of a new era in the Spanish economy since the country entered rapidly into a process of economic liberalization and international market integration. It contained measures in three main areas. Firstly, a classical stabilization operation 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 rate of discount 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 its trade. Eventually the recurrent financial problems due to monetary isolation also persuaded the authorities to rethinking 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.¹⁵ 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). The IMF, OEEC, the Bank for International

¹⁴ Spain integrated successively in the International Monetary Fund (1958); World Bank (1958); the Organization for European Economic Cooperation (1959) and the General Agreement on Tariffs and Trade (1963).

¹⁵ The national currency devalued to 60 Peseta per U.S. dollar, a rate slightly higher than the one prevailing in black market (Martínez Ruíz, 2003).

Settlements and several U.S. private banks provided financial coverage for the operation of the Stabilization Plan through grants and loans in hard currency.¹⁶

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 with tariffs, more flexible and less distorting. 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).

The commitment to openness of Spain 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.¹⁷ Trade liberalization was gradual since the rapid decrease of quantitative restrictions was partly counterbalanced by an increase in tariff rates (Donges 1973). However, international commitments imposed Spain to attend the GATT negotiating rounds.¹⁸ 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

¹⁶ The total amount of grants and loans was estimated at \$544 million. Furthermore, European governments assured not to demand payments of short-term debt that Spain had incurred through bilateral trade agreements (Calvo-González 2006).

¹⁷ 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).

¹⁸ In the Kennedy Round of GATT (1964-1967). Spain agreed tariff reductions that entered into force between 1968 and 1972 (Serrano Sanz and Pardos 2002).

imbalances were financed by foreign investment, tourism and emigrant remittances (Prados de la Escosura and Sanz 1996, Serrano Sanz and Pardos 2002).

Simultaneously, Franco's governments kept orthodox ideas about a balanced budget and the control of public expenditure, while social expenditure was of little significance (Comín 1994, Prados de la Escosura and Sanz 1996). So, during 1959-75, the share of government spending represented on average a mere 8 percent of GDP (see Figure 3 above). Nonetheless, social expenditures increased in the late Franco period (1960-75) and its share in GDP (excluding education) doubled to reach 12.5 percent of GDP (Bandrés 1999).

Measuring major economic policy changes

Can we assess quantitatively these policy reforms and their impact on long-run growth? Our strategy to deal with this challenge will be, firstly, to establish the chronology of major economic policy changes and, then, to investigate the extent to which these policies affected broad capital accumulation and efficiency gains.

However, a fundamental problem in analysing the impact of economic reforms is the simultaneity and connections between distinctive policies given that they are not absolutely independent and often are implemented simultaneously. From an econometric point-of-view, this may cause that the different explanatory variables are correlated among them. For this reason, we begin by constructing an index of macroeconomic distortions (hereafter *IMD*) for Spain.¹⁹

The *IMD* index tries to capture the basic features of macroeconomic policies that could influence economic performance while avoiding cross-correlation problems between different policy indicators. The selection of variables compounding the index is not *ad hoc* since we include those variables which seem more representative of Franco's economic policy.²⁰ Specifically, the index combines, using principal components analysis, three macroeconomic variables: the share of government consumption within national

¹⁹ Our index is related to the index of economic freedom published by the Fraser Institute since 1996 (Gwartney *et al.* 1996) and it is similar to the 'reduced' index of economic freedom developed in Prados de la Escosura and Sanz-Villarroya (2009).

²⁰ 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. However, any employs our index methodology.

consumption,²¹ the depreciation rate of the currency, and the differential between the official and the free market exchange rate (the ‘black market’ premium).²²

The impact of government consumption over economic growth is under dispute as most economists agree that the government has important tasks to perform (De Haan *et al.* 2006). From a free market perspective, the government should provide public goods for which free markets do not produce efficient results. However, when governments move into the provision of private goods, they restrict consumer choice and, hence, economic freedom. Furthermore, governments could produce an excess of public goods damaging economic growth. In particular, a dictatorship could produce an excess of law enforcement because of its desire to controlling citizens behaviour.

The depreciation of the currency is also part of the index. High and volatile inflation has a negative impact on economic growth. A high rate of inflation implies an absence of sound money and undermines gains from trade. Moreover, it alters the fundamental terms of long-term contracts leading to a decrease in economic confidence.²³

Finally, we introduce exchange rate controls in our index. Insofar they reduce the convertibility of currency; exchange rate controls hold back international trade, foreign investment and private confidence in government behaviour. In particular, Chanda (2005) shows that capital controls do have an important negative effect on economic growth. In countries with powerful interest groups, capital controls lead to greater inefficiencies and lower economic growth.

²¹ Government consumption covers government spending on goods and services (administration, military, judicial system, etc.) while 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 is not devoted directly to productive activities or to increase private consumption.

²² The reader could be intrigued by the fact that we do not include any openness measure in the IMD index. The fact is openness is not a good measure of national economic policy because is not only determined by government decisions but also by policies and goods demand from its trade partners. Moreover, the ‘black market’ premium (see below) will somehow capture the degree of openness.

²³ The relationship between inflation and growth has provoked an intense debate since Barro’s (1995) seminal contribution. Economists tend to agree that a high and volatile inflation will have a negative impact on growth, but for some authors a moderate rate of inflation is beneficial for growth (De Haan *et al.* 2006).

Once the variables to be included in the index of macroeconomic distortions (*IMD*) have been chosen, the next step is to decide how to incorporate them. To do so, we have employed factorial analysis based on the principal components method. Principal Component Analysis (PCA hereafter) assigns weights on the basis of the distributions and interrelations between the various underlining components.²⁴ We have conducted several refinements to the standard procedure in order to avoid several of its alleged shortcomings.²⁵

[TABLE 1]

The results obtained from the application of this methodology are presented in Table 1 above. All variables under study have positive weightings in the first component. Finally, the *IMD* index has been obtained as a linear combination of each of these variables, in which the values assigned by factorial analysis to each component as a proportion of their total value are used as their respective weightings.²⁶

[FIGURE 6]

The evolution of *IMD* (Figure 6) shows a significant increase up to 1947 where it stayed in a high plateau until a gradual decline started in 1951 and was sustained during the 1950s. Only an episodic reversal took place in 1956, associated to populist policies

²⁴ 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.

²⁵ Firstly, our weights do not contradict any underlining economic theory because, to our knowledge, a model for the construction of this type of indices is not available. Secondly, all variables to be used in the index have been standardized to minimizing their sensitivity to the scale of measurement. Additionally, in order to avoid ambiguity in the interpretation of the obtained results, we have checked the relative importance of each variable during each period of time. Finally, we have addressed the high correlation between the variables by considering their correlation matrix (available, upon request, from the authors). A direct observation of this matrix shows that the correlations are high enough to justify the use of principal component methodology but not high enough to generate distortions in the assignation of weights to different variables.

²⁶ These weightings are: 0.615 for Government Consumption relative to total consumption; 0.723 for currency depreciation; and 0.784 for Black Market.

implemented by Franco's Minister 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.

[TABLE 2]

Table 2 reviews the impact (measured as changes in one standard deviation) of its different components on *IMD*. The depreciation of the currency was the most important variable over the entire period, except during the early Franco's period (1939-1951) in which the 'black market' premium prevailed. The fact that the currency depreciation and 'black market' appear as the main explanatory variables matches the results obtained through PCA (Table 1), where they exhibit the largest weights.

Assessing the impact of *IMD* on growth

The next issue is how to estimate the effect of *IMD* on real GDP levels, which we hypothesize negative. More specifically, 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 log of the quantity of labour (number of hours worked) (hereafter *LAB*), 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 the log of total factor productivity (*TFP*).²⁷ The 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.²⁸

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

Our 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 in order to take into account the impact macroeconomic distortions have on them and to allow for additional exogenous variables. However, we have not follow

²⁷ Other studies show that per capita income differences across countries are explained taking account differences in capital endowments and TFP (Hall and Jones, 1999; Parente and Prescott, 2000; Easterly and Levine, 2003). The sources for the data used in this section are detailed in Appendix 1.

²⁸ TFP is drawn from growth accounting estimates in Prados de la Escosura and Rosés (2009). See Appendix 1.

the same procedure with *LAB* because we assume that this is mainly driven by exogenous demographic forces and unexpected shocks such as wars and epidemics (which are independent from macroeconomic policies).

There are several channels through which macroeconomic policy may have affect TFP growth, because this is the result of both efficiency gains and technological changes (Harberger 1998).²⁹ We postulate that TFP (in logs) depends on *IMD*, the degree of openness (measured as the ratio of exports plus imports to GDP, *OPEN*,³⁰ in logs) and previous levels of human capital and GDP, which are proxies for the actual technological capability.

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

In order to explaining 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 associated 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 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 M3 over GDP, *DEPTH*, thereafter) to encourage, *ceteris paribus*, investment. There are competing views as regards the role of inequality in capital accumulation: on the one hand, the negative connection between inequality and investment, as a result of social instability, has been stressed by, for example, Alesina and Perotti (1996) but, on the other hand, a positive link associating, at low levels of per capita income, inequality to increasing saving and investment has been claimed (Kaldor 1955-6). We employ the Gini coefficient as

²⁹ Particularly, orthodox macroeconomic policy may stimulate inventive activity because the amount of domestic R&D decreases as uncertainty about their benefits increase (Jaumotte and Pain 2005).

³⁰ 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, or impeding, FDI investment may also damage TFP gains given that multinationals transfer knowledge from “parents” to their foreign affiliates and sometimes some of this knowledge “spills over” to domestic firms in the host country through non-market transactions (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 well captured by our *IMD* variable.

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*.

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

Furthermore, it should be taken into account that price distortions 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 this reasons, the relative user cost of capital (*RUCK*) is assumed to depend on *IMD* and also on GDP level.

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

Lastly, the quality of labour, or human capital, depends on the level of development (GDP) and past levels of TFP.³¹

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

To investigate the relationship between *IMD* and *GDP* more in depth, we construct a structural model as a system of simultaneous equations (Equations 1 to 5).³² In the estimation we have employed Three Stages Least Squares (3SLS) that solves the problem of contemporary correlation between the equations' residuals and deals with the endogeneity problem often present in this kind of exercises. The results are presented in Table 3.

[TABLE 3]

The results are in line with our previous predictions. Not surprisingly, we found that *IMD* had a negative impact in GDP levels channelled through factor accumulation (via the relative price user cost of capital) and TFP levels. Also, all variables have the expected sign at the conventional levels of significance. Now, we will proceed to discuss in detail the results from equations 2 to 5, which investigate the relation between *IMD* and the underlining determinants of GDP.

To investigate whether *IMD* affects GDP via lower TFP, we have to take a closer look at equation (2) of our model. A lower degree of macroeconomic distortions, a higher degree

³¹ Cervellati and Sunde (2005) have shown that this relation exists.

³² All econometric development is detailed at the appendix 2.

of openness and a higher level of human capital and GDP in previous periods guarantee a higher TFP level.

Equations 3 and 4 analyses the impact of distortions in physical capital investment. We found that *IMD* influenced positively *RUCK* which, in turn, influenced negatively investment. 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 degree of financial development (*DEPTH*), inequality (*GINI*), and the level of GDP are associated to an increase of *INVT*. Why inequality is associated to a higher rate of capital accumulation deserves further research. In sum, investment is negatively correlated with distorting policies and positively correlated with inequality and financial development.

Lastly, equation 5 discusses the underlining determinants of human capital levels. In this occasion, 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 indirectly *HK* by reducing both, TFP and GDP levels.

Assessing the Impact of the Stabilization and Liberalization Plan

The estimated coefficients in Table 3 together with the values of each variable may be used to explore some counterfactual alternatives.³³ Our goal is assessing the economic impact of macroeconomic distortions, as measured by *IMD*, during the early phase of dictatorship (1939-1959), as a way of highlighting the change brought about to the Spanish economy by the 1959 Liberalization and Stabilization Plan.

We propose three counterfactual hypotheses (Table 4). Firstly, we consider a hypothetical situation in which the average value of *IMD* during 1939-51 would have been maintained over 1952-75 (**Scenario I**). This is an extreme situation that simulates a Spain ruled by the autarchic élite throughout the entire Franco regime. Then, a less astringent assumption is made in **Scenario II**: the *IMD* average value over 1952-58 would have remained in place until 1975. This seems to be a more plausible scenario in case Franco and his closest advisers had rejected the advice of the reformists and their international allies in the desperate conjuncture of lack foreign reserves Spain faced in 1959. Finally, **Scenario III**

³³ Carreras (1982, 1992) and Martín Aceña (2004) have investigated a counterfactual scenario but they did not carry out any formal estimation of the impact of Franco's economic policies.

simulates how would have the Spanish economy performed without the significant macroeconomic distortions which suffered over 1939-1958, and, therefore, the *IMD* would have been similar to its actual average over 1959-75. The latter mimics a non-Francoist Spain, that is, another Western European country under the pro-market influence of the Marshall Plan, such as Italy. We expect that in Scenarios I and II values are lower than the actual while in Scenario III should be higher than those observed.

[TABLE 4]

[FIGURE 7]

The results of these counterfactual exercises, summarized in Table 4 and Figure7, lend strong support to the hypothesis that macroeconomic policy conducted during the early Franco's regime damaged dramatically the Spanish economy. For each variable, per capita and absolute GDP, human capital, investment and TFP, the impact of Franco's economic policy was damaging. More prominently, the major channel by which *IMD* costs economic growth is through TFP growth. In other words, bad policies translated into lower TFP growth.

However, non-negligible differences are observed between the hypothetical results cast by Scenarios I and II. To be more precise, in Scenario I, real GDP per head would have grown, over 1959-75, at a rate 58 percent lower than the actual one, while under Scenario II it would have been only 18 percent lower. For the entire period, 1939-75, they would have been 33 and 11 percent lower, respectively. Such a result is confirmed by Scenario III which casts growth rates 63 and 21 percent higher for 1939-51 and 1952-58, respectively, under the hypothetical proposition of much lower macroeconomic distortions.

These results tend to contradict the conventional view of a homogeneous autarchic era covering the first two decades of Franco's dictatorship and portray the 1959 Stabilization and Liberalization Plan as a major discontinuity between two opposite worlds. Without challenging the significance of the 1959 Plan for sustained growth and catching up during Spain's delayed Golden Age (1960-75). our results stress that the gradual liberalization occurred during the 1950s allowed the economy to improve its performance substantially and depicts the 1959 structural reforms as the response to a growth crisis. In other words, as in other historical experiences (i.e. Latin America over 1940-80) inward-looking policies did not preclude growth in Spain but set limits to its sustainability over the long run.

[TABLE 5]

What would have been, then, Spain's relative position at the end of Franco's dictatorship had pre-1959 macroeconomic distortions remained in place? In Table 5 levels of GDP per head in 1975 for actual and counterfactual Spain (resulting from **Scenarios I and II**)

are compared to those in OECD, Central and Eastern Europe, and Latin America. Spain, already at the bottom of Western Europe, would have fallen further down: below Argentina, Greece, Czechoslovakia, and Ireland in the relatively benign Scenario II, and below Portugal, Bulgaria, Poland, and Hungary, and close to Uruguay and Mexico, in **Scenario I**. When Spain's performance relative to Western Europe's is considered, it appears that while actual Spain recovered her relative position in 1958 by 1962, counterfactual Spain would have had to wait until 1966 to do it (**Scenario II**) or would have remained below the 1950s level until 1974 (**Scenario I**).

Concluding remarks

This paper has analysed the impact of different Franco's economic policies on Spanish economic growth and, in particular, the consequences of Stabilization and Liberalization Plan of 1959. During the early years of Franco's dictatorship, the new regime introduced a set of anti-market policies that altered dramatically previous economic policy. These new measures resulted in high inflation rates, the development of 'black' markets, and a contraction in international trade. During the 1950s successive pro-market changes in economic policy were introduced which implied that the most extreme interventionist policies were relaxed while the Spanish economy benefited from a cooperation agreement with the US government. By the end of the decade, a new step towards liberalization was taken with the adoption of a stabilization plan in 1959. Spain entered into major international organizations, which increasingly committed Spanish government to free-market discipline. Moreover, Franco's Regime offered a precedent of responsible behaviour to domestic and foreign investors by implementing a sound macroeconomic policy. As a consequence, inflation decreased, 'black markets' disappeared, foreign investment increased, and international trade flourished.

The important role played by the economic policy reforms conducted during the 1950s, particularly the Liberalization and Stabilization Plan of 1959, in promoting sustained economic growth is confirmed by our results. A gradual reduction of macroeconomic distortions in the 1950s explains economic growth during this decade. The 1959 Plan, which appears as a response to an inward-looking growth crisis, gave way to a new institutional set which favoured the allocation of resources along comparative advantage and allowed sustained and faster growth, as well as catching up. Without the Stabilization and Liberalization Plan, GDP would have been significantly lower at the time of Franco's death, in 1975. However, there is a significant difference in outcomes depending on whether pre-1951 macroeconomic economic distortions had remained in place (that is, no economic

reform took place). or if only the 1959 Plan would have not been implemented and the 1950s restrictions persisted. In fact, by 1975, GDP would have represented two-thirds of its actual level in the first scenario, but only 85 percent, in the second. In other words, the previous reforms of the 1950s appear as a far from negligible prerequisite for implementing the stabilization plan in 1959.

Several broad lessons could be derived from this historical investigation. First, we have shown the advantages of case studies and the usefulness of our index of macroeconomic distortions, assembled with the principal components method and comprising government consumption, currency depreciation and 'black market' premium, in assessing the impact of economic policies on economic performance. Second, we confirm that successful stabilization programs are possible under authoritarian political regimes. Third, we have shown that major economic reforms are successful when come after a period of initial reforms and economic growth. It seems unlikely that the Stabilization Plan of 1959 had succeeded without previous policy reforms and economic growth. In this regard it is worth to notice interesting similarities between 1959 Stabilization and the Marshall Plan. In both cases their success depended on the fact that the countries involved were growing already and whose governments opened up their economies reassuring economic agents about their commitment to free markets and international integration (De Long and Eichengreen (1991). Lastly, our investigation also suggests that a detailed analysis is needed of the various channels through which the dictatorship could impact on economic growth.

No simple analogy can be easily drawn, however, between Spain's historical experience and the expected outcomes of similar reforms in today's developing countries. The main lesson is, perhaps, that the economic results of any major stabilization program depend, to a large extent, on its historical context. Several particular historical circumstances eased the Spanish economic reforms. The Cold War allowed the co-existence of a dictatorial regime in Western Europe with a market-oriented and internationally integrated economy. In particular, the international political situation made easier for the Regime to get foreign economic assistance and substantial loans to finance its economic reforms. The same nature of the Bretton Woods system, which restricted speculative capital movements, also helped the reform process. A new technology with large potential TFP gains, the mass production, was already available. Finally, its geographical situation facilitated Spain's integration into the international economy.

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Table 1
Principal Components Analysis to Derive the Index of Macroeconomic Distortions

	Government Consumption	Currency Depreciation	'Black Market' Premium
Factor 1	0.615	0.723	0.784

Sources: See the text.

Table 2
Impact of Different Variables over the IMD

	Government Consumption	Currency Depreciation	'Black Market' Premium
1939-1951	0.517	0.338	0.987
1952-1958	0.082	0.312	0.170
1959-1975	0.140	0.218	0.078

Sources: See the text.

Notes: Impact is measured as the one resulting from a standard deviation change.

The equation that relates the *IMD* index and its components exhibits the following coefficients: 7.237, depreciation of the currency; -2.879, Government Consumption; 0.029, 'black market' premium.

Table 3
Econometric Model: Structural Estimation

<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)			
Adjusted R²	0.990	0.936	0.769	0.567	0.947

Sources: Appendix 1.

Notes: 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
Growth in Actual and Counterfactual Economic Policy Scenarios

	1939-51	1952-58	1959-75	1939-58	1939-75
Per Capita GDP Growth (%)					
<i>Actual</i>	2.1	4.4	5.6	2.9	4.2
<i>Scenario I</i>		4.2	3.1		3.0
<i>Scenario II</i>			4.7		3.8
<i>Scenario III</i>	3.9	5.4		4.5	
GDP Growth (%)					
<i>Actual</i>	2.9	5.2	6.7	3.7	5.1
<i>Scenario I</i>		5.1	4.2		3.9
<i>Scenario II</i>			5.7		4.7
<i>Scenario III</i>	4.7	6.2		5.3	
Investment (% GDP)					
<i>Actual</i>	14.7	21.3	24.1	17.2	20.4
<i>Scenario I</i>		16.9	20.6		17.9
<i>Scenario II</i>			21.9		19.4
<i>Scenario III</i>	16.5	20.2		17.9	
Human Capital Growth (%)					
<i>Actual</i>	-0.6	1.3	1.2	0.1	0.6
<i>Scenario I</i>		1.1	0.7		0.3
<i>Scenario II</i>			0.9		0.5
<i>Scenario III</i>	0.3	1.3		0.6	
TFP Growth (%)					
<i>Actual</i>	1.2	2.7	4.1	1.7	2.9
<i>Scenario I</i>		1.5	2.2		1.7
<i>Scenario II</i>			3.0		2.3
<i>Scenario III</i>	2.2	3.4		2.6	

Sources: Computed with parameters from Table 4. See the text and Appendix 1.

Notes: **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; **Scenario III:** assumes 1959-75 IMD average value was maintained over 1939-58.

Table 5
Spain's Relative Per Capita GDP in 1975 (1990 Geary-Khamis \$)

United States	16284
Western Europe (12)	12228
Italy	10742
Venezuela	10472
Spain (actual)	8357
Argentina	8122
Greece	7722
Czechoslovakia	7399
Ireland	7316
Spain (Scenario II)	7121
Portugal	6517
Bulgaria	5831
Poland	5808
Hungary	5805
Spain (Scenario I)	5441
Uruguay	5421
Mexico	5158
Yugoslavia	4836
Peru	4326

Sources: Maddison (2009) except Spain (see text).

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

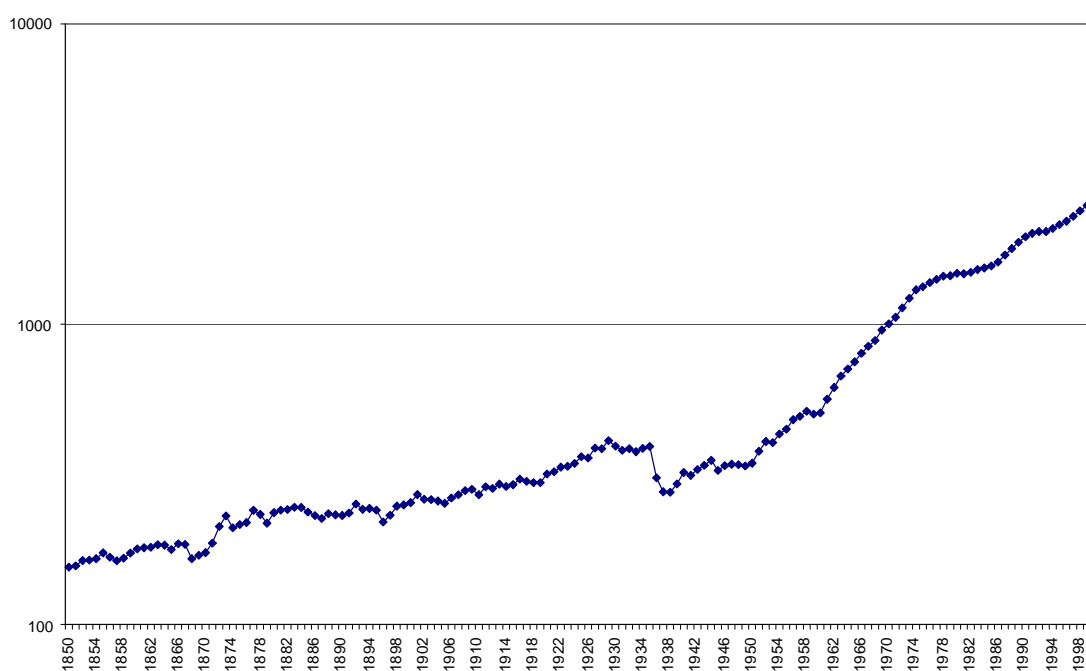


Figure 1 Real Per Capita GDP, 1850-2000 (000 Pesetas) (2000 prices)

Sources: Prados de la Escosura (2003, updated).

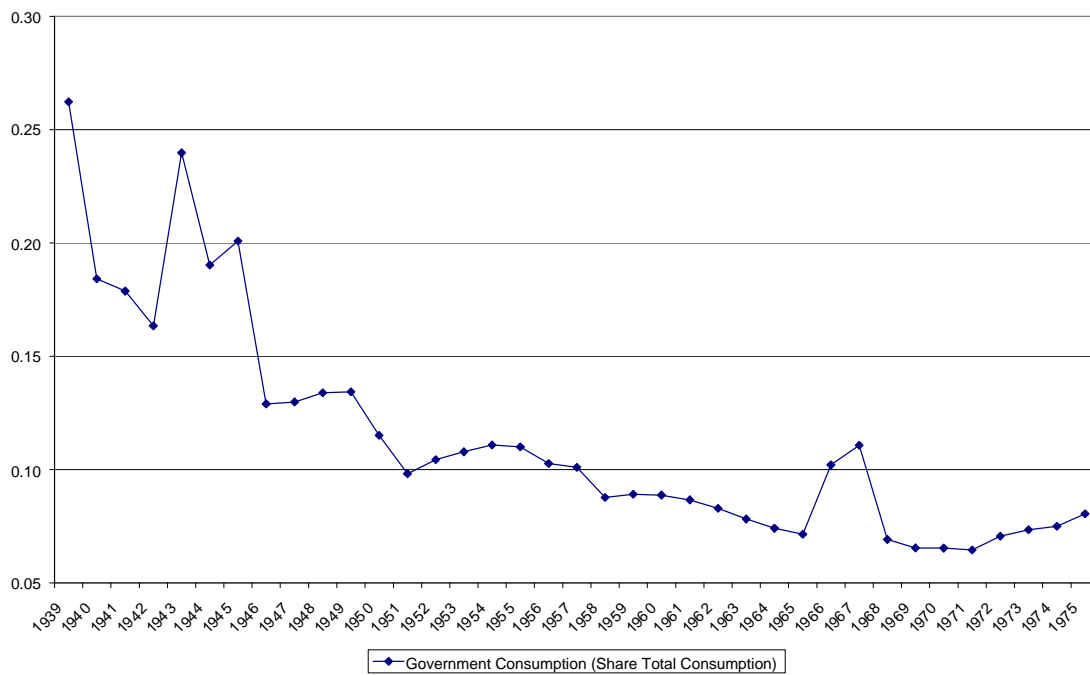


Figure 2 *Government Consumption Share of Total Consumption, 1939-75*
 Sources: Prados de la Escosura (2003) and see the text.

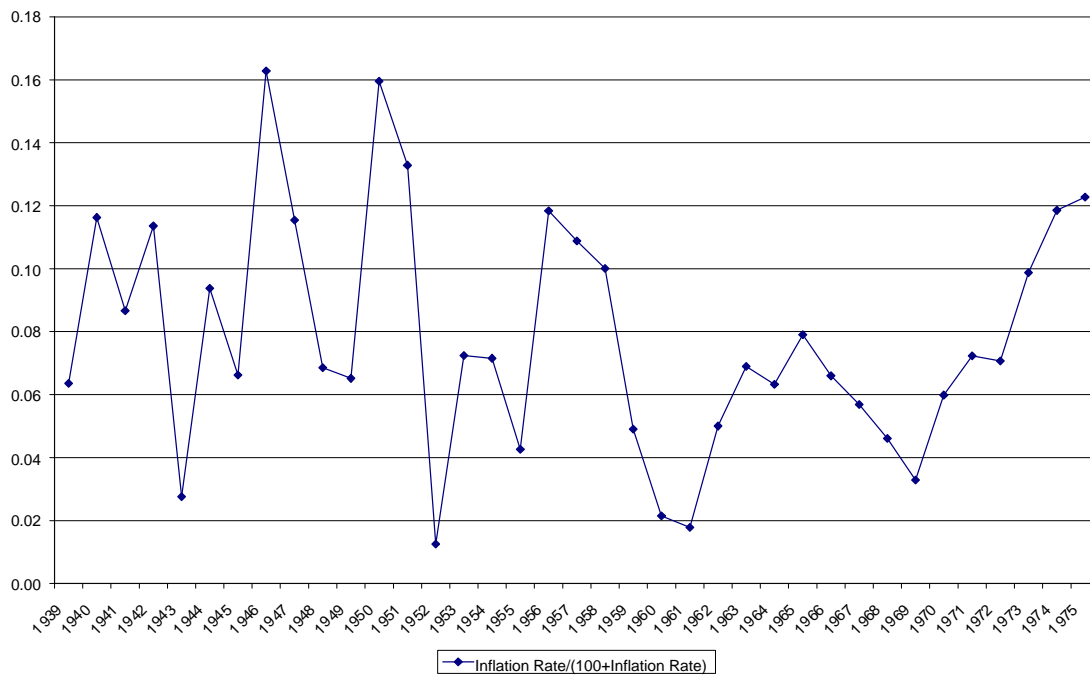


Figure 3 *Depreciation of the Currency, 1939-75*
 Sources: Prados de la Escosura (2003) and see the text.

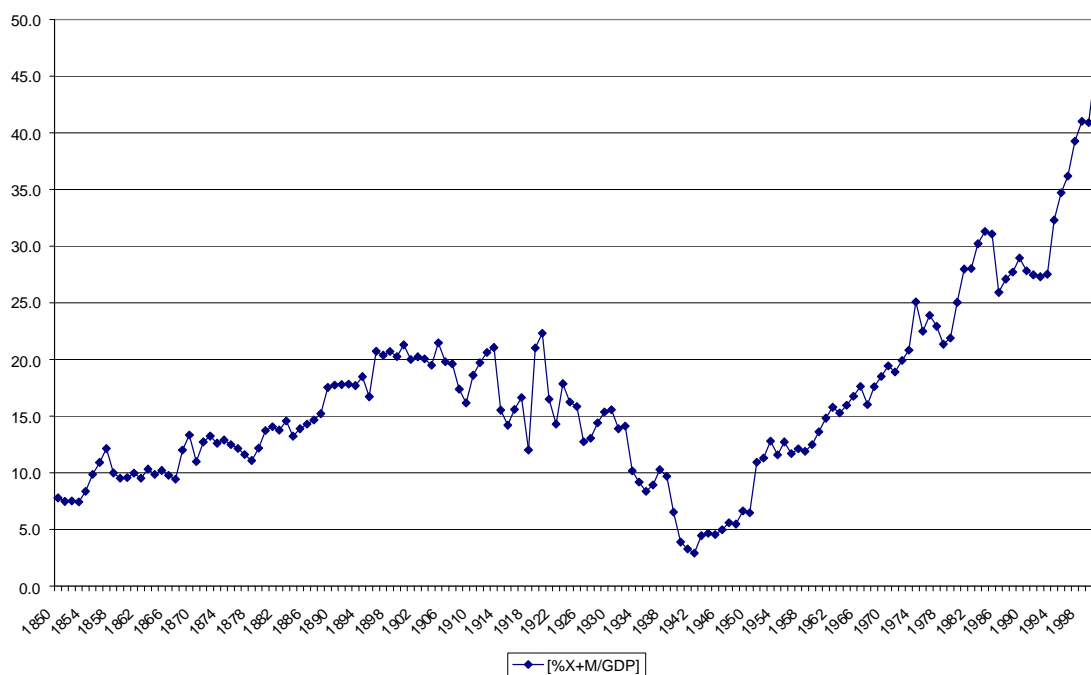


Figure 4 *Openness, 1850-2000 (exports and imports as % of GDP)*
 Sources: Prados de la Escosura (2003).

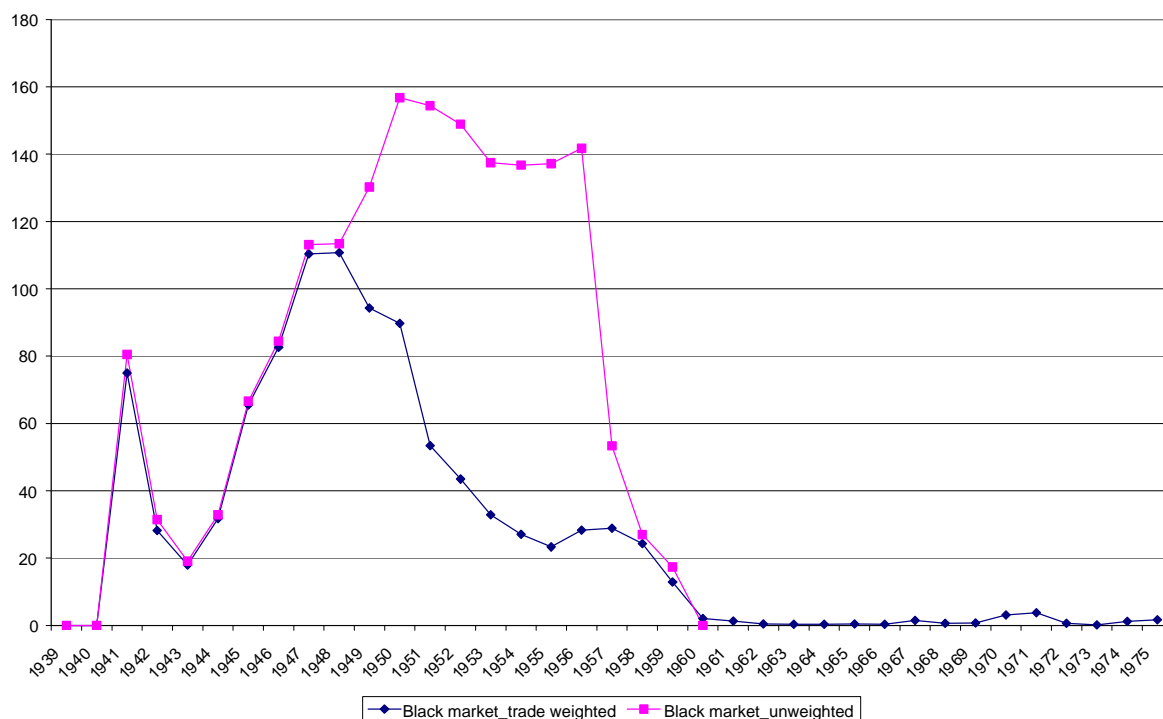


Figure 5 *“Black Market” Premium 1939-75: Trade-Weighted and Unweighted*
 Sources: Martínez Ruiz (2003). Martín Aceña and Pons (2005). Serrano Sanz and Asensio Castillo (1997) and Reinhart and Rogoff (2004).

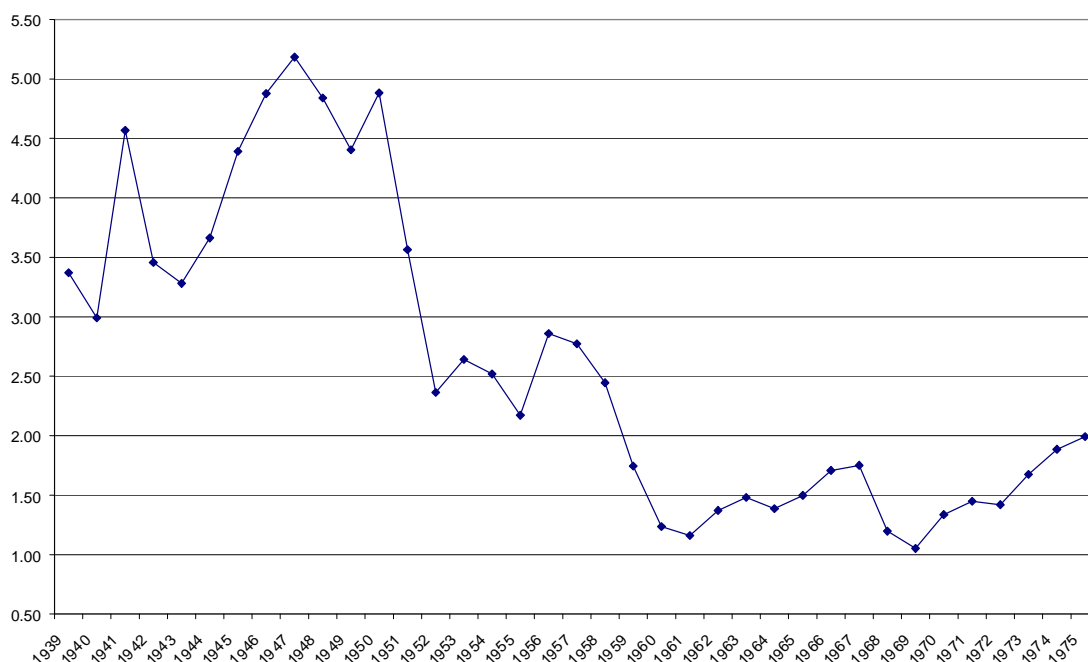


Figure 6. *Index of Macroeconomic Distortions (IMD), 1939-75*
 Sources: See Appendix 1 and the text.

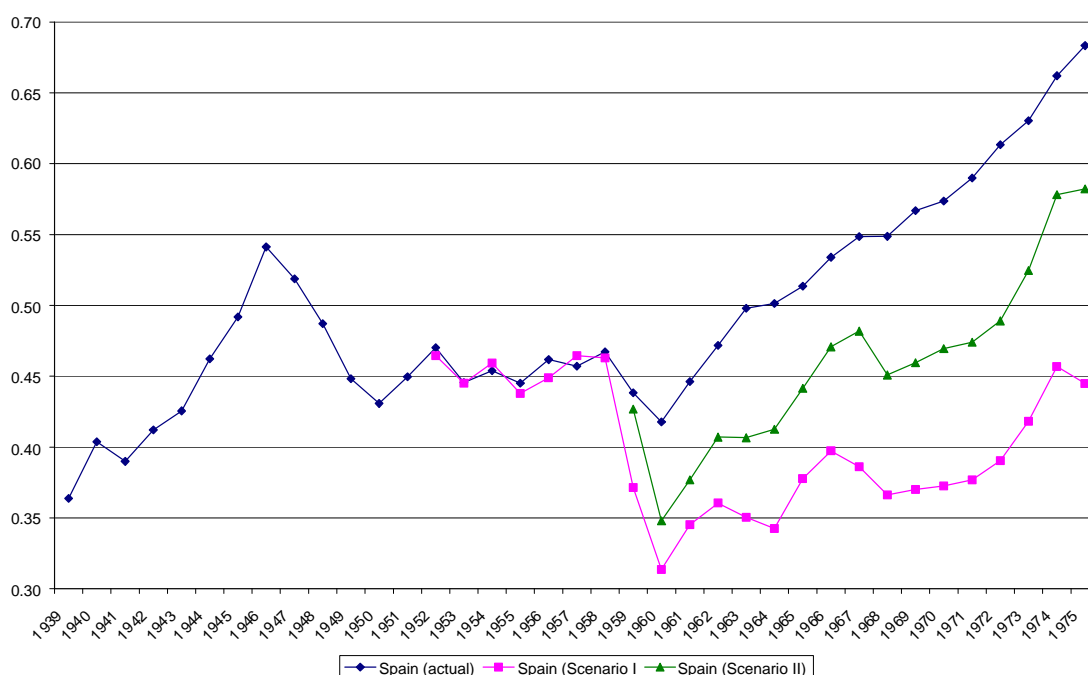


Figure 7 *Spain's Relative Per Capita GDP: Actual and Counterfactual, 1939-75*
 (Western Europe 12 = 1)

Sources: See the text.

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

Appendix 1: Data sources

GDP: United States and Western Europe, Maddison (2009); Spain, Prados de la Escosura (2003, updated).

Inflation rate (GDP implicit deflator): Prados de la Escosura (2003). table A.13.6.

‘Black market’ premium: Martínez Ruiz (2003). Serrano Sanz and Asensio Castillo (1997). Reinhart and Rogoff (2004). Martín Aceña and Pons (2005). table 9.17.

Share of Government Consumption in total Consumption: Government and Domestic Consumption are drawn from Prados de la Escosura (2003). table A.6.8.

Investment rate: Prados de la Escosura (2003). table A.12.3.

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

LAB (labour) and **HK** (labour quality): Prados de la Escosura and Rosés (2010b). underlying data.

OPEN (openness): Computed as Exports plus Imports divided by GDP with data drawn from Prados de la Escosura (2003. table A.13.1.

RUCK (relative user’s cost of capital): Prados de la Escosura and Rosés (2009). underlying data, and Prados de la Escosura (2003).

INTEREST (interest rate): Martín Aceña and Pons (2005). table 9.17.

CIM (contract-intensive money): Computed as (M2-Cash)/M2 with data drawn from Martín Aceña and Pons (2005).

Appendix 2: Econometric Basis for 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 A.1).

[TABLE A.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 A.2

[TABLE A.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 A.3]

Granger causality tests of Table A.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 A1
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>	-1.047	-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 A.2
Long-run Relationship between Variable Pairs

Pairs of Variables	ADF Test over the residuals of the Long-run Relationship
<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 A.3
Granger Causality between IMD, RUCK, and TFP

Pairwise Granger Causality test			
	Null Hypothesis:	F-statistic	Chi-square
Row 1	<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
Row 2	<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
Row 3	<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.