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Exports and long-run growth: The case of Spain, 1850–2020

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ABSTRACT

We analyse in this paper the relationship between international trade and economic growth from the point of view of one of the most traditional hypotheses within this field, namely, the export-led growth hypothesis, for the case of Spain in a long-term perspective of 170 years. Exports seem to have played a positive, though modest, role in promoting economic growth in the Spanish economy over the whole period, mostly due to the higher productivity associated with the export sector. The contribution of exports to growth, however, seems to have been stronger in the final years of the 19th century, unlike the rest of the period, where it proved to be negligible.

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Exports; Economic growth; Export-led growth; Spanish economy

1. Introduction

There is a large stream of literature analysing the role of foreign trade and, in general, a higher degree of openness, as a driver of economic growth. For instance, there are a few papers using cointegration analysis and Granger-causality tests between exports and GDP growth, with mixed results; a non-exhaustive list includes Afxentiou and Serletis (1991), Kugler (1991), Marin (1992), Oxley (1993), Thornton (1996), Kónya (2006), Bajo-Rubio and Díaz-Roldán (2012) or Pistoiesi and Rinaldi (2012), among many others. On the other hand, the development of endogenous growth theories has provided this line of research with some more solid theoretical foundations. In particular, more open countries have been assumed to have a greater ability to absorb new ideas or technological advances generated in the rest of the world, resulting in higher rates of growth. Some contributions along these lines include Dollar (1992), Ben-David (1993), Sachs and Warner (1995), Edwards (1998), Frankel and Romer (1999), Irwin and Terviö (2002), Noguer and Siscart (2005), Wacziarg and Welch (2008), Eriş and Ulaşan (2013), Hye, Wizarat, and Lau (2013), Sakyi, Villaverde, and Maza (2015) or Huchet-Bourdon, Le Mouël, and Vijil (2018), among many others. However, from a theoretical point of view, things are not so clear-cut. While it is true that integration would ease the transmission of knowledge across countries and avoid duplicating research, if a country had a comparative disadvantage in research-intensive sectors, higher integration might lead this country to a greater specialisation in low skilled-intensive sectors, resulting eventually in lower growth by deviating resources from research-intensive sectors (Grossman and Helpman, 1991).

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On the other hand, and within the field of economic history, a long-standing debate has developed around the so-called “tariff-growth paradox”. Starting from Bairoch (1972), who found a positive correlation between tariff protection and economic growth for several European countries over the period 1860–1913, some new evidence in the same vein was obtained, e.g., by O’Rourke (2000) or Jacks (2006). However, although robust for the period before the First World War, the basic result does not seem to hold in more recent years, as shown by Vamvakidis (2002) or Clemens and Williamson (2004), being also qualified in some more recent contributions. For instance, protection was found to be associated with higher growth in rich countries, but not in poor countries, which tend to give higher protection to low-skill-intensive sectors; see Tena-Junguito (2010). In turn, Schularick and Solomou (2011) stress the role of the “Long Depression” of the 1870s, which resulted in a rise in protectionism so that, when growth resumed in the 1890s, average tariff levels were higher. Also, according to Lehmann and O’Rourke (2011), industrial tariffs, unlike agricultural tariffs, are those positively correlated with growth.

This broad literature, stemming from both the economic growth tradition and economic history, has been surveyed in Edwards (1992, 1993) or, more recently, in Andersen and Babula (2009) or Singh (2010); and, with a longer term perspective, in Meissner (2014) or Lampe and Sharp (2019).

In last years, though, the unambiguously beneficial character of trade liberalisation has been nuanced. So, in Driskill’s (2012) words, the standard argument in favour of free trade “is incoherent or makes implicit value judgements in as much as the argument simply says free trade is good for the nation because it creates a bigger pie, even though some members of the nation end up with less pie” (Driskill, 2012, p. 3). Certainly, the standard argument admits that some groups may win and some may lose under free trade, although the general principle is still valid as far as the winners can compensate the losers. However, as trade liberalisation advances, redistributive effects get larger and tend to offset the gains from trade, at the same time that governments have lower incentives to compensate those harmed by liberalisation once this is underway (Rodrik, 2018).

In general, the evidence in favour of the hypothesis that lower barriers to international trade result in faster growth is somewhat mixed. Take, for instance, the detailed study of Lampe and Sharp (2013), who related per capita income and protection, measured by the ratio of tariff revenue to imports, for 24 countries over the years 1865–1913 and 1913–2000, using cointegrated VAR models. Cointegration was not found in a substantial number of cases; and, when found, the relationship between the two variables was mostly negative for both periods. However, in the second part of the sample, Granger-causality ran from income to tariffs, i.e., countries had liberalised trade as they got richer. In a similar vein, Federico, Sharp, and Tena-Junguito (2017) have estimated, following the same methodology, cointegration relationships between per capita GDP and openness, measured by the ratio of exports to GDP, for 30 countries over the period 1830–2007. Again, cointegration was obtained in about half of the cases, but now the relationship between the two variables was both positively and negatively signed. Finally, they suggest that a positive relationship between openness and GDP seems more likely for poor countries.

Summing up, the relationship between external openness and economic growth seems to be far from unambiguous, as shown in the influential paper of Rodríguez and Rodrik

(2001), depending on “whether the forces of comparative advantage push the economy’s resources in the direction of activities that generate long-run growth (via externalities in research and development, expanding product variety, upgrading product quality, and so on) or divert them from such activities” (Rodríguez and Rodrik, 2001, p. 269). In other words, the relationship between openness and growth would be rather a contingent one, relying on a number of particular characteristics, both country-specific and external; see Rodríguez and Rodrik (2001). And, among these particular characteristics, the role of institutional quality would be crucial; see Crafts (2004).

In this paper, we will analyse the relationship between international trade and economic growth from the point of view of one of the most traditional hypotheses within this field, namely, the export-led growth hypothesis. In other words, our emphasis will be on the role of exports as drivers of growth, according to the model developed by Feder (1983). On the other hand, given the not always clear-cut nature of the relationship between external openness and growth, both theoretically and empirically, as well as the great heterogeneity of country experiences, it seems that a more promising empirical approach should be focusing on specific countries. This will be our approach in this paper, where we will perform an analysis of the case of Spain in a long-term perspective. In this regard, the Spanish economy can provide a relevant case study, given the steady process of growth she has experienced after the start of industrialisation in the first years of the 19th century. However, being a country with rather poor endowments of natural resources, and traditionally characterised by a relative backwardness as regards her neighbouring countries, the role that the external sector might have played in the long-term evolution of the Spanish economy appears to be of a particular interest. In particular, we will make use of a very long sample of 170 years, thanks to the recent availability of national accounts’ series over the period 1850–2017, updated to 2020, due to Prados de la Escosura (2017).

Notice that most of the available empirical evidence on the effects of exports, and in general foreign trade, on economic growth, limits itself to performing Granger-causality tests, the Spanish case not being an exception (see the next section). In contrast, this paper tries to contribute to the literature by presenting a comprehensive and systematic analysis of the export-led growth hypothesis in the context of a specific model, for a particular country, which means a more suitable approach to the issue, in a long-term perspective of 170 years. In addition, we will conduct several formal tests of structural change in order to check whether the estimated relationship has changed over such a long period. Finally, for the sake of completeness, and since this is the approach followed in most of the available literature on the subject, the analysis will be complemented with some Granger-causality tests.

The rest of the paper is organised as follows: a brief account of the relationship between international trade and growth in the Spanish economy, together with a review of the available literature, is presented in Section 2; the theoretical framework on which the empirical analysis is based, is developed in Section 3; the data and main empirical results are discussed in Section 4; and the main conclusions are summarised in Section 5.

2. International trade and economic growth in Spain, 1850–2020

As mentioned in the introduction, the Spanish economy has shown a continuous and remarkable process of growth since the first steps of industrialisation at the start of the

19th century. This process, however, has experienced ups and downs over the last two centuries so that, though following a rather similar evolution to that of the rest of Western Europe, the GDP per capita of Spain at the end of the 20th century was still around three quarters of Western Europe's, roughly the same as one hundred years before (Prados de la Escosura, 2007). On the whole, Spain fell behind the advanced countries between 1850 and 1950, but this situation reverted over the period 1950–2007, in which the Spanish economy was able to catch up and reduce the gap against the most advanced economies; however, the Great Recession stopped this trend after 2008, although it is still too early to assess whether such a trend is permanent or not (Prados de la Escosura, 2017). In any case, using the data of Prados de la Escosura (2017), over the period 1850–2020 real GDP grew at an average cumulative rate of 2.3% per year; in per capita terms, the average rate of growth was 1.6% per year over the same period. Figure 1 shows the evolution of real GDP per capita in Spain and several other European countries, namely, the United Kingdom, Germany, France, and Italy, over the period 1850–2018, where two vertical lines, one in 1900 and another in 1950, have been added so the information in the figure can be easier to relate to that in Figure 2 (see below).

There has been a long-standing debate among economic historians about the reasons of the relative backwardness of Spain as regards the rest of Western Europe; a broad discussion can be found in, e.g., Tortella (2000) or Carreras and Tafunell (2018). In particular, some authors have analysed in more depth the role of the foreign sector and its relationship to economic growth. The importance of the external sector as a crucial

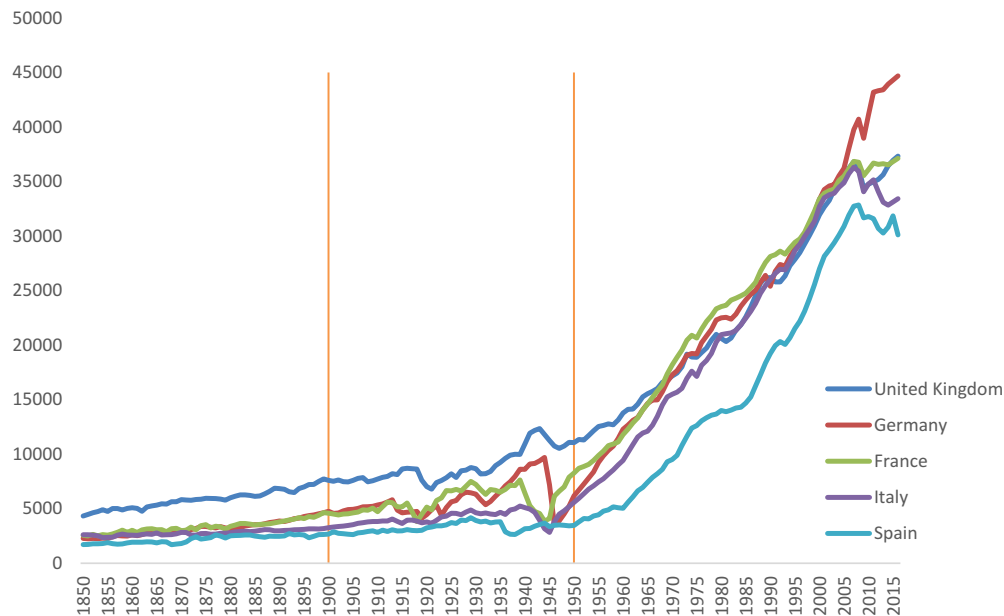
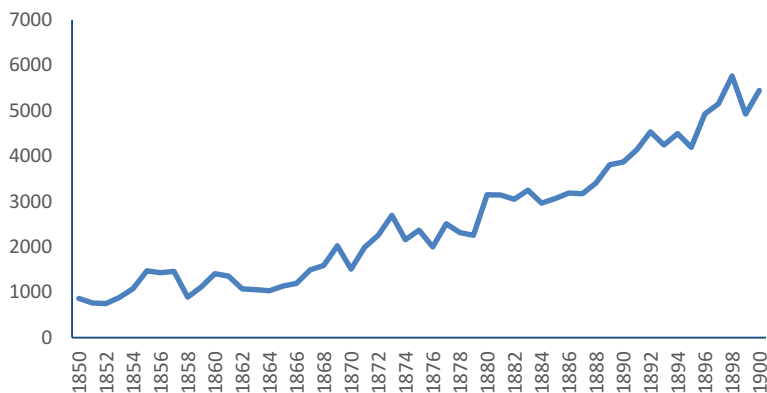
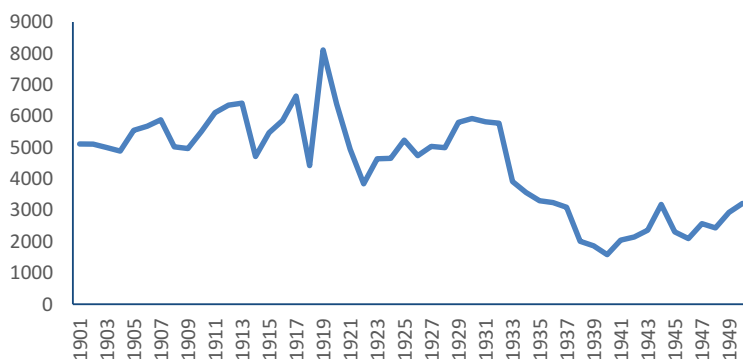
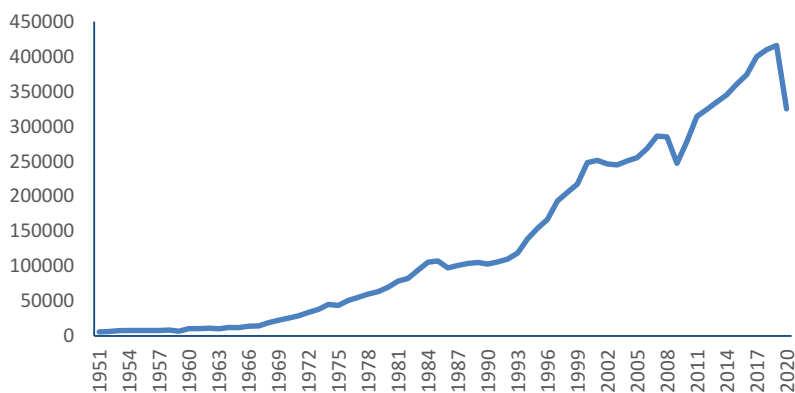


Figure 1. Real GDP per capita: Spain and several European countries, 1850–2018. (2011 US\$, 2011 benchmark)

Source: Maddison Project Database, version 2020 (Bolt and van Zanden, 2020).

a) 1850-1900**b) 1901-1950****c) 1951-2020****Figure 2.** Evolution of Spanish exports, 1850–2020.

(million €, 2010 prices)

Source: Prados de la Escosura (2017).

modernising factor in the evolution of the Spanish economy, despite its small relative size, was emphasised by Prados de la Escosura (1988). Indeed, a pervasive empirical regularity is that the highest growth periods were those characterised by a greater external

openness (as in, e.g., the 1960s, or the years after 1986), unlike those periods where a greater isolation against the rest of the world prevailed (such as the years 1890–1913, or 1930–1950), in which the Spanish economy fell behind in relative terms (Prados de la Escosura, 2007). Focusing on the case of exports, which are the variable of interest in this paper, we provide some descriptive evidence in [Figure 2](#), where we show their evolution over the period 1850–2020, distinguishing three subperiods, namely, 1850–1900, 1901–1950, and 1951–2020. In addition, the cumulative growth rates of both GDP and exports over the whole period and the three subperiods appear in [Table 1](#).

Spain lost most of her colonial empire at the start of the 19th century, so the previous exports to the colonies and re-exports of colonial products to Europe were drastically reduced. Accordingly, Spanish exports had to be redirected to the European markets, which led in turn to a great trade deficit. As a result, Spanish foreign trade grew during the second half of the 19th century faster than in France or Britain, with an improvement in the terms of trade until about 1880 (Tortella, 2000). As shown in [Figure 2](#) and [Table 1](#), Spanish exports followed an upward trend over the second half of the 19th century, even though with some ups and downs, showing an accumulative growth rate almost three times above that of GDP (3.7% versus 1.3%).

This period coincided with an international environment dominated by free trade, following the abolition of the Corn Laws in Britain in 1846, and the Cobden-Chevalier Treaty between Britain and France in 1860, as well as other tariff treaties across Europe and the extension of the most-favoured nation clause. So, even though international trade showed a rising trend over the 19th century and until 1913, the greatest increase in trade and openness occurred in the period before 1870 (Federico and Tena-Junguito, 2017). Things seemed to change in the next years, however, following the inflow of cheap grain from the United States and Russia, and the depression of 1873–1879, the longest and deepest experienced so far. All this led to an increased demand for protection across Europe (Zamagni, 2017).

In the Spanish case, this protectionist policy stance materialised in the 1890s, resulting in the degree of openness, which had increased steadily since 1850, to decrease after 1895. Protectionism tended to prevail in the following years, both in Spain and across the world. Yet, despite the recovering of world trade after the First World War, world trade collapsed after 1929 as a consequence of the Great Depression and the subsequent protectionist policies implemented, such as the Hawley-Smoot Tariff Act in the United States and the ensuing retaliation policies pursued in other countries. Such a trend was reinforced in Spain after the Civil War of 1936–1939, with external openness reaching

Table 1. Cumulative growth rates of GDP and exports: Spain, 1850–2020 (percentage points).

	GDP	Exports
1850–1900	1.34	3.68
1901–1950	1.18	–0.92
1951–2020	3.56	5.97
1850–2020	2.30	3.53

Source: Own elaboration from Prados de la Escosura (2017).

a minimum in the 1940s. In fact, the years following the end of the Spanish Civil War were characterised by the pursuit of “autarky” by the Francoist government, leading to the lowest point in the process of convergence of the Spanish economy towards Western Europe. Looking at [Figure 2](#) and [Table 1](#), we can see the very irregular profile of Spanish exports over the first half of the 20th century, which even experienced a negative rate of cumulative growth.

Next, in the 1950s some gradual measures of liberalisation addressed to the external sector were implemented, in the context of world trade liberalisation and the rise in world trade after the Second World War. These liberalisation measures, however, did not prove to be sustainable over the long run. Specifically, the growth of exports was mostly temporary and fostered by the rise in world demand (in particular due to the Korean War in the first years of the decade), and without a proper response of exports, harmed by decades of protectionism and insufficiently diversified. The reconstruction effect, which was very important for other European countries after the Second World War ([Dumke, 1990](#)), did not seem to work in the Spanish case, showing the importance of institutional factors in order to sustain growth and catching-up ([Crafts, 1992](#)).

Based on this early experience, such a trend towards a greater openness of the economy was strengthened with the launching of the Stabilisation Plan of 1959, and the subsequent trade liberalisation measures adopted during the 1960s and 1970s ([De la Dehesa, Ruiz, and Torres, 1991](#)). Finally, this policy strategy culminated once Spain joined the present-day European Union (EU) in 1986, when the Spanish economy can be considered as having definitely adopted an institutional framework comparable to that of the rest of her new partners ([Bajo-Rubio and Torres, 1992](#)). According to [Figure 2](#) and [Table 1](#), exports experienced a sustained growth after 1960, that was reinforced after the mid-1990s, and even showed a very good performance, despite the large decrease of 2009, over the Great Recession initiated in 2008 (the big fall in 2020 was due to the COVID-19 pandemic). Overall, the cumulative growth rate of exports during the period 1951–2020 was 6%, well above that of GDP, i.e., 3.6%. In addition, this higher growth of exports was accompanied by a change in their composition, now predominantly manufactures and services, unlike mining and agricultural products that prevailed until the 1960s.

Formal empirical evidence on the subject for the Spanish case, on the other hand, is relatively scarce, in particular over the long run. Regarding the specific topic of this paper, i.e., the relationship between exports and growth, notice that all the available literature is based on Granger-causality tests. We can first quote a paper by [Pardos \(2001\)](#), who analysed causality relationships between exports, imports, and national income for the periods 1870–1935, 1940–1959 and 1964–1995, and found Granger-causality from exports to national income just in the second and third subperiods. Similar results, i.e., Granger-causality from exports to national income from 1959 on but not before, was obtained by [Balaguer and Cantavella-Jordá \(2001\)](#) in a study for the period 1901–1999. The role of export composition was examined in [Balaguer and Cantavella-Jordá \(2004\)](#) over the period 1910–2000, obtaining Granger-causality to GDP only after 1961, from exports of food and agricultural products, and from consumption goods; unlike the exports of energy products, capital goods and semi-manufactures, for which no significant relationship was found. Later on, for the period 1900–2012, [Balaguer, Florica, and Ripollés](#)

(2015) again detected Granger-causality from exports (as well as energy imports) to GDP only after 1959.

On the other hand, there is a stream of literature that analyses the possibility that foreign trade, and in general the balance of payments, might act as a constraint on the rate of growth of the economy, on putting a limit on the growth in the level of demand to which supply can adapt. In particular, a higher domestic output, on increasing imports, could lead to an external deficit, which might require either a fall in demand or an exchange rate depreciation in order to assure the sustainability of the deficit. In the Spanish case, since the classical work of Sardà (1948), the traditional vision has been that of a chronic deficit in the trade balance, intensified in higher growth periods. This question was examined in Bajo-Rubio (2012) for the period 1850–2000, through an estimation of the so-called balance of payments-constrained rate of growth (Thirlwall, 1979), obtaining that the external deficit did not seem to have restrained growth over the long run, unless some shorter and specific subperiods, such as 1940–1959 and 1959–1974. On the other hand, when analysing the evolution of the current account during the period before the First World War, Prados de la Escosura (2010) found that economic growth at the end of the 19th century was fostered by the arrival of high amounts of foreign capital inflows, which helped to finance current account deficits and complemented domestic savings; whereas, reversals of these capital inflows in the form of “sudden stops” (i.e., significantly and unexpectedly) after 1891 tended to slow down growth since investment had to rely just on domestic savings. Finally, in Bajo-Rubio and Esteve (2021) no evidence on the possible optimality of the path followed by the current account balance of the Spanish economy over the period 1850–2016 was found, suggesting that, in periods of greater external openness, rather than being used to smooth consumption in the presence of shocks, current account deficits were financed by entries of foreign capital that contributed to foster growth.

3. Theoretical framework

Our theoretical framework will be based on the so-called export-led growth hypothesis, formally derived by Feder (1983) from previous intuitive ideas mostly aimed to empirical purposes. This author developed a model made up of two sectors: one producing export goods, and the other producing for the domestic market. Feder made two crucial assumptions: (i) the exportable sector yields positive externalities on the domestically oriented sector (through the development of more efficient management techniques, the introduction of improved production technologies, the training of more skilled labour, and the like); and (ii) marginal factor productivities are higher in the exportable sector.

The model can be written as follows. Denote by Y , N , and X aggregate output, non-exports, and exports, respectively. We assume that output in both sectors is produced using capital, K , and labour, L :

$$Y = N + X \quad (1)$$

$$N = F(K^N, L^N, X) \quad (2)$$

$$X = G(K^X, L^X) \quad (3)$$

Denoting partial derivatives by subscripts, the first assumption (i.e., the positive externality of exports on non-exports) would be given by $F_X > 0$. On the other hand, the second assumption (i.e., the productivity differential across sectors) would be represented by the following equation:

$$\frac{G_K}{F_K} = \frac{G_L}{F_L} = 1 + \delta \quad (4)$$

where $\delta > 0$ measures the extent of the productivity differential in favour of exports.

Equations (1)-(4) make up the basic model. Differentiating (2) and (3) with respect to time and taking (4) into account, so that:

$$G_K \dot{K}^X + G_L \dot{L}^X = (1 + \delta) (F_K \dot{K}^X + F_L \dot{L}^X) = \dot{X}$$

replacing into the time derivative of (1), dividing by Y and rearranging, we obtain the following expression for the rate of growth of aggregate output:

$$\frac{\dot{Y}}{Y} = \alpha \frac{\dot{I}}{Y} + \beta \frac{\dot{L}}{L} + \left(\frac{\delta}{1 + \delta} + F_X \right) \left(\frac{X \dot{X}}{Y X} \right) \quad (5)$$

where dotted variables denote time derivatives. In this equation, $I \equiv \dot{K} = \dot{K}^N + \dot{K}^X$ and $\dot{L} = \dot{L}^N + \dot{L}^X$, where I , K , and L denote total gross investment, capital, and labour, respectively; and, following Feder, it is assumed that $\alpha = F_K$ and $\beta = F_L(L/Y)$, where both α and β are constants.

Equation (5) represents the basic formulation of the model. Notice that, in the absence of the productivity differential ($\delta = 0$) and of the externality related to exports ($F_X = 0$), the last term disappears and (5) reverts to a standard neoclassical growth equation. It follows from this equation that the rate of growth of output is given by the contributions of factor accumulation (i.e., growth of capital and labour), plus the gains derived from a reallocation of resources into the (high productivity) exportable sector, and out of the (low productivity) domestically oriented sector.

On the other hand, Feder assumes that exports affect the production of non-exports with a constant elasticity θ . Replacing this assumption in equation (2) above we have:

$$N = X^\theta \psi(K^N, L^N) \quad (2')$$

so that, being $F_X = \theta \left(\frac{Y}{X} - 1 \right)$, we can disentangle the productivity and externality effects by estimating the following equation:

$$\frac{\dot{Y}}{Y} = \alpha \frac{\dot{I}}{Y} + \beta \frac{\dot{L}}{L} + \left(\frac{\delta}{1 + \delta} - \theta \right) \left(\frac{X \dot{X}}{Y X} \right) + \theta \frac{\dot{X}}{X} \quad (5')$$

The traditional export-led growth model has been restated in terms of the theory of endogenous growth by Ahumada and Sanguinetti (1995). In a model for an open economy with three sectors: exportable, importable, and non-tradable, the authors found that exports can be an “engine” of economic growth. Specifically, the exportable sector sustains the continuing increase in per capita output by means of two channels: (i) the exportable sector yields positive externalities on the rest of the economy (as in Feder); and (ii) both human and physical capital in the exportable sector are not subject to diminishing returns.

Feder's approach has been subject to some criticisms, yet. Bacha (1984) questions the existence of a linear relationship between export ratios and GDP Table 1 growth rates since, he argues, for very high export ratios domestic investment will be crowded out by additional exports and hence a lower output growth rate will result, due to the internal savings constraint; see also Ocampo (1986) for a similar claim. Following this line of reasoning, Kohli and Singh (1989) introduce in Feder's model the notion of "diminishing returns" with respect to the impact of the export sector, by allowing for a quadratic term in equation (5) above:

$$\frac{\dot{Y}}{Y} = \alpha \frac{I}{Y} + \beta \frac{\dot{L}}{L} + \left(\frac{\delta}{1 + \delta} + F_X \right) \left(\frac{X \dot{X}}{Y \dot{Y}} \right) + \mu \left(\frac{X \dot{X}}{Y \dot{Y}} \right)^2 \quad (5'')$$

with $\mu < 0$. Accordingly, this specification implies diminishing returns to the effects of exports on GDP growth, since $\frac{\partial^2(\dot{Y}/Y)}{\partial(X/Y)^2} = 2\mu \left(\frac{\dot{X}}{X} \right)^2 < 0$ and $\frac{\partial^2(\dot{Y}/Y)}{\partial(\dot{X}/X)^2} = 2\mu \left(\frac{X}{Y} \right)^2 < 0$.

Finally, we will also mention the influential contribution of Jung and Marshall (1985), who raise the possibility that the causality between exports and growth might run the other way round, i.e., from output to exports. Take the case of a growing economy, where growth is mostly concentrated in a few sectors. Then, if domestic demand does not grow as much as the production of these dynamic sectors, producers are likely to turn to foreign markets to sell their goods. Therefore, in this case, causality would run from output to exports.

In the next section, we will provide some tests of the export-led growth hypothesis for the case of Spain over the period 1850–2020, by estimating Feder's equation as well as Kohli and Singh's formulation. In addition, we will also perform Granger-causality tests to address Jung and Marshall's criticism.

4. Data and empirical results

As mentioned before, our data source is the set of historical national accounts of Prados de la Escosura (2017), covering the period 1850–2020. In particular, we have used the data on GDP (Y), exports (X) and gross fixed capital formation (I), in million €, from Table 1; whereas the amount of labour (L) has been proxied alternatively by employment (full-time equivalent) and hours worked, both measured in million, from Table 18 and Table 22, respectively. In turn, the variables Y and X were converted into real terms, in order to compute their rates of growth, using the deflator of GDP (2010 = 100), taken from Table 7. All these tables refer to the Electronic Appendix of Prados de la Escosura (2017), which can be accessed at <http://espacioinvestiga.org/bbdd-chne/?lang=en>.

To begin with, we have tested for the order of integration of the variables appearing in the model, by means of the tests proposed by Ng and Perron (2001). These tests are a modified version of the Phillips-Perron tests, designed to improve them with regard to both size distortions and power. The results are shown in Table 2, where $L1$ and $L2$ denote employment and hours worked, respectively. As can be seen, the null hypothesis

Table 2. Ng-Perron tests for unit roots.

	MZ_{α}	MZ_t	MSB	MP_T
\dot{Y}	−81.04 ^a	−6.365 ^a	0.079 ^a	0.302 ^a
$\frac{I}{Y}$	−21.96 ^b	−3.283 ^b	0.149 ^b	4.341 ^b
$\frac{L1}{L1}$	−60.83 ^a	−5.490 ^a	0.090 ^a	0.462 ^a
$\frac{L2}{L2}$	−44.27 ^a	−4.693 ^a	0.106 ^a	0.586 ^a
$\left(\frac{X}{Y} \frac{\dot{X}}{\dot{Y}}\right)$	−82.41 ^a	−6.415 ^a	0.078 ^a	1.122 ^a
$\frac{\dot{X}}{\dot{X}}$	−10.48 ^b	−2.279 ^b	0.217 ^b	2.379 ^b

Note: ^a and ^b denote significance at the 1% and 5% levels, respectively. The critical values are taken from Ng and Perron (2001, Table I).

Table 3. Estimation of growth equations, 1850–2020
(dependent variable: \dot{Y}/Y).

	Eq. (5)		Eq. (5')		Eq. (5'')	
constant	0.367 (0.496)	0.381 (0.520)	0.180 (0.246)	0.191 (0.263)	0.495 (0.650)	0.513 (0.680)
$\frac{I}{Y}$	0.101 ^b (2.092)	0.117 ^b (2.282)	0.123 ^a (2.716)	0.139 ^a (2.871)	0.091 ^c (1.847)	0.105 ^b (2.029)
$\left(\frac{I}{L}\right)$	0.633 ^a (3.770)	0.492 ^a (2.999)	0.634 ^a (4.002)	0.500 ^a (3.251)	0.619 ^a (3.671)	0.482 ^a (2.997)
$\left(\frac{X}{Y} \frac{\dot{X}}{\dot{Y}}\right)$	0.004 (1.527)	0.004 (1.498)	−0.007 ^b (−2.427)	−0.007 ^b (−2.450)	0.007 ^b (1.986)	0.007 ^b (2.013)
$\frac{\dot{X}}{\dot{X}}$	-	-	0.124 ^a (3.540)	0.125 ^a (3.667)	-	-
$\left(\frac{X}{Y} \frac{\dot{X}}{\dot{Y}}\right)^2$	-	-	-	-	−5.34·10 ^{−6c} (−1.855)	−5.54·10 ^{−6c} (−1.917)
R ²	0.111	0.100	0.159	0.149	0.120	0.110
σ	4.553	4.580	4.443	4.468	4.544	4.569
B-G(1)	1.746	1.898	0.985	1.021	2.268	2.472
B-G(4)	2.129	2.106	3.118	2.355	2.823	2.777
B-P	4.946	4.671	5.521	5.315	5.040	4.801
ARCH(1)	0.741	0.792	0.855	0.904	0.588	0.644
ARCH(4)	3.882	3.059	5.368	4.530	3.428	2.706
RESET(1)	1.604	2.919 ^c	0.529	0.263	0.303	0.878

Note: *t*-statistics in parentheses; ^a, ^b and ^c denote significance at the 1%, 5% and 10% levels, respectively.

of a unit root is rejected for all the variables, so they will be taken as stationary (in the case of $\frac{I}{Y}$ around a linear trend).¹

We present in Table 3 the results of the estimations of equations (5), (5') and (5'') above, for the two alternative proxies of the labour force, namely, employment and hours worked, shown in every first and second column for each equation, respectively. Since all the variables appearing in the equations are stationary, the estimation method is OLS, using the correction of standard errors for heteroscedasticity and autocorrelation proposed by Newey and West (1987). In addition, we include in the table, together with the coefficient of determination and the standard error of the regression, several diagnostic tests: for serial correlation (the Breusch-Godfrey LM test, B-G, of 1st and 4th order), heteroscedasticity

¹Notice that, when computing the unit root tests, as well as in the estimations below, the observations for 2020 have been dropped. Since this is an absolutely atypical year due to the COVID-19 pandemic, including them distorted considerably the results.

(the Breusch-Pagan LM test, B-P), autoregressive conditional heteroscedasticity (the Engle test, ARCH, of 1st and 4th order), and model specification (the Ramsey test, RESET, for 1 fitted term), none of which show any sign of misspecification, so validating the estimated model.

Notice, first, that the results for the two proxies of the labour force are very similar. Beginning with the estimation of equation (5), both the ratio of investment to output and the rate of growth of labour appear with positive coefficients, significant at the conventional levels; however, the coefficient on the multiplicative variable $\left(\frac{\dot{X}}{Y} \frac{\dot{X}}{X}\right)$, although positive, is only significant at the 13% level in both cases. When the rate of growth of exports is added as an additional regressor in equation (5'), the coefficient on the latter is positive and significant, while the coefficient on the multiplicative variable, although now more clearly significant, turns to be negative, but with a very small value. Finally, if the original equation is augmented to include the squared value of the multiplicative variable in equation (5''), its estimated coefficient is negative and significant, so supporting Kohli and Singh's (1989) hypothesis of "diminishing returns" of exports on growth.

In the next step, we compute the contributions of investment, labour growth and exports, to output growth over the period 1850–2020. Such contributions, shown in Table 4, have been obtained from the coefficient estimates of equation (5') in Table 3 and the mean values of the explanatory variables. In particular, the contributions of investment and the growth of the labour force are given by $\alpha \frac{I}{Y}$ and $\beta \left(\frac{\dot{L}}{L}\right)$, respectively; whereas, following Feder (1983), the contribution of exports is split into two parts, namely, those due to (i) the beneficial externalities affecting the non-export sector, and (ii) other factors leading to a higher productivity in the export sector, given by $\theta \left(1 - \frac{\dot{X}}{Y}\right) \frac{\dot{X}}{X}$ and $\left(\frac{\delta}{1+\delta}\right) \left(\frac{\dot{X}}{Y} \frac{\dot{X}}{X}\right)$, respectively.

As can be seen, our estimated equations explain between 2.33 and 2.29 points, i.e., around 90% of the actual average 2.56% of GDP growth over our sample period. The most important source of growth would be capital investment followed by labour force growth, which explain 1.70 and 0.48 points of the average GDP growth (i.e., 66 and 19% of total) when labour is measured by employment; and 1.91 and 0.22 points of the average GDP growth (i.e., 75 and 9% of total) when labour is measured by hours worked. In turn, exports would explain in both cases around 0.16 points of the actual average GDP growth of 2.56% (i.e., 6% of total). This positive, albeit small, contribution of

Table 4. Contributions to economic growth, 1850–2020 (percentage points).

Variable	with employment	with hours worked
Investment	1.695	1.911
Labour growth	0.475	0.223
Exports	0.162	0.157
Externalities	–7.560	–7.635
Higher productivity	7.721	7.792
Total	2.332	2.291
GDP growth	2.556	2.556

Source: Own elaboration from Table 3 and Prados de la Escosura (2017).

exports would be the result of a positive effect due to the higher productivity in the export sector, and a negative (rather than positive, as assumed by the model) effect from externalities on the non-export sector. Such negative externalities could be explained from the fact that the development of the export sector might have resulted in a diversion of resources from the non-export sector, leading to lower growth.

However, since we are dealing with a very long time period (i.e., 170 years), an analysis of the overall evolution over the long run might hide a differentiated behaviour across subperiods. To this end, we have performed a formal test of structural change to the equations estimated in Table 3. In particular, we have applied the tests of Bai and Perron (1998, 2003a), who proposed a sequential procedure method to detect endogenously multiple unknown breaks, as well as several test statistics in order to identify the possible break points, namely:

- (i) the UD_{\max} and WD_{\max} tests of the null hypothesis of no structural break versus the alternative of an unknown number of breaks given some upper bound,
- (ii) an F -type test of the null hypothesis of no structural break versus the alternative of a fixed (arbitrary) number of breaks, and
- (iii) a sequential F -type test of the null hypothesis of l breaks versus the alternative of $l + 1$ breaks.

When implementing these tests, we have allowed up to three breaks with a trimming percentage of 20%, so that each regime is restricted to have at least 33 observations; and let error distributions to differ across regimes.

The results of the Bai and Perron tests appear in Table 5, where we show the UD_{\max} and WD_{\max} tests, and the F statistics scaled by the number of varying regressors (all of them, in our case) for the other tests. Since the UD_{\max} and WD_{\max} tests are significant, at least one break is present. The scaled $F(1)$, $F(2)$ and $F(3)$ tests are also significant at the 5% level, which means that there is at least one break. Finally, when labour is measured using employment figures, and for equation (5') when measured using hours worked, the scaled $F(1|0)$ test is significant but $F(2|1)$ is not, so the sequential procedure method selects one break, estimated at 1896. In turn, for equations (5) and (5'') when labour is measured using hours worked, both the scaled $F(1|0)$ and $F(2|1)$ tests are significant unlike $F(3|2)$, so in these cases two breaks would be detected, estimated at 1896 and 1981.

Table 5. Bai-Perron tests for structural change.

Tests	Eq. (5)		Eq. (5')		Eq. (5'')	
UD_{\max}	38.04	49.76	42.64	58.00	40.10	58.21
WD_{\max}	55.29	72.34	42.64	82.27	56.89	82.57
scaled $F(1)$	19.60	19.19	42.64	40.50	38.12	46.41
scaled $F(2)$	12.43	29.95	23.31	30.35	20.25	43.15
scaled $F(3)$	38.04	49.76	28.68	58.00	40.10	58.21
scaled $F(1 0)$	19.60	19.19	42.64	40.50	38.12	46.41
scaled $F(2 1)$	4.139*	39.86	3.606*	16.42*	4.211*	24.63
scaled $F(3 2)$	-	5.387*	-	-	-	4.612*
Number of breaks selected	1	2	1	1	1	2

Note: All the test statistics are significant at the 5% level, except those denoted with *. The critical values are taken from Bai and Perron (2003b).

Table 6. Estimation of growth equations, 1850–1895 and 1896–2020
(dependent variable: $\frac{\dot{Y}}{Y}$).

	Eq. (5)		Eq. (5')		Eq. (5'')	
(A) 1850–1895						
constant	−2.165 (−0.934)	−2.219 (−0.991)	−2.010 (−0.905)	−2.237 (−1.035)	−2.345 (−1.043)	−2.417 (−1.118)
$\frac{I}{Y}$	0.360 (0.896)	0.421 (1.335)	0.245 (0.629)	0.398 (1.329)	0.314 (0.844)	0.395 (1.363)
$\left(\frac{\dot{I}}{I}\right)$	1.165 (0.676)	0.555 (0.707)	1.862 (1.126)	0.414 (0.534)	1.445 (0.922)	0.646 (0.837)
$\left(\frac{X \dot{X}}{Y \dot{Y}}\right)$	0.026 ^a (4.510)	0.025 ^a (4.709)	0.065 ^a (5.098)	0.059 ^a (5.007)	0.020 ^c (1.914)	0.019 ^c (2.001)
$\frac{\dot{X}}{X}$	− (−3.659)	− (−3.659)	−0.259 ^a (−3.659)	−0.221 ^a (−3.290)	− (−3.290)	− (−3.290)
$\left(\frac{X \dot{X}}{Y \dot{Y}}\right)^2$	−	−	−	−	4.71·10 ^{−5} (1.154)	4.57·10 ^{−5} (1.153)
R ²	0.284	0.285	0.337	0.325	0.305	0.304
σ	4.469	4.467	4.354	4.395	4.459	4.461
B-G(1)	1.113	0.957	1.389	1.438	0.963	0.799
B-G(4)	5.276	4.464	6.452	5.367	5.760	4.742
B-P	3.458	2.199	3.549	2.455	3.974	2.717
ARCH(1)	0.005	0.000	0.005	0.017	0.020	0.001
ARCH(4)	8.485 ^c	8.501 ^c	9.049 ^c	9.239 ^c	8.449 ^c	8.325 ^c
RESET (1)	0.507	0.415	0.022	0.056	2.132	2.411
(B) 1896–2020						
constant	0.257 (0.215)	0.315 (0.267)	0.307 (0.276)	0.365 (0.332)	0.383 (0.317)	0.464 (0.388)
$\frac{I}{Y}$	0.120 ^c (1.972)	0.134 ^b (2.112)	0.125 ^b (2.171)	0.138 ^b (2.309)	0.112 ^c (1.780)	0.123 ^c (1.879)
$\frac{\dot{I}}{I}$	0.611 ^a (3.628)	0.447 ^a (2.781)	0.619 ^a (3.810)	0.464 ^a (2.972)	0.605 ^a (3.599)	0.445 ^a (2.803)
$\left(\frac{X \dot{X}}{Y \dot{Y}}\right)$	0.001 (0.704)	0.001 (0.683)	−0.008 ^a (−2.788)	−0.008 ^a (−2.787)	0.003 (0.843)	0.003 (0.884)
$\frac{\dot{X}}{X}$	− (−3.007)	− (−3.007)	0.113 ^a (3.007)	0.115 ^a (3.103)	− (−3.103)	− (−3.103)
$\left(\frac{X \dot{X}}{Y \dot{Y}}\right)^2$	−	−	−	−	−2.09·10 ^{−6} (−0.829)	−2.49·10 ^{−6} (−0.910)
R ²	0.109	0.088	0.152	0.133	0.111	0.091
σ	4.425	4.477	4.335	4.385	4.439	4.489
B-G(1)	1.874	2.110	0.733	0.840	1.993	2.274
B-G(4)	2.901	3.298	1.682	1.476	3.006	3.430
B-P	4.822	4.721	5.305	5.225	5.041	4.906
ARCH(1)	0.621	0.763	0.767	0.897	0.618	0.759
ARCH(4)	2.962	2.350	3.282	2.665	2.789	2.202
RESET(1)	0.511	0.649	0.418	0.168	0.370	0.524

Note: See Table 3

The break in 1896 can be justified in the context of the rising trend in protectionism that occurred in the final years of the 19th century, both in Spain and in most European countries. In particular, in the case of Spain a new and extremely protectionist tariff was approved in December 1891, which largely favoured the industrial sector; see Tena-Junguito (2006). Indeed, such a rise in protection fell within a “nationalistic” policy stance implemented by the Spanish authorities in that time, addressed to preserve domestic markets to domestic producers through the intervention of the government in support of particular pressure groups. In turn, the break in 1981 seems to be somewhat more difficult to identify, although it can be related to the weak economic performance of

Table 7. Contributions to economic growth, 1850–1895 and 1896–2020 (percentage points).

Variable	with employment	with hours worked
(A) 1850–1895		
Investment	1.459	2.372
Labour growth	0.727	0.138
Exports	1.244	1.194
Externalities	8.754	7.464
Higher productivity	–7.510	–6.271
Total	3.430	3.705
GDP growth	1.483	1.483
(B) 1896–2020		
Investment	2.067	2.291
Labour growth	0.526	0.203
Exports	–0.026	–0.027
Externalities	–8.018	–8.147
Higher productivity	7.992	8.120
Total	2.567	2.467
GDP growth	3.220	3.220

Source: Own elaboration from Table 6 and Prados de la Escosura (2017).

the Spanish economy over the first 1980s, following the second oil shock. For that reason, and since we are particularly interested in equation (5'), which allows us to compute the contributions to output growth from the different explanatory variables, we will re-estimate the model both before and after 1896.

Accordingly, we have re-estimated equations (5), (5') and (5'') for the two subperiods 1850–1895 and 1896–2020. As can be seen in Table 6, for the first subperiod the only significant coefficients are those on the multiplicative variable $\left(\frac{\bar{X}}{\bar{Y}} \frac{\bar{X}}{\bar{X}}\right)$ and on the rate of growth of exports in equation (5'), even though with the opposite sign as compared to the whole period. In turn, the results for the second subperiod are rather similar to those for the whole period, especially for equation (5'). Again, the diagnostic tests do not show any sign of misspecification in the estimated equations.

Next, we proceed to compute the contributions to output growth from the explanatory variables using the coefficient estimates of equation (5') for the two subperiods, as shown in Table 7. The results for 1850–1895 should be taken with high doses of scepticism, since the coefficients on investment and labour growth are not statistically significant: equation (5') would explain more than twice the actual output growth, with a more important role of exports than for the whole period, i.e., around 1.2 points of the actual average 1.48% of GDP growth over the subperiod (i.e., around 80% of total); even though the sign of the two channels would be now reverted, i.e., negative for productivity and positive for externalities. This latter effect can be justified if we recall that the Spanish exports during this subperiod came basically from agriculture, a sector with lower productivity levels, so the surpluses from agricultural exports could have been invested into manufacturing, a more productive sector that had hardly exported until then.

Finally, equation (5') would explain between 80 and 77% of the average output growth over the subperiod 1896–2020 (i.e., 2.57 and 2.47 points in each specification, of the actual average 3.22%), with all the estimated coefficients being statistically significant in Table 6. As in the whole period, the highest contribution is that of investment, followed by labour

growth: 2.07 and 0.53, and 2.29 and 0.20 points, of the actual average GDP growth of 3.22%, when labour is measured by employment and hours worked, respectively, i.e., slightly less in percentual terms than for the whole period. However, the contribution of exports is now virtually zero, and even negative: -0.03 points of the actual average GDP growth of 3.22% (i.e., -0.8% of total); again, the signs of the externalities and productivity channels are negative and positive, respectively, with the latter slightly lower than the former.

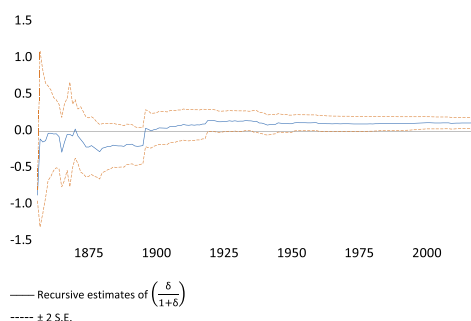
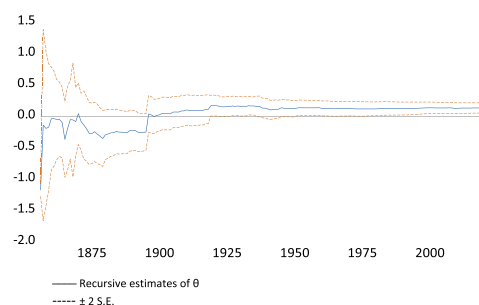
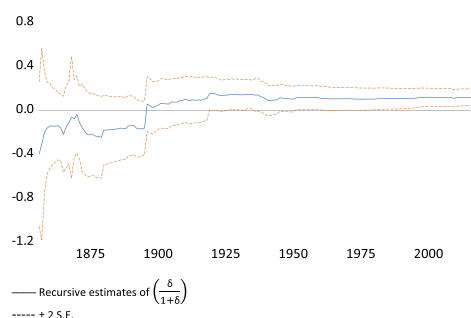
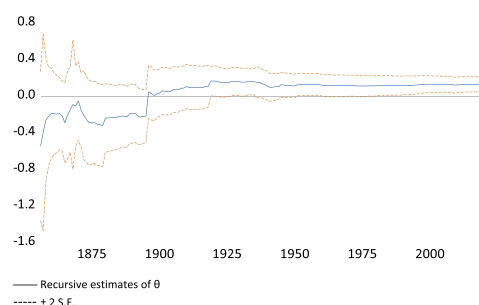
If we relate the econometric results to the descriptive evidence presented in [Section 2](#) (see [Figure 2](#) and [Table 1](#)), we can observe how Spanish exports showed a sustained growth over the second half of the 19th century, with an accumulative growth rate 2.75 times above that of GDP. However, the evolution of exports was quite irregular throughout the 20th century. So, during the first half of the century (a period characterised by the limited insertion of the Spanish economy into the international economy, which culminated with the Francoist autarky) exports were roughly stagnant, even experiencing on the whole a negative accumulative growth rate. In turn, since 1951 the growth of exports was highly remarkable (especially following the Spanish accession to the EU in 1986), although, as compared with the second half of the 19th century, its accumulative growth rate was only 1.7 times above that of GDP.

The above results can be confirmed from a different angle, by computing the recursive estimates of the coefficients on the effect of exports through externalities and productivity, i.e., θ and $\left(\frac{\delta}{1+\delta}\right)$, respectively, from the estimation of equation (5'). Recall that equation (5') can be rewritten as:

$$\frac{\dot{Y}}{Y} = \alpha \frac{I}{Y} + \beta \frac{\dot{L}}{L} + \left(\frac{\delta}{1+\delta}\right) \left(\frac{X \dot{X}}{Y X}\right) + \theta \left(1 - \frac{X}{Y}\right) \frac{\dot{X}}{X}$$

The results, together with ± 2 standard errors, are shown in [Figure 3](#), and display a similar pattern for both coefficients, independently of the proxy used for the labour force. They start from negative values, and show an uneven profile, until the final years of the 19th century; to turn positive at a very low level, and mostly stable over the rest of the sample. This would agree with the results of the Bai-Perron test for structural change, supporting the different role played by exports in the two parts of the sample.

To conclude, and for the sake of completeness, we have performed Granger-causality tests (Granger, 1969) on the variables growth of GDP and growth of exports, following the suggestion of Jung and Marshall (1985). Although our main interest in this paper is on the econometric estimations, we also present the results of Granger-causality tests, since this is the strategy followed in most of the empirical literature on the case of Spain (see [Section 2](#)). Up to ten lags of the two variables were tried, and the best results were obtained with four lags. According to the results in Part A of [Table 8](#), it is possible to reject the null hypothesis of no Granger-causality from export growth to GDP growth for the whole period at the 9% level, but not the other way round. Such result would roughly agree with that found in the econometric estimation of the model (see [Tables 3 and 4](#)), of a positive but weak effect of export growth on GDP growth. In turn, when performing the tests over the two subperiods 1850–1895 and 1896–2020, the null hypothesis of no Granger-causality from export growth to GDP growth is only rejected in the second

a) With employment**b) With hours worked****Figure 3.** Recursive estimates of the coefficients on the effect of exports.

subperiod, at the 4% level.² On the other hand, no evidence of Granger-causality from GDP growth to export growth was found in any case. Finally, we have also analysed the possible Granger-causality between, on the one hand, GDP growth, and, on the other hand, the two components of export growth, namely, $\left(1 - \frac{X}{Y}\right) \frac{X}{X}$ and $\left(\frac{X}{Y} \frac{X}{X}\right)$, which proxy the externalities and productivity channels, respectively. As can be seen in Parts B and C of Table 8, now the null of no Granger-causality was not rejected in all cases.

Summarising, according to our results, the long-run growth of the Spanish economy between 1850 and 2020 was mostly driven by physical capital accumulation and, to a lower extent, labour force growth, with a small contribution from exports (seemingly greater in the first years of the period analysed, and mostly negligible afterwards). Although they are not strictly comparable with ours, it is worthwhile to mention here the results of Prados de la Escosura and Rosés (2009). These authors decomposed the long-run growth of the Spanish economy between 1850 and 2000 into the contributions of factor accumulation and total factor productivity, the latter measured as the difference between the growth rate of output and a weighted average of the growth rates of the productive factors. They found that between 1850 and 1950 growth was dominated by factor accumulation, mostly physical capital and, to a lower

²We have also performed Granger-causality tests between $\frac{X}{X}$ and both $\frac{I}{L}$ and $\frac{I}{Y}$. While no evidence of Granger-causality was found in the first case, in the second case the null that $\frac{X}{X}$ does not Granger-cause $\frac{I}{Y}$ is clearly rejected both for the whole period and the two subperiods (results available from the author upon request). This would suggest an indirect effect of exports on output, via investment. In any case, recall that the concept of Granger-causality refers to causality in statistical, rather than economic, terms.

Table 8. Granger-causality tests.

Null hypothesis	1850–2020		1850–1895		1896–2020	
	F-statistic	Probability	F-statistic	Probability	F-statistic	Probability
(A) Between $\frac{\dot{Y}}{Y}$ and $\frac{\dot{X}}{X}$						
$\frac{\dot{X}}{X}$ does not Granger-cause $\frac{\dot{Y}}{Y}$	2.083	0.086	0.928	0.460	2.606	0.039
$\frac{\dot{Y}}{Y}$ does not Granger-cause $\frac{\dot{X}}{X}$	0.755	0.556	0.823	0.520	1.409	0.235
(B) Between $\frac{\dot{Y}}{Y}$ and $(1 - \frac{X}{Y})\frac{\dot{X}}{X}$						
$(1 - \frac{X}{Y})\frac{\dot{X}}{X}$ does not Granger-cause $\frac{\dot{Y}}{Y}$	1.664	0.161	1.442	0.243	1.539	0.195
$\frac{\dot{Y}}{Y}$ does not Granger-cause $(1 - \frac{X}{Y})\frac{\dot{X}}{X}$	0.509	0.729	1.030	0.407	0.694	0.597
(C) Between $\frac{\dot{Y}}{Y}$ and $(\frac{X\dot{X}}{Y\dot{Y}})$						
$(\frac{X\dot{X}}{Y\dot{Y}})$ does not Granger-cause $\frac{\dot{Y}}{Y}$	1.774	0.137	1.343	0.276	1.663	0.163
$\frac{\dot{Y}}{Y}$ does not Granger-cause $(\frac{X\dot{X}}{Y\dot{Y}})$	0.440	0.779	1.012	0.416	0.664	0.618

extent, labour, whereas total factor productivity was the leading force thereafter. However, employment creation and physical capital accumulation turned again to be the main drivers of growth after the Spanish integration into the EU in 1986. In a further contribution, Prados de la Escosura and Rosés (2021) have updated their previous results for the period 1850–2019 with a greater emphasis on the evolution of labour productivity, measured as output per hour worked. Again, the increase in labour productivity over the period was mostly due to capital deepening, whereas after 1986 the increase in hours worked by person became the main explanation. Accordingly, factor accumulation, and in particular physical capital, seems to have been the main growth driver in the Spanish economy, both over the long run and in specific periods.

5. Conclusions

The expansion of foreign trade, on enlarging the size of domestic markets, was an important encouraging element for the spread of industrialisation during the 19th century. Indeed, improvements in transportation, which facilitated the use of modern technologies, were crucial for this expansion of the market, both domestic and international (Kenwood and Lougheed, 1999). The Spanish economy was not an exception to this worldwide trend; the question, then, would be: did this increase in external openness result in higher growth rates?

In this paper, we have analysed, in a comprehensive and systematic way, the relationship between international trade and economic growth from the point of view of one of the most traditional hypotheses within this field, namely, the export-led growth hypothesis, for the case of Spain over the period 1850–2020. Given the not always clear-cut nature of the relationship between external openness and growth and the great heterogeneity of country experiences (see, e.g., Rodríguez and Rodrik, 2001), focusing on particular case studies for specific countries seems to be a more promising approach. More specifically, our empirical framework follows the well-known model of Feder (1983); a model that can be reformulated in terms of the theory of endogenous growth as shown by Ahumada and Sanguinetti (1995).

First, we estimated growth equations including the role of exports as an additional explanatory variable, together with capital investment and labour growth. The estimated equations explained almost 90% of the actual average GDP growth over our sample

period. The most important source of growth was capital investment followed by labour force growth, whereas exports had a positive though small contribution, amounting to 6% of the total average GDP growth. This positive, albeit small, contribution of exports was the result of a positive effect due to the higher productivity in the export sector, and a negative effect from externalities on the non-export sector. In addition, some evidence of diminishing returns of the impact of exports on growth was also found.

Next, and given the length of the sample period, we performed a formal test of structural change on the previously estimated equations, in order to check whether the results were homogeneous over the whole sample. After detecting a break at the year 1896, which could be justified in the context of the rise in protectionism and economic nationalism taking place in the final years of the 19th century, we re-estimated our growth equations for the two subperiods 1850–1895 and 1896–2020. The estimation results for the subperiod 1850–1895 were not good, with the coefficients on investment and labour growth being not statistically significant; with all these caveats in mind, the contribution of exports proved to be higher than for the whole period: around 80% of the actual average GDP growth over the subperiod. In turn, the results for the subperiod 1896–2020 were rather similar to those for the whole period, even though the contribution of exports was now negligible, and even negative: around -0.8% of the actual average GDP growth over the subperiod. Such results match the evolution shown in [Section 2](#), with a sustained growth of exports, quite above that of GDP, over the second half of the 19th century; and a quite irregular evolution throughout the 20th century, with roughly stagnant exports in the first half of the century (a period that culminated in the Francoist autarky), and a spectacular growth of exports since 1951 (especially after the accession to the EU in 1986). In addition, this pattern of results was confirmed by computing the recursive estimates of the coefficients on the effect of exports through externalities and productivity, showing the different role played by exports in the two parts of the sample. Finally, some evidence of Granger-causality was found only from export growth to GDP growth, both for the whole period and the subperiod 1896–2020.

Summarising, exports seem to have played a positive, though modest, role in promoting economic growth in the Spanish economy over the period 1850–2020, mostly due to the higher productivity associated with the export sector. The contribution of exports to growth, however, seems to have been stronger in the final years of the 19th century, unlike the rest of the period, where it proved to be very small. These results would suggest that the role of exports should be more important in the first stages of capitalist development, but not so much when the latter is underway. Notice that this hypothesis would be also supported by the evidence found on diminishing returns of the impact of exports on growth. In the particular case of Spain, Ayuda and Pinilla (2021) emphasise in a recent paper the great dynamism of agricultural exports (by then, the most important component of total exports) during the first wave of globalisation (basically, the second half of the 19th century), and their positive, though moderate, contribution to economic growth. Overall, the results of this paper would agree with the claim of Prados de la Escosura and Sánchez-Alonso (2020, p. 15) that “trade emerges not as the hegemonic element in the country’s economic modernization, but rather as a small but indispensable stimulus of development”.

To conclude, notice that we have focused in this paper just on the direct role of international trade, and more specifically exports, on economic growth. However,

international trade, by allowing essential imports such as energy, raw materials, intermediate products, and equipment goods, has had an important role in the growth of the Spanish economy; while the ensuing trade deficit, despite the steady growth of exports, did not seem to have restrained growth over the long run, other than in some specific periods (Bajo-Rubio, 2012). In addition, in those periods characterised by a greater external openness and current account deficits, the latter were financed by inflows of foreign capital that meant a significant contribution to higher growth, on complementing domestic savings and allowing for the essential imports of capital goods and raw materials above the amount allowed by export revenues; see Prados de la Escosura (2010, 2020) and Bajo-Rubio and Esteve (2021).

Hence, while the direct effect of exports on economic growth (and so the notion of “export-led growth”) seems to be rather weak, at least in the Spanish case, preserving a reasonable degree of external openness is something beneficial for the development of a country. This should not mean, however, overlooking the serious distributive problems raised by an ever-increasing trade liberalisation, which underlie the recent backlash against the current process of globalisation and the subsequent rise of populism (Bajo-Rubio and Yan, 2019). While resorting to protectionism certainly means a step backwards, protecting people and regions from the risks associated with globalisation should be a priority (O’Rourke, 2019).

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