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Dpto. de Historia Económica e Instituciones
Universidad Carlos III de Madrid
Calle Madrid, 126
28903 Getafe (Spain)
Fax (341) 624-98-75

THE SPANISH 1898 DISASTER: THE DRIFT TOWARDS NATIONAL- PROTECTIONISM

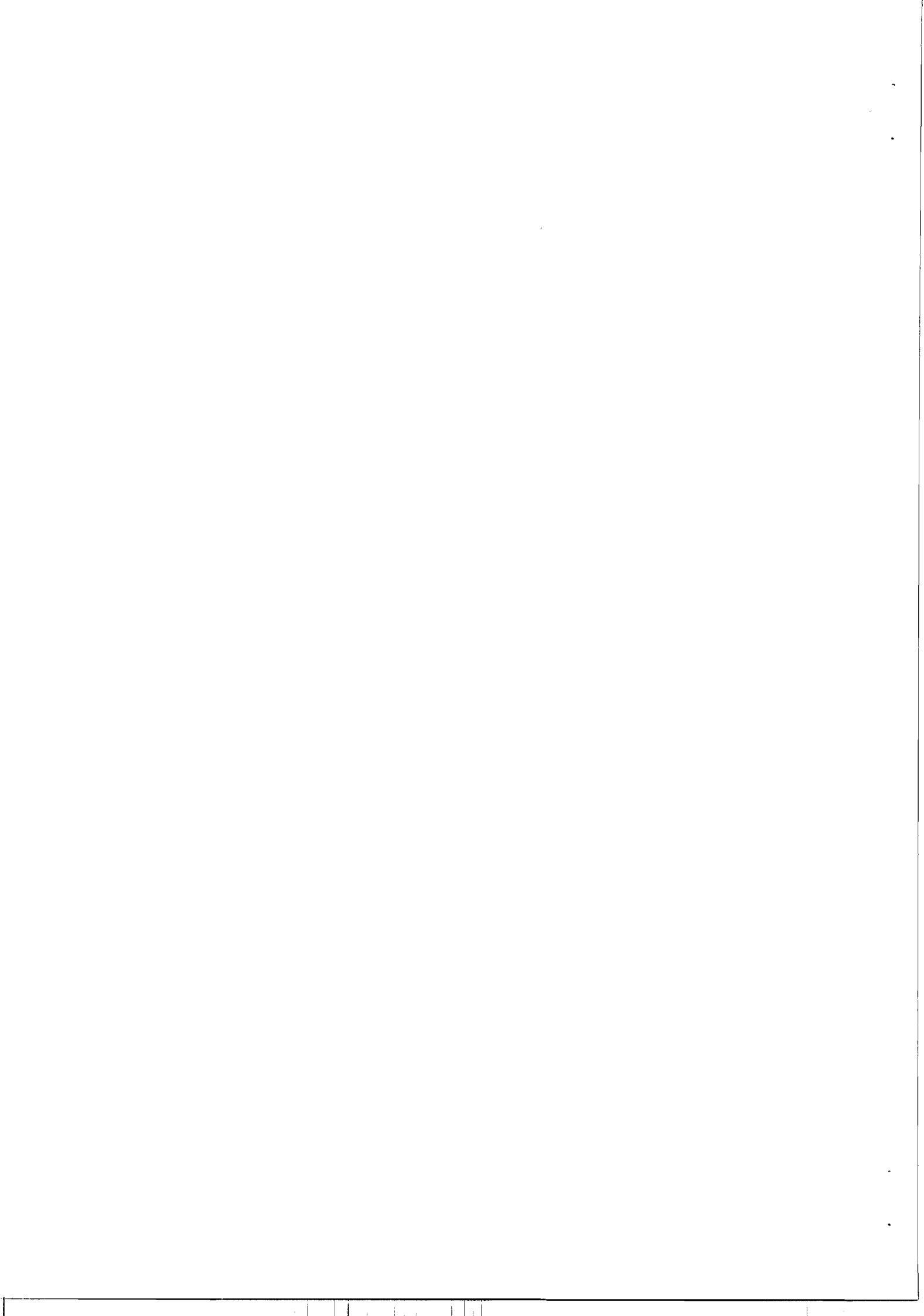
Pedro Fraile and Alvaro Escribano*

Abstract

An econometric analysis of Spanish aggregate and sectoral data reveals that the loss of the last colonial possessions in 1898 was not, in fact an economic *disaster* of the catastrophic proportions some traditional historians had held. Both at the aggregate level and in the sectors most directly involved in the colonial trade, the events of 1898 were not a specially relevant watershed. However, the nationalistic sentiment, and the climate of public opinion created by the defeat in the 1898 Spanish-American War induced a favorable institutional framework for the adoption of autarkic measures, especially high tariffs. This produced in subsequent years a progressive separation of the Spanish economy from international markets. This indirect and institutional effect, rather than the direct loss from the war itself, was the real economic disaster of 1898.

Keywords: colonial trade; colonialism; economic nationalism; autarky; tariffs; lobbies.

* Fraile, Departamento de Historia Económica e Instituciones, Universidad Carlos III de Madrid. E-mail: pedrof@eco.uc3m.es; Escribano, Departamento de Estadística y Econometría, Universidad Carlos III de Madrid. E-mail: alvaroe@est-econ.uc3m.es



**THE SPANISH 1898 DISASTER:
THE DRIFT TOWARDS NATIONAL-PROTECTIONISM.**

by

Pedro Fraile

*Department of Economics
Universidad Carlos III de Madrid*

and

Alvaro Escribano

*Department of Statistics and Econometrics
Universidad Carlos III de Madrid*

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I - Introduction

Two interrelated ideas are developed in this essay: first, that the consequences for the aggregate Spanish economy of losing the last colonies--Cuba, Puerto Rico, and the Philippines--at the end of the nineteenth century were relatively small, and that it hardly can be regarded, as many historians have done as *the Disaster of 1898*. Second, that despite its small overall direct impact on the Spanish economy, the independence was fought with the colonies, and the defeat at the hands of the Americans in 1898, started a process of intense political nationalism that resulted in the adoption of western Europe's most stringent autarchy at the beginning of the XXth century. The colonial *Disaster* was therefore, an indirect one. Its economic consequences were first felt by Bentham's "ruling few"--in Spain's case, the wheat, flour, and textile traders of Castile and Catalonia--and later reached the "subject many" by way of their influence on the adoption of extreme protective measures ("integral protection", as it became known by Spanish nationalists) facilitated by the general climate caused by the colonial loss.

The essay is divided in five parts. After this introduction, a brief section surveys the commercial involvement of European countries with their colonial (or ex-colonial) possessions, and establishes the fact that only Spain and Portugal, and to a certain extent, Turkey, had a significant volume of trade--higher than ten or twelve percent of all exports--with their colonies. The third part of the essay analyzes the trends and cycles of the most important series affected by the *Disaster*--foreign trade, capital flow, and some sectoral indexes--to conclude that far from the disastrous impact usually assigned to the colonial losses of 1898, the independence of Cuba, Puerto Rico and the Philippines had, in fact, beneficial consequences for the Spanish economy, specially through the inflow of capital that the war produced. The fourth section examines the losses suffered by special interest groups--Castilian wheat and flour traders, and Catalan textile producers--that enjoyed the colonial monopoly; and the last part focuses on the political impact of *the Disaster* and its economic consequences.

II - Colonial Markets in Peripheral Europe.

Losing Cuba, Puerto Rico, and the Philippines in 1898 was not Spain's major colonial defeat during the nineteenth century. Nine decades before, the campaigns of Bolívar, Sucre and San Martín led to the emancipation of Spanish South America from Madrid. Mexico had declared independence in 1810, and the Central American republics in 1823. Sucre's victory in the Ayacucho (Peru) battle against the Spanish royalist army in 1824, thus, put an end to three hundred years of the Spanish crown's

sovereignty over a territory twenty five times larger than its peninsular dominions. Fear of a slave revolt--as in Haiti after emancipation in the 1790s and 1800s--and the economic prosperity afforded by the integration into the North American market of the sugar plantation system, kept the Caribbean possessions loyal to Madrid. Several independence attempts were suffocated from the metropolis, as in the case of Cuba's Ten Year War of 1868-1878, but Cuba, Puerto Rico, and the Philippines remained under Spanish domination until the end of the 1895-1898 conflict and the American intervention.¹

In any case, loosing the mainland at the beginning of the century had noticeable commercial consequences: between 1784/96 and 1815/20 exports to the colonies dropped by sixty percent, and the pre-independence share of colonial markets on all Spanish exports, that accounted for over one third, was about one fifth at the end of the Napoleonic Wars.² Colonial exports recovered to some extent after the first years of independence but did not keep pace with the general expansion of the Spanish foreign trade, this time re-oriented towards other European countries. The colonial export share declined through the nineteenth century to levels below ten percent after the export boom of the 1890s (figure 1).

(insert figure 1)

However, although most of Spain's foreign trade was redirected toward the rest of Europe after losing the colonial markets, exports to the remaining colonies still were an important part of foreign sales. Sales to Cuba doubled between 1850/4 and 1885/89 and went up even further during the last decade of the century due to new colonial tariffs of the 1870s and the war supplies during the Spanish-American war.³ Although exports to Puerto Rico and the Philippines also grew throughout the century, the Cuban market was the destination of more than ninety percent of all Spanish sales to the colonies, and acted also as an entrepôt for peninsular exports to the ex-colonies on the mainland, specially during the first years after independence.

¹ For a bibliographical review of Cuban history and its debates, see Antonio Santamaría García, "Evolución socio-económica y formación nacional", *Revista de Indias*, LVI, n. 207, May-August 1996, pp. 505-539.

² Leandro Prados de la Escosura, "La pérdida del Imperio y sus consecuencias económicas" in Leandro Prados de la Escosura and Samuel Amaral (eds.), *La independencia americana: consecuencias económicas*, Madrid: Alianza, 1993, pp. 262 and 267.

³ Jordi Maluquer de Motes, "El mercado colonial antillano en el siglo XIX", in Jordi Nadal and Gabriel Tortella (eds.), *Agricultura, comercio colonial y crecimiento económico en la España contemporánea*, Barcelona: Ariel, 1974, pp. 330-333.

Table 1
Share of Colonial Exports in Several European Countries, 1885-1912
(five-year averages)

Countries	Exports	1895-99	1900-04	1905-9	1910-12
Germany (mark)	Total	3,688,320	4,791,560	6,383,480	8,179,200
	Colonial	7,871	14,662	33,012	45,633
	%	0.208	0.305	0.518	0.560
Holland (gulden)	Total	1,406,345	1,838,677	2,185,132	2,825,954
	Colonial	63,312	67,985	84,183	137,009
	%	4.521	3.709	3.848	4.831
Belgium (francs)	Total	1,643,212	1,994,041	2,770,222	3,646,419
	Colonial	12,268	10,049	15,444	26,593
	%	0.769	0.502	0.560	0.728
France (francs)	Total	3,607,240	4,215,420	5,299,460	6,341,100
	Colonial	379,694	512,374	653,888	816,447
	%	10.486	12.154	12.344	12.860
Portugal (milreis)	Total	28,068	29,793	29,845	34,895
	Colonial	3,912	4,599	4,641	3,657
	%	13.784	15.310	15.546	15.675
Spain (pesetas)	Total	937,278	875,994	982,436	1,107,516
	Colonial	224,932	83,230	74,032	69,198
	%	23.346	9.512	7.539	6.088

Source: *Statistical Abstract for the Principal and Other Foreign Countries, 1893-1912*, London, 1905-1914, [Cd.2566], [6099] and [Cd.7525].

The importance of the colonial trade for Spain is best seen in comparison to other European cases of commercial relations with overseas territories. One of the best known facts in modern European commercial history is the intense concentration of foreign transactions among European countries. With the notable exception of Britain, which always retained strong commercial links with its colonies, most continental economies were the best clients of each other in foreign trade. Nevertheless, for some European nations--specially those from the periphery--colonial trade was still an important part of their total transactions. Table 1, shows to what extent the Belgium and German exports to their African colonies, the Dutch sales in Java and Guyana, and even the French exports to their vast empire, were smaller as a percentage of total exports than the colonial exports of Spain and Portugal. Despite the lack of reliable data for the Turkish case, the available statistics also show that Turkey's integration with central and northern Europe was not as important as in the case of more developed economies at the

time, and that its colonies and ex-colonial territories still accounted for about fifteen percent of Turkish exports at the beginning of the XXth century.⁴

III - The Disaster's Economic Impact

Despite the undeniable importance of colonial markets for the European backward metropolises, it is at least doubtful that the privileged monopolies they enjoyed were an indispensable requirement for their industrialization. However, traditional colonial historiography--at least in the Spanish case--has adopted the Leninist interpretation of Cuba, Puerto Rico and the Philippines as the last chance for Spain's industrial growth based on colonial markets. A good number of historians still debate the role of the last colonies as a leverage for acquiring the necessary market size for its manufactures, and consequently to what extent *the Disaster* of 1898 was a lost opportunity for Spain to join the ranks of industrial Europe.⁵

The debate centers around the two traditional but basic propositions: the need for colonial markets as outlets for domestic manufactured output, and the colonial exploitation of Cuba. Although the second question is beyond the purpose of this paper, the performance of the Cuban economy during the second half of the nineteenth century in comparison to those Latin American countries that did secede from Spain at the end of the Napoleonic Wars seems to suggest a doubtful exploitative relation. The colonial governments maintained a system of relative political stability, achieved by the independent Latin American republics only much later in the century. In this context, the reciprocal comparative advantage of the US and Cuban economies led to an intense commercial relationship and efficient market integration based in specialization: around one fourth of all US export to Latin America went to Cuba during the XIXth century, and almost half of all Latin American sales in the US market were of Cuban origin.⁶ Per capita sugar consumption was growing at an annual rate of two percent in the US and British markets, and intensive technical and scale changes in the Cuban sugar sector led

⁴ B.R. Mitchell, *International Historical Statistics. Africa, Asia & Oceania, 1750-1988*, London: McMillan, 1995, pp. 523-527 y 610-611.

⁵ Pierre Vilar, *Historia de España*, París: Librairie Espagnole, 1974, p. 91. Jordi Maluquer de Motes, "El mercado...", cit; Miquel Izard, "El comerç catala contemporani: de la perdua del mercat colonial a l'aferrissada lluita per un mercat <<nacional>>", *Quaderns d'Historia Econòmica de Catalunya*, XXI, Oct 1980; Luis de Llera and Milagrosa Romero, "Los intelectuales y el problema colonial" in Emilio de Diego (ed.), *1895: La guerra en Cuba y la España de la Restauración*, Madrid: Universidad Complutense, 1996. pp. 263-295; Luis Abellán, "La guerra de Cuba y los intelectuales", *Historia 16*, III, n. 27, July 1978, pp. 90-95.

⁶ Pedro Fraile Balbín, Richard and Linda Salvucci, "El caso cubano: exportaciones e independencia" in Leandro Prados de la Escosura and Samuel Amaral (eds.), *La independencia americana: consecuencias económicas*, Madrid: Alianza, 1993, pp. 80-85.

to rapid gains in productivity.⁷ The output per sugarmill grew fifteen-fold between 1790 and 1860, and by mid-century Cuban per capita income was among the highest in the world, at the same level as those of Europe's advanced economies.⁸ In any case, the "iniquitous colonial relationship between Cuba and the metropolis"⁹ gave place on the island to a substantially more prosperous economy--at least 30 percent higher in income per capita terms--than in Spain.¹⁰

With respect to the need of the colonies for industrialization, the rationale is the indispensable role played by captive colonial markets for metropolitan exports. In the Spanish case, the 1898 War translated into a drastic short-run reduction of exports to the Cuban protected market, but, as shown below, total Spanish exports were basically unaltered. As will be evident later, a substantial amount of the volume of total exports to Cuba was redirected to alternative areas of Latin America and Europe, and although they remained low relative to pre-1898 levels up to 1914, exports to Cuba started to recover soon after the First World War, and by the interwar years reached levels similar to those previous to the export boom of the 1870s.¹¹ In addition, the sales of services to the island remained almost unaltered. In contrast with the first experience of colonial independence, when Spain lost two thirds of its sales in transport, insurance and financial services,¹² Spanish shipping companies remained very active in the island's trade, and most of the merchant firms and property owned by Spaniards in Cuba was practically unaffected by independence in 1898.¹³ Furthermore, unlike the sixty percent drop after the first wave of colonial secession in the 1820s,¹⁴ custom revenues went up

⁷ Antonio Santamaría García, "Caña de azúcar y producción de azúcar en Cuba. Crecimiento y organización de la industria azucarera cubana desde mediados del siglo XIX hasta la finalización de la Primera Guerra Mundial", in Consuelo Naranjo, Miguel Angel Puig Samper and José Luis García Mora (eds.), La nación soñada: Cuba, Puerto Rico y Filipinas ante el 98, Aranjuez: Editorial Doce Calles, 1996. pp. 225-250. Also see, Alan Dye, "Producción en masa del azúcar cubano, 1899-1929: economías de escala y elección de técnicas", Revista de Historia Económica, XI, n. 3, 1993, pp. 563-593.

⁸ P. Fraile and R. and L. Salvucci, "El caso cubano..." cit, pp. 94-101.

⁹ Thomas Hart Baker Jr., "Imperial Finale: Crisis, Decolonization, and War in Spain, 1890-1898", Doctoral Dissertation, Department of History, Princeton University, November 1976, p. 148.

¹⁰ P. Fraile and R. and L. Salvucci, "El caso cubano..." cit, p. 101 and Leandro Prados de la Escosura, "Spain's Gross Domestic Product, 1850-1993: Quantitative Conjectures. Appendix", Working Paper n. 95-06, Universidad Carlos III de Madrid, February 1995, p. 197. Neither Spanish nor American domination after independence seemed to have harmed Cuban interests or those of the Spaniards living on the island. Most lands remained in Spanish hands after independence, and the Reciprocity Treaty of 1903 gave the island's cane growers freer access to the US sugar market, and more revenues from it. S. Levergott concludes: "The prime economic beneficiaries of the Spanish-American War, in sum, were Spaniards and Cubans who owned Cuban sugar land at the start of the war." See, Stanley Lebergott, "The Returns to U.S. Imperialism, 1890-1929", The Journal of Economic History, XL, n. 2, June 1980, p.303.

¹¹ Antonio Tena, "Comercio exterior", in Albert Carreras (ed.), Estadísticas históricas de España. Siglos XIX-XX, Madrid: Fundación Banco Exterior, 1989, pp. 346-347 and 356.

¹² L. Prados de la Escosura, "La pérdida.." cit, p. 262.

¹³ Alejandro García Álvarez, "Presencia española en el comercio cubano", Estudios de Historia Social, 1988, nos. 44/47, pp. 605-613.

¹⁴ L. Prados de la Escosura, "La pérdida.." cit, p. 270.

by more than one third between 1880/1900 and 1900/1910.¹⁵ Migration flows to Cuba doubled after independence,¹⁶ and this helped not only the growth of migrants_ remittances,¹⁷ but also to increase and diversify Spanish exports--specially food products--to the ex-colony.

It is doubtful, therefore, that the loss of this colonial market seriously jeopardized Spain's chances for industrial growth. In the rest of this section, a more rigorous assessment is developed of the real impact on the aggregate Spanish economy of loosing Cuba, Puerto Rico, and the Philippines in 1898. We propose to do this by searching for unusual years (outliers) or abnormal periods (structural breaks) using time series methods. We apply those techniques to several aggregate economic variables like foreign trade, capital flow and several sectoral indexes from the year 1859 to 1914.

Our goal is to isolate "unusual" or unstable periods in several economic variables during the years 1850 to 1914. A basic condition for aggregate data to support the hypothesis of the existence of a "Spanish 1898 Disaster" is that the time series analysis of the data should be able to identify the period around 1898 as an "unusual" or unstable period, creating structural breaks in the parameters of constant parameter models built over the full sample period. For that purpose we use recent time series techniques developed and implemented by Gómez and Maravall¹⁸.

In particular, we consider that a certain year is "unusual" if the observation corresponding to that year is an "outlier" or if that year is affected by previous outliers.

Let $oz(t)$ be a particular economic time series variable observed at time t , for example OEXPORTS at time t , where $t = 1850, \dots, 1914$ and let $z(t)$ be the same time series variable but corrected for the unusual events (outliers), EXPORTS. Therefore the relationship between the two variables is,

$$oz(t) = outlier(t) + z(t) \quad (1)$$

If the outlier(t) component is equal to 0 for all time t , where $t = 1850, \dots, 1914$, this means that during this period there has been no structural change in the $oz(t)$ variable. If on the contrary, the outlier(t) component is different than 0 for some t we then check if among those unusual years is the year 1898 or its near future. Four

¹⁵ Francisco Comín Comín, Fuentes cuantitativas para el estudio del sector público en España, 1801-1980, Madrid: Instituto de Estudios Fiscales, monografía n. 40, 1985, pp. 72-73.

¹⁶ Blanca Sánchez Alonso. Las causas de la emigración española, 1880-1930, Madrid: Alianza, 1995, pp. 281-282.

¹⁷ José Ramón García López. Las remesas de los emigrantes españoles en América. Siglos XIX y XX, Gijón: Júcar, 1992.

¹⁸ The theory is explained in Gómez V. and A. Maravall (1994) "Estimation, prediction and interpolation for nonstationary series with the Kalman filter", Journal of the American Statistical Association 89, 611-624, and in Maravall A. (1988) "The use of ARIMA models in unobserved components estimation" in Barnett, W., Berndt, E. and White H. (eds.), Dynamic Econometric Modeling, Cambridge: Cambridge University Press.

different types of outliers are considered for each economic variables: innovation outliers (IO), additive outliers (AO), temporal changes (TC) and level shifts (LS)¹⁹.

The basic idea of our methodology is the following: if the impact of loosing Cuba, Puerto Rico and the Philippines, the so called "Spanish 1898 Disaster", affected aggregate economic variables we should be able to identify several outliers from 1898 and after. Otherwise, since we know that important events occurred, and this is not reflected on aggregated economic variables, it must be because all of these real effects washed out on the aggregate through reallocation of resources among different sectors of the economy (distributional effects among different sectors) or among different countries (trade). On the contrary, when an outlier is detected for a certain year T we would like to have a methodology that can provide us with a *quantitative measure of the temporal effects*: How long (*duration*) does the impact last ? How large (*size*) is the quantitative effect on the economic variable ? In appendix A, we give a brief introduction to the econometric methodology used in the empirical analysis.

The economic variables selected for this quantitative study of the aggregate effects of "1898" are the following²⁰: observed export series (OEXPORT) from 1850 to 1914, observed real gross domestic product per capita (ORGDPPOP) from 1850 to 1914, observed index of bank deposits (OBANKING) from 1850 to 1914, observed current account balances (OCCBAL) from 1851 to 1914, current account +/- reserve variations (CCBALM) from 1857 to 1914, manufacturing index of food products (FOOD) from 1850 to 1914 and manufacturing index of textile products (OTEXTILES) from 1850 to 1914.

Table 2 includes the time series (ARIMA) models estimated for the outlier corrected variable $z(t)$. When certain types of outliers are detected in $oz(t)$ from 1850 to 1914 this is reported in the table with the corresponding t-test of significance (t-ratio). In most of the cases analyzed in the paper, the absolute values of the t-ratios are always larger than the 1% or 5% critical values, and in those cases we always reject the null hypothesis that $w=0$ in favor of the alternative hypothesis of having detected an outlier ($w \neq 0$). When we do not report the t-ratio of w , like for the variables CCBALM and FOOD, it is because we could not identify any outlier effect on that variable ($w=0$).

¹⁹ See appendix A for a detailed explanation of the estimated models, a definition of each type of outlier and the unobserved components model decomposition (trend, cycle, etc.).

²⁰ See appendix B for an explanation of the terminology used for the analysis of each variable and for a detailed definition of the data used.

Table 2 Detection of Outliers and Estimation of ARIMA(p,d,q) Models by Exact Maximum Likelihood				
Additive Outlier (AO): outlier(T) = w I _t (T) Temporal Change (TC): outlier(T) = w {1/0.7Δ} I _t (T) oz(t) = outlier(t) + z(t)				
where z(t) is $\phi(B) \Delta \{z(t) - \mu\} =$ $\theta(B) a(t)$	AR(p) $\phi(B)$ coeffs.	MA(q) $\theta(B)$ coefficients.	Type of outliers detected	Misspecification detected*
OEXPORTS variable (1850-1914)				
ARIMA(0,1,2)** $\mu = 18.86$ t-ratio = (4.13)	----	$\theta_1 = -0.23$ t-ratio = (-1.85) $\theta_2 = -0.32$ t-ratio = (-2.42)	Year = 1914 Type = Additive outlier w = -543 t-ratio(w) = (-6.88)	none
ORGDPPOP variable (1850-1914)				
ARIMA(0,1,1)	----	$\theta_1 = 0.15$ t-ratio = (-1.27)	Year = 1872 Type = Temporal change w = 10776 t-ratio(w) = (4.11) Year = 1911 Type = Temporal change w = 11953 t-ratio(w) = (4.53)	none
OBANKING variable (1850-1914)				
ARIMA(0,1,1) $\mu = 0.10$ t-ratio = (3.09)	----	$\theta_1 = -0.16$ t-ratio = (-1.33)	Year = 1898 Type = Temporal change w = 2.05 t-ratio(w) = (6.86)	none
OCCBAL variable (1851-1914)				
ARIMA(0,1,1)	----	$\theta_1 = -0.73$ t-ratio = (-8.60)	Year = 1899 Type = Temporal change w = 547 t-ratio(w) = (3.94)	none
CCBALM variable (1857-1914)				
ARIMA(0,1,1)	----	$\theta_1 = -0.56$ t-ratio = (-5.10)	none	none
FOOD variable (1850-1914)				
ARIMA(0,1,1) $\mu = 0.72$ t-ratio = (2.15)	----	$\theta_1 = -0.40$ t-ratio = (-3.46)	none	none
OTEXTILES variable (1850-1914)				
ARIMA(0,1,1) $\mu = 0.79$ t-ratio = (3.13)	-----	$\theta_1 = 0.06$ t-ratio = (0.47)	Year = 1907 Type = Additive outlier w = 6.13 t-ratio(w) = (4.71) Year = 1914 Type = Additive outlier w = 7.27 t-ratio(w) = (3.80)	none
* The misspecification analysis done corresponds to: <i>Normality</i> test of the errors, the <i>autocorrelogram</i> and <i>partial autocorrelogram</i> of the residuals and a <i>test of runs</i> on the residuals.				
** See appendix A for a deeper explanation of the parameters estimated and the type of outliers detected.				

All the series we are considering are nonstationary (with unit roots) and we therefore take first differences to make them stationary (no more unit roots). None of the autoregressive coefficients (AR) are significant in the estimated ARIMA models. The maximum moving average found was an MA(2) when modelling the first difference of the exports variable (OEXPORT). The variables OCCBAL, CCBALM and FOOD of Table 2, have significant moving average polynomials of order 1 (MA(1)). The first difference of ORGDPPPOP, OBANKING and OTEXTILES have MA(1) coefficients which are not significant (white noise). In none of the models we were able to identify any type of misspecification (see bottom of Table 2 for details).

(insert Figure 2a)

Only two of the four types of outliers are detected in the seven variables analyzed in Table 2: *additive outlier* (AO) and *temporal change* (TC), see appendix A. During the whole sample period, 1850 to 1914, several "unusual years" are found and the following outliers were detected for at least one of the seven series, 1872, 1898, 1899, 1907, 1911 and 1914. Among those dates the years 1898 and 1899 correspond to our period of interest. However, those two years influenced only two of the seven aggregated economic variables analyzed, OBANKING and OCCBAL, but not the rest of them.

(insert Figure 2b)

In the observed index of bank deposits (OBANKING) the instantaneous impact of 1898 was equal to 2.05 million pesetas, with a significant t-ratio of 6.86 (see Table 2). The total impact until 1914 was 6.80 million pesetas and coincides with the shaded area, indicated in figure 2a of appendix C, when we compare the evolution of the variable OBANKING with that variable corrected for outliers (BANKING) from 1898 to 1914. The temporal profile of this impact is represented in figure 2b. It is clear that those effects are transitory with a decreasing impact. In fact, even though the effects last until 1914 the main duration of the 1898 impact lasted eight years, from 1898 to 1906, and it is evaluated in 6.48 millions of pesetas which represents 95% of the total impact, see Table 3 and figure 2b. This variable OBANKING can be decomposed in terms of the unobserved components, the trend (BANKINT) and the irregular component (BANKINGI) and those are represented in figures 3a and 3b. Clearly, since the outlier

is of a temporal change (TC) type it is associated with the irregular component and not with the trend that would only include permanent changes.

Table 3 Temporal Evaluation of the Impact of Outliers 1898 and 1899 on the Variables OBANKING and OCCBAL respectively			
YEAR	OBANKING (TC)*	YEAR	CCBAL (TC)*
1898**	2.0455063	-	-
1899	1.4318544	1899***	547.00684
1900	1.0022981	1900	382.90479
1901	0.7016086	1901	268.03335
1902	0.4911261	1902	187.62335
1903	0.3437882	1903	131.33634
1904	0.2406518	1904	91.93544
1905	0.1684562	1905	64.354808
1906	0.1179194	1906	45.048365
1907	0.0825436	1907	31.533856
1908	0.0577805	1908	22.073699
1909	0.0404463	1909	15.451589
1910	0.0283124	1910	10.816113
1911	0.0198187	1911	7.5712788
1912	0.0138731	1912	5.2998951
1913	0.0097112	1913	3.7099266
1914	0.0067978	1914	2.5969486
PERIOD	TOTAL	PERIOD	TOTAL
1898-1914	6.80	1899-1914	1817.30
1898-1906	6.48	1899-1906	1718.24
* The outliers are of the temporal change (TC) type.			
** The years of this shaded area correspond to the shaded area of figures 2a, 2b, 3a and 3b.			
*** The years of this shaded area correspond to the shaded area of figures 4a, 4b, 5a and 5b.			

(insert figures 3a and 3b)

In terms of the observed current account balances (OCCBAL) the instantaneous impact of 1899 was equal to 547 million pesetas, with a significant t-ratio of 3.94 (see Table 2). The total impact until 1914 was 1817.30 millions of pesetas and corresponds to the area between the two series of figure 4a from 1899 to 1914 and the shaded area of figure 3b. The temporal profile (TC) is represented in figure 4b.

(insert figures 4a and 4b)

Once again, the impact of 1899 is transitory and decreasing in time with the mayor effects finishing in 1906. Those effects are quantified as 1718.24 million pesetas and represents 95% of the total effect until 1914 (see Table 3 and figure 4b).

(insert Figures 5a and 5b)

The unobserved components of OCCBAL are represented in Figure 5a and 5b, respectively. The trend component (CCBALT) of Figure 5a has no clear tendency to grow and this is consistent with having an MA(1) with coefficient of -0.7 indicating that this series is close to stationary without taking first differences. The temporal change found is therefore added to the irregular component (CCBALI) in Figure 5b.

(insert Figures 6a and 6b)

Finally, since the export variable is one of the most relevant one to analyze the aggregate impact of the "1898 disaster" on trade, we have completed a full analysis of this variable. In Figures 6a and 6b we represent the observed series and the additive outlier (AO) detected in 1914, respectively. Since Figure 6b is almost empty this means that there was no aggregate effect until 1914, which is the last year of the sample analyzed. The unobserved components decomposition in trend (EXPORTT), business cycle (EXPORTC) and irregular (EXPORTI) are represented in Figures 7a to 7c. Clearly the largest impact of the year 1898 and after, occurred in the cyclical component, but does not imply any structural change in the parameters of this component. Notice that it is the irregular component the one that was associated with the outlier found in 1914.

(insert Figures 7a, 7b and 7c)

IV - The Sectoral Effects of the Disaster.

Although the overall effect of colonial independence was not really a *disaster* for Spain, and despite the fact that it even had positive consequences for the ex-metropolis, the 1898 events did not leave Spain's industry and trade unaffected. To begin with, the assesment carried out in the previous section has not included the analysis of certain variables whose changes could have had direct and indirect, instant and lagged effects on the overall economic system. This is the case, for example, of the sharp depreciation of the Spanish exchange rate, and the increase in public expenditure and deficits of the 1895-1898 war,²¹ and even the previous independence attempt of 1868-1878²². But even

²¹ Jordi Maluquer de Motes, "La financiación de las guerras y la economía española (1895-1898)", paper presented to the V Encuentro de Americanistas. El fin de un Imperio: Balance económico. Universidad de Oviedo, Noviembre 1996.

²² Francisco Comín Comín, Hacienda y economía en la España contemporánea (1800-1936), Madrid: Instituto de Estudios Fiscales, 1988, vol. I, p. 338; Gabriel Tortella Casares, Los orígenes del capitalismo en España. Banca, industria y ferrocarriles en el siglo XIX, Madrid: Tecnos, 1973, pp. 198-199.

more important, the previous aggregate analysis did not take into account the specific effects that the colonial link, and its rupture, could have had on concrete sectors of the economy whose connection with the colonial trade was specially intense.

As in most colonial cases, the commercial relations between Spain and Cuba were dominated by a few sectors that concentrated most of the transactions between the metropolis and her colonies, and benefited most from the captive Cuban markets. From mid-nineteenth century on, four groups of products--flour, cotton textiles, shoes and wine--represented between one half and two thirds of all Spanish sales to the island, and in the two decades preceding independence, exports of flour and cotton textiles accounted for almost a third of the total.²³ It was in these activities that some industrial capital was accumulated, and where the dynamic effects of colonial trade were to be felt. As in most cases of colonial relations, the special interests of these sectors organized powerful lobbies that played a decisive role in shaping the overall colonial policy.

At the end of the Napoleonic Wars, the old mercantilist policy of commercial exclusion for non-Spanish trade, was relaxed to some extent. But the 1847 tariff again tightened protection for metropolitan exports. Differential rates in favor of Spanish products were increased again in 1870 and 1872, and under the *Commercial Relations Act* of 1882. However, that same year, an agreement was signed with the U.S.A. to accord preferential tariff treatment to American flour on the island in exchange for easier access of the colonial *ingenios* to the United States sugar market. From that moment on, exports of Spanish flour dwindled to almost nothing at the time of independence. Cotton textiles, on the other hand, continued to dominate colonial markets, and even though the loss of the colonies translated into an export crisis, this was only temporary. Exports to the rest of Latin America and Europe more than compensated for the Cuban market for at least one more decade after independence.²⁴

Flour exporters and wheat growers were located on the northern plateau of Castille, and used the port of Santander on the Bay of Biscay as their main connection with Cuba. The Caribbean trade made Santander the second merchant port in Spain by mid-century, specially after the completion of the Castille Canal (1852) and a railroad (1859) that linked the northern coast to the wheat growing plains of north-central Spain.²⁵ Between 1780 and 1860 about one hundred and fifty flour mills were installed

²³ J. Maluquer, *El mercado...*, cit., pp. 340-341.

²⁴ Carles Sudria, "La exportación en el desarrollo de la industria algodonera española, 1875-1920", *Revista de Historia Económica*, I, n. 2, 1983, pp. 384-385.

²⁵ Andrés Hoyo Aparicio. *Todo mudó de repente. El horizonte económico de la burguesía mercantil en Santander, 1820-1874*, Santander: Universidad de Cantabria, 1993; Tomás Martínez Vara, "Aproximación al comercio

along this transportation route, all of them engaged in the protected Cuban market. Large trading firms, all of them managed by local merchant families, developed and diversified around Santander and some Castilian towns. This was the case of the Pombos, whose assets reached from milling into sailing, railroads, banking, textiles, and food processing,²⁶ and the López-Dórigas (later Botín) who are now one Spain's oldest entrepreneurial families. They also started as colonial traders but later became involved in steel mills, utilities, electricity, engineering, mining, sailing and banking (Banco Santander).²⁷ Like Pombo and Botín, other family groups--Illera, Huidobro, Hornedo, Gallo--formed an extensive and technically advanced network associated with milling and flour exports to the protected Caribbean market.²⁸

Cotton textiles were heavily concentrated around Barcelona in Catalonia, and had developed behind high tariff walls from the last decades of the XVIII century. Unlike flour, cotton textile exports started late, after the 1882 tariff reform that reserved the colonial market for peninsular producers. However, they became the leading export merchandise from the metropolis after American wheat was awarded free entry in 1882. In any case, the reaction to *the Disaster* was very different in both sectors. The independence of the last Spanish colonies meant the loss of protected markets and the need to find alternative outlets for their products. This was difficult for Castilian wheat growers and flour millers whose total exports after Cuban independence practically disappeared due to the competition of American suppliers. But most Castilian merchants diversified their firms into food processing, textiles, coal mining, construction, electricity and banking.²⁹ Catalan textile producers, on the other hand, fared much better in the new open market (figure 8). They found alternative foreign outlets for their exports, and it was not until extreme tariff protection of the home market made domestic sales more profitable--and competition abroad unnecessary--that Spanish textile exports were substituted by domestic sales.³⁰

marítimo de Santander en los siglos XVIII y XIX" in Tomás Martínez Vara (ed.), Mercado y desarrollo económico en la España contemporánea, Madrid: Siglo XXI, 1986, pp. 175-203; and "El comercio de Santander en los siglos XVIII y XIX. Notas para su estudio", in Miguel Angel Pesquera (ed.), Santander. El puerto y su historia. Bicentenario del Consulado del Mar, 1785-1985, Santander: Junta del Puerto, 1985, pp. 73-96.

²⁶ Javier Moreno Lázaro, "Empresa, burguesía y crecimiento económico en Castilla la Vieja en el siglo XIX: los Pombo; una historia empresarial", Anales de Estudios Económicos y Empresariales, 1994, n. 9, pp. 333-356.

²⁷ Javier Moreno Lázaro, "Los López Dóriga: historia de una saga empresarial santanderina. 1770-1914", V Congreso de la Asociación de Historia Económica, (Proceedings), San Sebastián, 29-30 September, 1993, pp. 168-190.

²⁸ For an analysis of technological change in the Castilian mills, see Javier Moreno Lázaro, "Crisis y transformación de la harinería en Castilla y León (1882-1905)", Cuadernos de Economía de Castilla y León, I, 1992, pp. 163-229.

²⁹ Ibid; Andrés Hoyo Aparicio, Todo mudó..., cit, pp. 237-277.

³⁰ Despite their small size, the successful performance of Spanish textile exports in open, post-colonial markets, is specially relevant in view of the acritical acceptance by many economic historians of the Spanish manufacturers'

(insert Figure 8 here)

In summary, for a complete analysis of the impact of Empire--first having it and then loosing it--the global results presented in section III need to be taken in connection with their sectoral consequences. A closer look at the post-1898 events reveals that the loss of the last colonies had, indeed, a disastrous effect on the Spanish economy, and that traditional historians are, after all, right in assessing its consequences as a *Disaster*. The adverse effects, however, were not due to the loss of the colonial markets, but rather to the institutional changes the colonial independence brought about in Spain. However right about the *Disaster*, it is likely that they have put too much emphasis on the traditional (positive) dynamic effects of protected markets--capital accumulation, technical change, economies of scale, learning by doing--while ignoring their negative, also dynamic, consequences. Captive colonial markets, as in any case of trade restriction, might have helped the accumulation of Spanish manufacturing capital in some sectors, like flour milling and cotton textiles. From the end of the XIX century to the Great Depression, output of Castillian wheat and flour and Catalan textiles expanded substantially, and it is likely that the increase was helped by the initial exploitation of the captive Cuban market. But it is at least doubtful that the reserved colonial market could have been the basis for successful industrialization in Spain. One of the dynamic effects of protection is increasing output in the short run, but another, seldom ignored dynamic effect, is the opportunity for output restriction that protection affords by eliminating foreign competition in small national markets. Spain's gradual deindustrialization (relative to other European economies) in the context of Europe's highest trade barrier seems to suggest that this was exactly the case.³¹ In addition, the colonial character of the markets lost in 1898 by Spanish exporters had a clear differential effect at home. Loosing the colonies put in motion a society-wide process of soul searching that carried profound political consequences, and created the ideal framework of political nationalism and economic autarky.

V - The political consequences of the Disaster

In addition to its merely commercial aspects, European imperialism at the end of the century had important military and political consequences for the peripheral countries of Europe. Italy started its incursions into the Dodecanese, Eritrea, Somalia,

inability to compete in international markets. See Carles Sudrià, "La exportación...", cit., p. 378; J. Harrison, "Catalan Business and the Loss of Cuba, 1898-1914", *The Economic History Review*, XXVII, n.3, August 1974, pp. 345-346; Miquel Izard, "El comerç català...", cit., pp. 113-121.

³¹ Pedro Fraile Balbín, *Industrialización y grupos de presión. La economía política de la protección en España, 1900-1950*, madrid: Alianza, 1991.

Abyssinia, Libya, and later the Balkans. After losing Brazil in 1822, Portugal started its African territorial expansion, and between the 1885 Berlin Conference and 1935, acquired the recognition of its sovereignty over more than two million square kilometers. Similarly, after its independence in (1821-1828), Greece acquired through wars and diplomatic pressures the Ionian islands (1864), Thessaly and part of Epirus (1881), Macedonia, Crete, west, and later east, Thrace (1920), and practically all the Aegean islands, and even invaded Turkey--reaching near Ankara in 1921.³²

Only the two large colonial powers at both ends of the Mediterranean--Spain and Turkey--suffered territorial losses from their colonial empires at the turn of the century. In the Spanish case, the attempts to recover their Latin American possessions and to establish new colonies in Africa were not enough to alleviate "the Disaster".³³ As for Turkey, the territorial losses started at the end of the XVIIIth century and resulted in military conflicts with all its neighbors, and even with France and Britain. Throughout the nineteenth century up to the Great War, the Turkish "disaster" resulted in the loss of the Balkans, Greece, Crimea, Egypt, the Middle East, and Northern Africa.

The implications of these two processes were of great importance for both countries' economic development in subsequent years. Regardless of the direct impact of the colonial emancipation on Spain's foreign transactions, the political impact was of such magnitude, that loosing its empire--or what was left of it--shaped the policy making for a long time afterwards. The trend towards economic nationalism--specially through tariff protection--found in the political climate created by "the Disaster" one of its most solid justifications.

From the Young Turks to Kemalism and its Six Arrows program of étatism and economic nationalism, the Turkish movement of "defensive modernization" was the reaction to the loss of territorial hegemony and capitulations.³⁴ The Spanish Disaster also had deep political consequences, which in turn created a path towards economic nationalism and autarky. Modern political analysis of nationalism assigns military defeat a central role in the development of national movements. Like economic

³² Nicholas V. Gianaris. The Economies of the Balkan Countries, New York: Praeger, 1982, pp. 36-37.

³³ Attempts at regaining colonial control were made in Chile and Peru in 1866-68. An expedition was sent to Indochina in 1860, and to Mexico in 1862. The expansionary movement in Marocco started at least with the war of 1859-60 and continued well in to the twentieth century (1921-25). Even Portugal became an object of interest for unification and expansion in the so called *Iberian Movement* that started after the Napoleonic Wars. See José Antonio Rocamora, El nacionalismo ibérico 1792-1936, Valladolid: Universidad de Valladolid, 1994.

³⁴ Mustafa Kemal's regeneration program during the 1920s and 1930s was based on six proclaimed principles: étatism, nationalism, populism, secularism, revolutionism and republicanism. See, Paul Dumont, "The Origins of Kemalist Ideology" in J.M. Landau, (ed.), Atatürk and the Modernization of Turkey, Boulder, Co.: Westview, 1984, pp. 25-44; Dankwart A. Rustow, "The Modernization of Turkey in Historical and Comparative Perspective" in Kemal H. Karpat (ed.), Social Change and Politics in Turkey: A Structural-Historical Analysis, Leiden: E.J. Brill, 1973, pp. 100-101; Nicholas V. Gianaris, The Economies of the Balkan Countries, New York: Praeger, 1982, pp. 43-44.

exploitation, or the denial of cultural individuality, military defeat may be one of the most powerful affronts felt by the elite in charge of defining (inventing) national identity. Defeat at the hands of a foreign army becomes a powerful excuse and a basic reference for identifying the enemy and setting the limits of national image. This helps not only to sanctify the nation and the national project, but also to enhance the nationalist sentiments and to cement the state's central place as the project's leader. Recent research on nationalism indicates that this was the case of Spain after the war of 1898.³⁵ Spanish modern nationalism had already started half a century ago based on the "invention" of the war and victory against the 1808 Napoleonic invasion,³⁶ so that the Spanish-American conflict put an abrupt and bitter end to a period of national myth-making. The public perception of the defeat in the 1898 Spanish-American War was that of a profound and far-reaching failure. The long historiography on the Disaster shows a firm consensus on the deep crisis that losing the last colonies meant, and on the pessimism it induced about Spain's economic conditions.³⁷ Journalists, writers, intellectuals, politicians and, of course, the military, all combined to create an atmosphere of disproportionate national frustration that had not had any previous equivalent, even when Spain lost the bulk of its four centuries old empire eighty years before.³⁸ While losing the mainland colonies in the 1820s was perceived as "a loss of the King's territories", the loss of 1898--a mere 2 percent of what had been the large Spanish Empire's territory--was taken as "our own collective failure"³⁹ by the nationalist elite. The Spanish intelligentsia, and the middle class "became suddenly aware of the

³⁵ José Alvarez Junco, "Elites y nacionalismo español", *Política y Sociedad*, vol. XVIII, 1995, pp. 93-105.

³⁶ José Alvarez Junco, "La invención de la Guerra de la Independencia", *Studia Historica*, XII, 1994, pp. 75-99. The debate on the origins of Spanish modern nationalism is focused on the notion of the need of a wide popular political movement that in Spain did not exist. See Andrés de Blas Guerrero, *Sobre el nacionalismo español*. Madrid: Centro de Estudios Constitucionales, 1989; Andrés de Blas Guerrero, *Tradición republicana y nacionalismo español (1876-1930)*. Madrid: Tecnos, 1991; Andrés de Blas Guerrero, *Nacionalismos y naciones en Europa*. Madrid: Alianza, 1994; Andrés de Blas Guerrero, *Enciclopedia del Nacionalismo*, Madrid: Tecnos, 1977; Stanley G. Payne, "Spanish Nationalism in the Twentieth Century", *The Review of Politics*, XXVI, 1964, n. 3, pp. 403-422; Juan Pablo Fusi Aizpurua, "Center and Periphery 1900-1936: National Integration and Regional Nationalisms Reconsidered" in Francis Lannon and Paul Preston (eds.), *Elites and Power in Twentieth Century Spain. Essays in Honour of Sir Raymond Carr*, Oxford: Clarendon Press, 1990, pp. 33-34; José María Jover Zamora, "Prólogo", *La Era Isabelina y el Sexenio Democrático (1834-1874)*, Madrid: Espasa Calpe, 1981, pp. VII-CLXII; José María Jover Zamora, "Caracteres del nacionalismo español, 1854-1874", *Actas del Simposio sobre posibilidades y límites de una historiografía nacional*, Madrid, 1983, pp. 355-374.

³⁷ Carlos Serrano, "Aspectos ideológicos del conflicto cubano", en Emilio de Diego (ed.), *1895: La guerra en Cuba y la España de la Restauración*, Madrid: Editorial Complutense, 1996, pp. 73-87.

³⁸ Jesús Rivera Córdoba, "La sociedad española durante la última guerra colonial", *Tiempo de Historia*, IV, 1978, pp. 48-59; Manuel Tuñón de Lara, "Los últimos días de un imperio", *Historia 16*, III, 1978, n. 27, pp. 70-80; José Luis Abellán, "La guerra de Cuba y los intelectuales", *Historia 16*, III, 1978, n. 27, pp. 90-95; Luis de Llera Esteban and Milagrosa Romero Samper, "Los intelectuales españoles y el problema colonial", in Emilio de Diego, cit, pp. 263-295;

³⁹ José Alvarez Junco, "El nacionalismo español como mito movilizador", in R. Cruz and M. Pérez Ledesma (eds.), *Cultura y movilización en la España contemporánea*, Madrid: Alianza Universidad (forthcoming).

country's backwardness"⁴⁰ and set out to put a remedy to it through national economic *regeneration*.

The Disaster contributed to enhance the sense of both economic failure and urgency of reform, and this gave way to the ideas of a necessary *nostrification* of the Spanish economy as a remedy for backwardness. The nationalist path for progress was formulated by the *regeneration* writers, who as a consequence of the 1898 colonial defeat, found a further motive to *nationalize* the domestic market. The central figure of the regeneration movement, Ramiro de Maeztu, saw it in these terms:

The loss of our colonial markets makes clear how shallow and peripheral our economic evolution is...It is pointless for Biscay to produce iron and Catalonia to weave textiles...For these manufactures to take root on solid ground we would need now that our national nucleus, our granary, the Castilian plateau, would become an ample market with enough consumption power.⁴¹

The national market, however, was small and lacked enough purchasing power to support domestic manufacturing in competition with foreign suppliers. A period of isolation was deemed necessary for the development of economies of scale and competitive ability in mature industrial (and also agricultural) sectors. Failure and urgency, then, combined to accelerate the trend towards autarky that characterized the twentieth century Spanish economy. This drift toward radical autarky had, of course, been started before, but it owed much of its strength to the climate of nationalism created by the loss of international status as a colonial power. The exaggerated perception of failure and urgency created a favorable environment for rent-seekers, some of them with sincere patriotic intentions. In addition to the groups directly affected by the loss of privileges, large social groups of the middle class that had not profited from the colonies felt their patriotic pride wounded, and channeled their frustration by blaming the State for the treason and dishonor imposed on Spain. Their rebellion found its best expression in the Producer committees (*asambleas de productores*), the chambers of commerce and agriculture, and an endless number of associations of farmers, merchants and small manufacturers that adopted regeneration, e.i., economic nationalism, as their central goal.⁴²

Tariff protection and other means of isolation from foreign competition were, of course, old hat in the Spanish tradition. The tariffs of 1849, 1877, and specially 1892, made Spain one of Europe's most protected markets many years before losing the last

⁴⁰ J. Alvarez Junco, "Elites.", cit., p. 103. The influential thinker Francisco Giner de los Ríos wrote at that moment: "Spain is now the land where all spiritual and material misery is settled" (cited in Juan López-Morillas, "Francisco Giner: de la Setembrina al Desastre", *Cuadernos Hispanoamericanos*, January 1980, n. 355, p. 21.

⁴¹ Ramiro de Maeztu, *Hacia otra España*, Madrid: Rialp, 1967 [1899], p. 102.

⁴² Carlos Seco Serrano, "1898, España en cuestión", *Estudios de Historia Social*, n. 44/47, January-December 1988, pp.387-393.

colonies. In addition, the return to tariff protection was common in all Europe. But in the Spanish case, the regeneration movement that pervaded the country at the turn of the century accelerated protectionism to a degree higher than in any other European economy.⁴³ Regardless of the economic losses for the country as a whole or for the two main sectors involved in colonial trade, the groups representing the colonial interests--notably wheat growers and textile producers--organized themselves into powerful lobbies⁴⁴ that found an irrefutable excuse and a favorable nationalistic framework to achieve unparalleled tariff protection. We could conclude, therefore, that the loss of Cuba, Puerto Rico, and the Philippines was, indeed, a *disaster* for the Spanish economy, but not necessarily due to the direct impact of losing the captive colonial markets, but rather for the economic nationalism that, as an indirect consequence, was imposed in Spain during most of the rest of the twentieth century.

⁴³ Heinrich Liepmann, Tariff Levels and the Economic Unity of Europe, London: George Allen & Unwin, 1938, pp. 383-398; for a more accurate estimate of Spain's differential protection levels see, Antonio Tena, Protección y crecimiento en la España de la Restauración, 1870-1930 (forthcoming).

⁴⁴ José Varela Ortega, "El proteccionismo de los trigueros castellanos y la naturaleza del poder político en la Restauración", Cuadernos Económicos de ICE, n. 6, 1978, pp. 7-60; and Pedro Fraile Balbin, Industrialización y Grupos de Presión, Madrid: Alianza, 1991.

Appendix A: Econometric Methodology

In this appendix we briefly review the main time series concepts that are needed to define the four different types of outliers used in this paper and to define the measures used for the impact (size) and the temporal effects (duration) of the outliers.

Remember, from equation (1) of the text, that $oz(t)$ is the observed variable and that $z(t)$ is the same variable but outlier corrected, that is $z(t) = oz(t) - \text{outlier}(t)$.

The outlier corrected series $z(t)$ can usually be represented by an autoregressive, integrated, moving average model, ARIMA(p,1,q), like

$$\phi(B) \Delta\{z(t)-\mu\} = \theta(B) \varepsilon(t) \quad (\text{A.1})$$

where $\Delta z(t) = z(t) - z(t-1)$ is the first difference of the series $z(t)$, $\varepsilon(t)$ is a sequence of independent, identically distributed, Normal variables with mean 0 and constant variance (white noise or innovations). B is the lag operator, so that $B^k z(t) = z(t-k)$, and the polynomials $\phi(B)$ and $\theta(B)$ are polynomials in B of order p and q . In particular the autoregressive polynomial of order p , AR(p), is $\phi(B) = 1 + \phi_1 B + \dots + \phi_p B^p$ and the moving average polynomial of order q , MA(q), is $\theta(B) = 1 + \theta_1 B + \dots + \theta_q B^q$. In practice with annual data the order of the autoregressive polynomials p and the order of the moving average polynomials q are usually lower or equal to 2. In our case p was always equal to 0, AR(0), and q was always equal to 1, MA(1), but in the case of exports that was equal to 2, MA(2). Therefore the two types of estimated models of Table 2 are: an ARIMA(0,1,1) which can be written as,

$$\Delta\{z(t)-\mu\} = \varepsilon(t) + \theta_1 \varepsilon(t-1) \quad (\text{A.2})$$

and an ARIMA(0,1,2) model,

$$\Delta\{z(t)-\mu\} = \varepsilon(t) + \theta_1 \varepsilon(t-1) + \theta_2 \varepsilon(t-2). \quad (\text{A.3})$$

The ARIMA(p,d,q) representation is very general and can give good approximations to most of macroeconomic variables expressed in real and monetary terms when d is equal to 1 or 2. Furthermore, equations (1) and (A.1) to (A.3) allow us to incorporate the four different types of outliers previously mentioned⁴⁵.

Let $I_t(T)$ be a *dummy variable* defined as $I_t(T) = \{1 \text{ if } t = T \text{ and } 0 \text{ if } t \neq T\}$. That is $I_t(T)$ is a variable which is always equal to 0 except for the year T , where the year T can be any year from 1850 to

⁴⁵ This is implemented by using the program TRAMO of Gómez V. and Maravall A. (1996) "Time series regressions with ARIMA noise, missing observations and outliers". D.T. Banco de España, # 9628.

1914. For example, if a "disaster" occurred in aggregate economic variables in 1898 we should be able to identify T with the year 1898.

Definition 1: Innovation outlier (IO)

The outlier(t) is an innovation outlier at time T if it can be represented by,

$$\text{outlier}(T) = w \{ \theta(B) / \phi(B) \Delta \} I_t(T) \quad (\text{A.4})$$

where w is the constant that measure the *size of the impact* and the lagged polynomial $\{ \theta(B) / \phi(B) \Delta \}$ measure the *duration of the impact* of the outlier at time T on the variable $oz(t)$. Notice that when $w=0$, there is no outlier effect and therefore this is the hypothesis we are testing in Table 2 by reporting the t-ratio of w . The name "innovation" outlier comes from the fact the its effects on $oz(t)$ are transmitted through the innovations $\varepsilon(t)$ of model (A.1).

Definition 2: Additive outlier (AO)

The outlier(t) is an additive outlier at time T if it can be represented by,

$$\text{outlier}(T) = w I_t(T) \quad (\text{A.5})$$

where w is the constant that measure the *size of the impact* of the outlier at time T on the variable $oz(t)$. Notice that now the outlier at time T has an *instantaneous impact* affecting, $oz(t)$, only at time $t = T$ but not during the rest of the years.

Definition 3: Temporal change (TC)

The outlier(t) represents a temporal change at time T if it can be represented by,

$$\text{outlier}(T) = w \{ 1 / \delta \Delta \} I_t(T) \quad (\text{A.6})$$

where w is the constant that measure the *size of the impact* and the lagged polynomial $\{ 1 / \delta \Delta \}$ measure the *duration of the impact* of the outlier at time T on the variable $oz(t)$. Usually δ is equal to 0.7 which means that the outlier at time T has an impact with effects that last several periods in the future (duration) and the sizes of the impacts on $oz(t)$ decreases exponentially through time (transitory effect).

Definition 4: Level shift (LS)

The outlier(t) represents a level shift at time T if it can be represented by,

$$\text{outlier}(T) = w \{ 1 / \Delta \} I_t(T) \quad (\text{A.7})$$

where w is the constant that measure the *size of the impact* and the lagged polynomial $\{1/\Delta\}$ measure the *duration of the impact* of the outlier at time T on the variable $oz(t)$. Notice that now the outlier at time T has a *permanent impact* affecting, $oz(t)$, not only at time $t = T$ but during the rest of the years (permanent effect).

Once we have the estimated ARIMA model for the series $z(t)$ we would like to decompose the observed series in three different unobserved components⁴⁶ : the trend, the business cycle and the irregular component,

$$oz(t) = \text{trend}(t) + \text{cycle}(t) + \text{irregular}(t). \quad (\text{A.8})$$

This decomposition is interesting because we can associate and measure the impact of the outliers on the different components. This property is very important since the economic and policy implications of outliers are different contingent on affecting the trend (permanent component), the business cycle (transitory component) or the irregular component (innovations).

Appendix B: The Data

OEXPORT is defined as exports (f.o.b) in constant 1913 prices in millions of pesetas (Antonio Tena, "Comercio exterior", in Albert Carreras (ed), Estadísticas Históricas de España. Siglos XIX y XX, Madrid: Fundación Banco Exterior, 1989, pp. 340-343).

ORGDPPOP is the real gross domestic product per capita at 1980 constant pesetas (L. Prados de la Escosura, "Spain's gross domestic product ...", cit, pp 101-102).

OBANKING is an index of bank deposits (1958=100) (ibid pp 77-78).

OCCBAL is the current account balances in millions of pesetas (ibid).

CCBALM is defined as the current account balances plus (minus) changes in gold and silver reserves in millions of pesetas (ibid and Juan Hernández Andreu Historia Monetaria y Financiera de España, Madrid: Síntesis, 1996, pp.239-241).

FOOD is a manufacturing index of food products, 1958= 100 (L. Prados de la Escosura, "Spain's Gross Domestic product ...", cit. pp. 71-72).

OTEXTILES is a manufacturing index of textile products 1958=100 (ibid pp. 71-72).

The terminology used in the text, in Figures 2 to 7 and in Tables 2 and 3 is the following:

⁴⁶ The unobserved components models are obtained using the program SEATS of Gómez V. and Maravall A. (1996) "Signal extraction in ARIMA time series". D.T. Banco de España, # 9628.

Consider the variable EXPORT where we have found some outliers and we have decomposed the series in three components: trend, business cycle and irregular. When outliers are found, the original series is identified by the name of the series but adding an **O at the beginning of the name**, meaning **observed series**, $oz(t)$, and the series corrected for outliers by the name of the series without beginning by an o, $z(t)$. Example, $oz(t) = OEXPORT$ = Observed EXPORT series with outliers, and $z(t) = EXPORT$ series corrected for outliers (free of outliers).

The trend component of the series is identified by the name of the series but adding a **T at the end of the name**, meaning **Trend**. Example, $EXPORTT$ = Trend component of EXPORT.

The business cycle component is identified by the name of the series but adding a **C at the end of the name**, meaning **Cycle**. Example, $EXPORTC$ = Business cycle component of EXPORT.

The irregular component of the series is identified by the name of the series but adding an **I at the end of the name**, meaning **Irregular**. Example, $EXPORTI$ = Irregular component of EXPORT.

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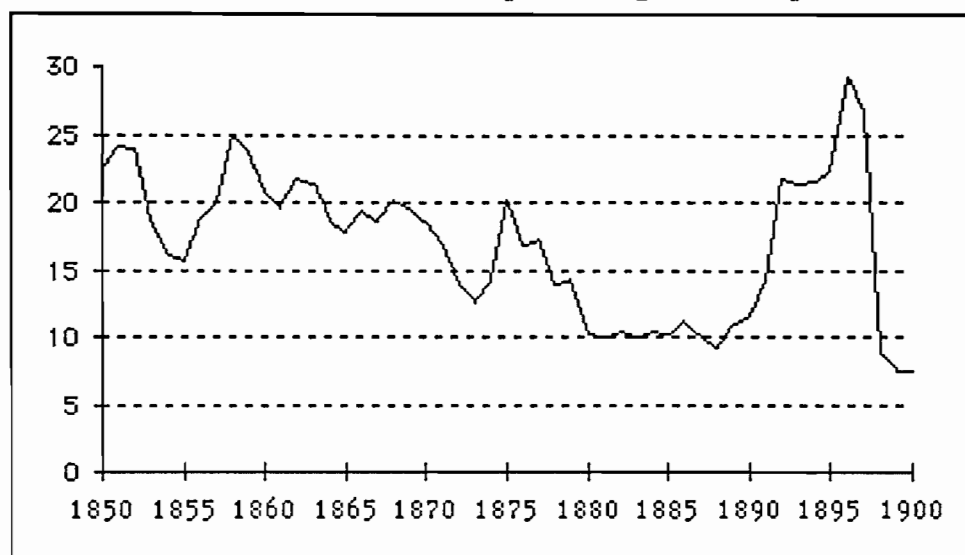
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Figure 1
Spanish sales to colonial markets as a percentage of all exports, 1850-1900.



Source: Jordi Maluquer de Motes, "El mercado colonial antillano en el siglo XIX", in Jordi Nadal and Gabriel Tortella (eds.), Agricultura, comercio colonial y crecimiento económico en la España contemporánea, Barcelona: Ariel, 1974, pp. 354-355.

Figure 2: BANKING

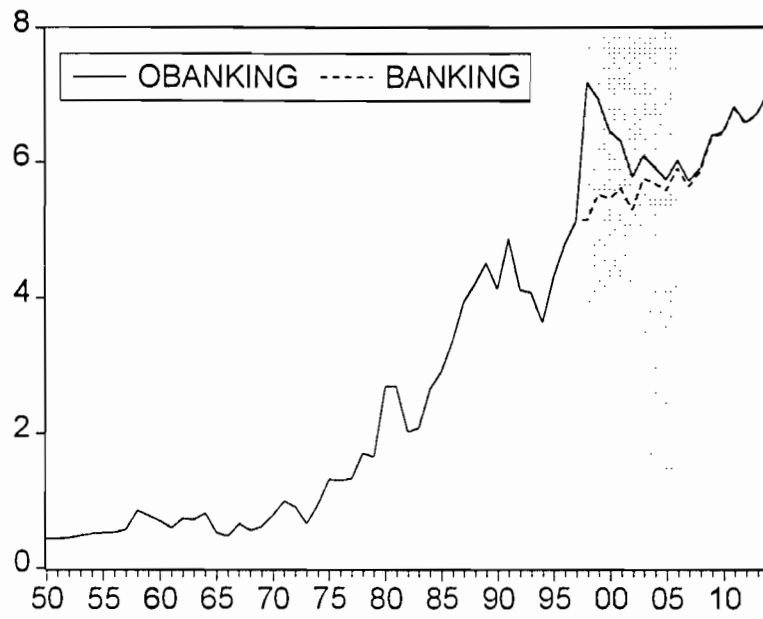


Figure 2a: Original and Outlier Corrected Series

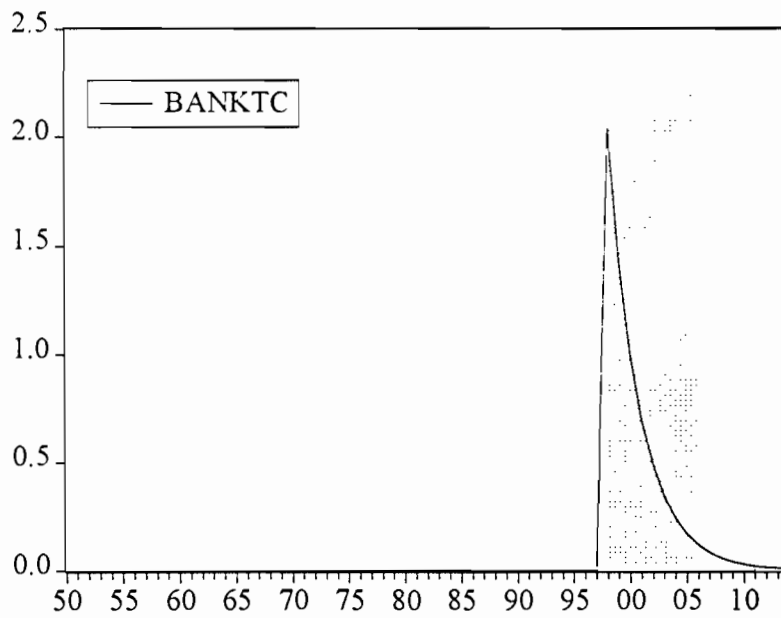


Figure 2b: Evolution of the Impact of 1898

Figure 3: Unobserved Components in BANKING

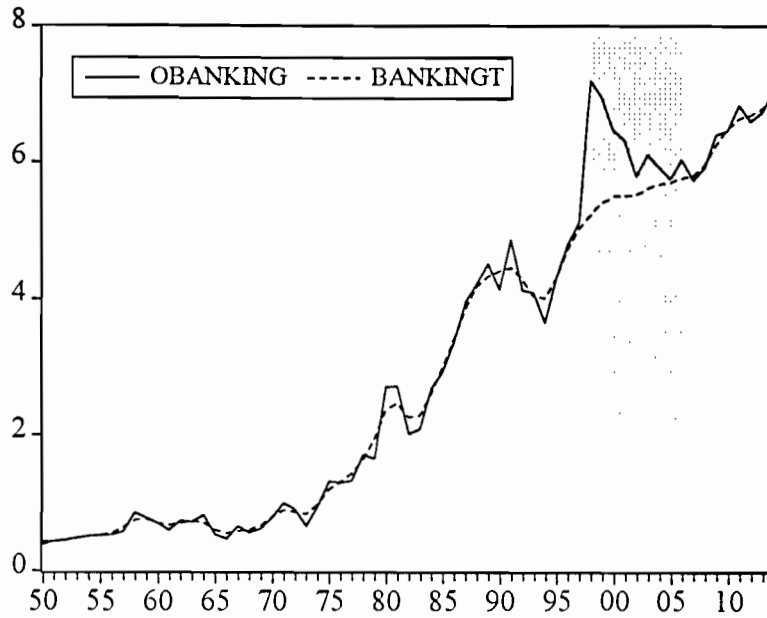


Figure 3a: Original series and Trend Component

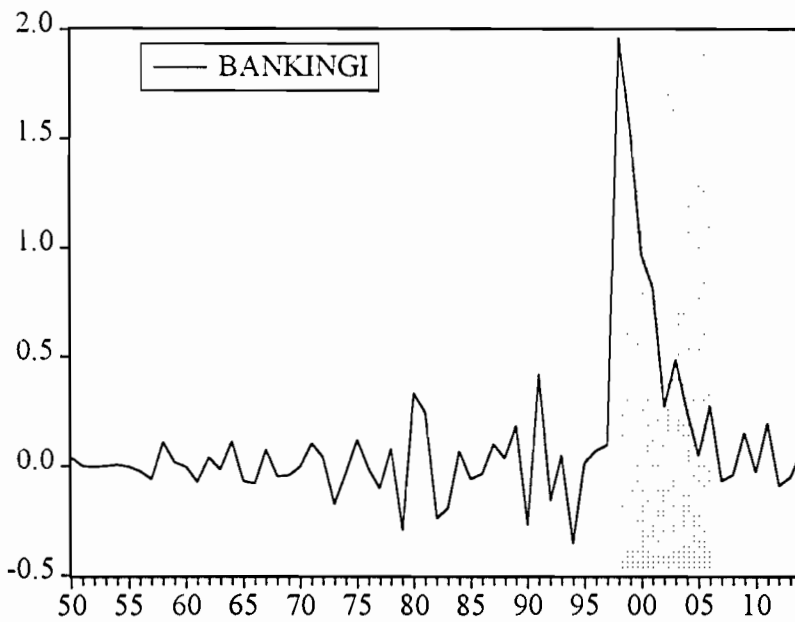


Figure 3b: Irregular Component + TC Outlier

Figure 4: CCBAL (1851-1914)

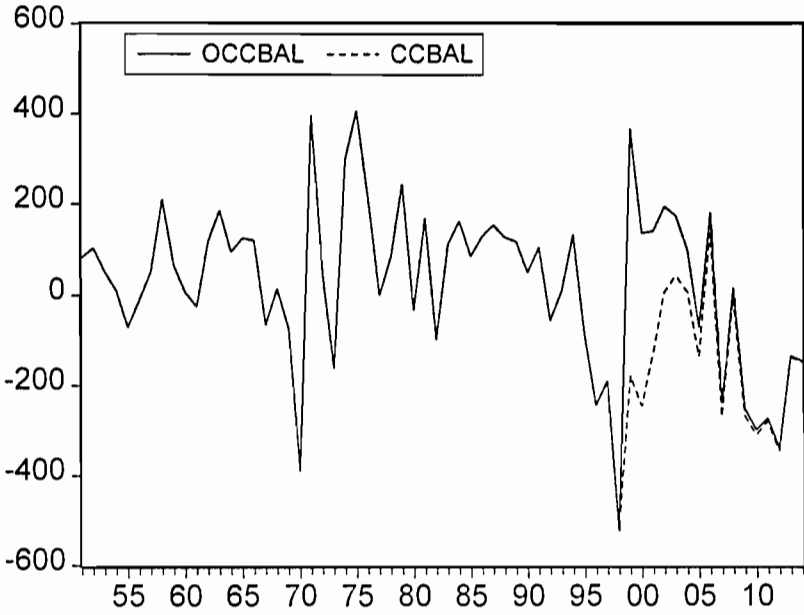


Figure 4a: Original and Outlier Corrected Series

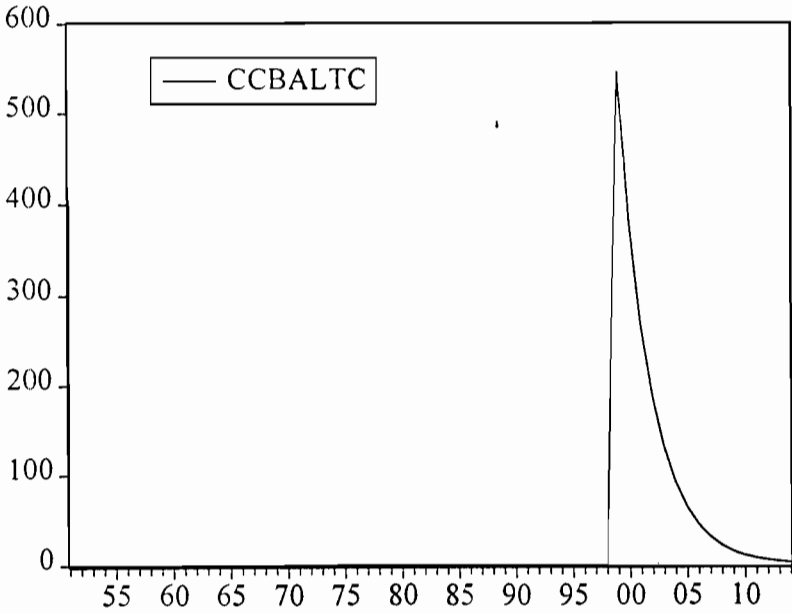


Figure 4b: Evolution of the Impact of 1899

Figure 5: Unobserved Components in CCBAL (1851-1914)

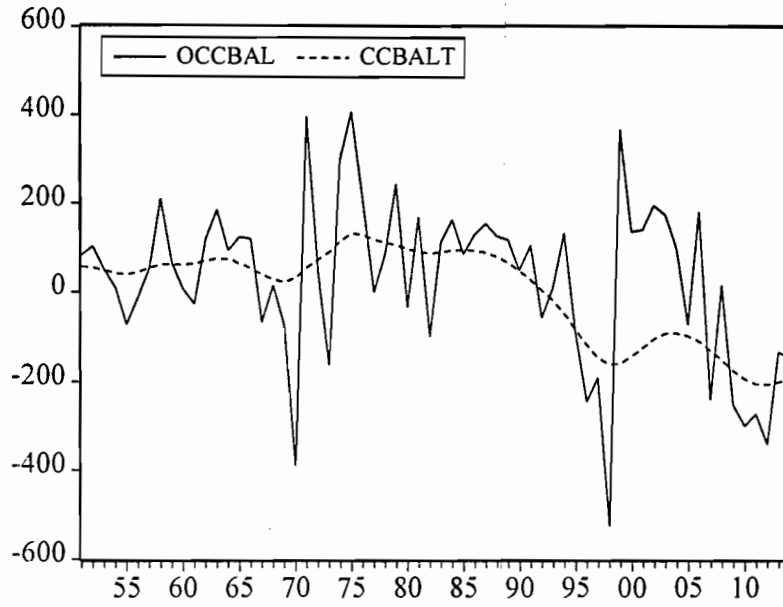


Figure 5a: Original Series and Trend Component

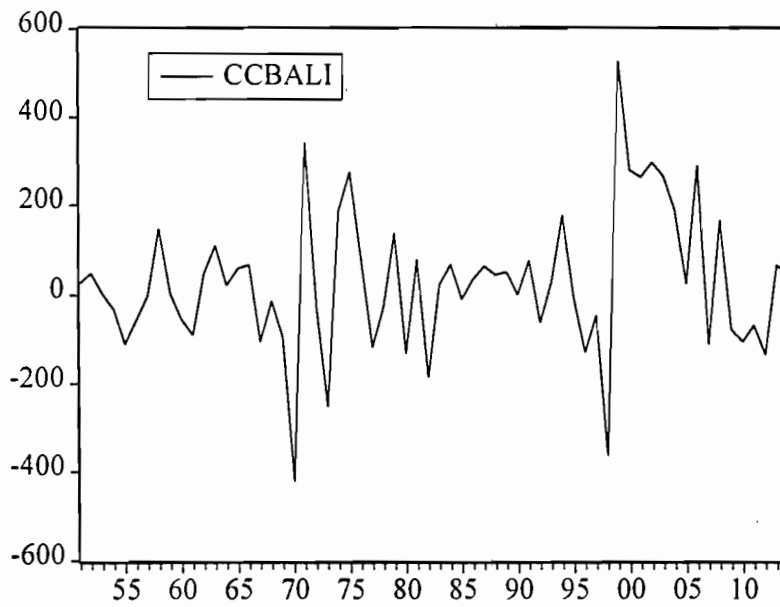


Figure 5b: Irregular Component + TC Outlier

Figure 6: OEXPORT

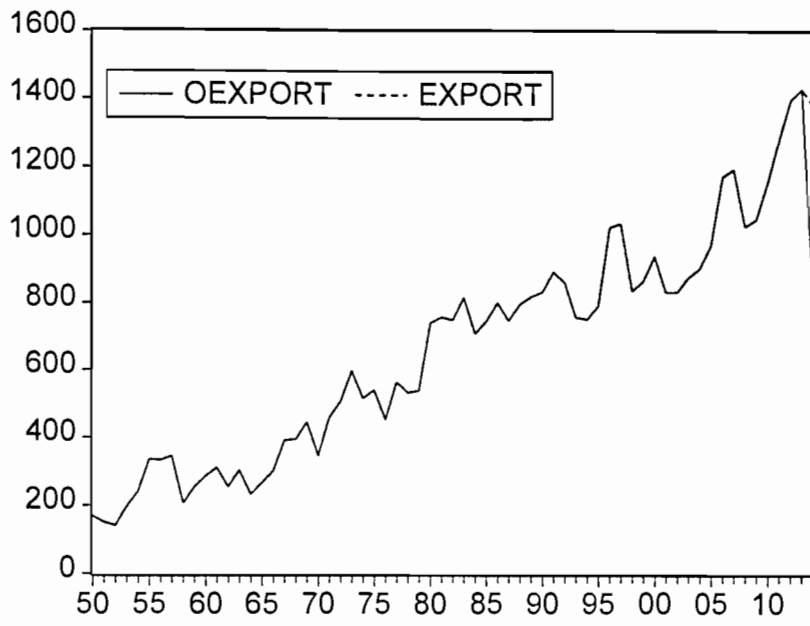


Figure 6a: Original and Outlier Corrected Series



Figure 6b: Additive Outlier in 1914

Figure 7: Unobserved Components in OEXPORT

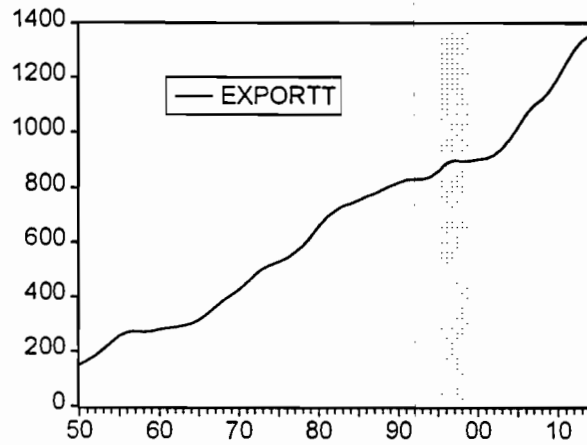


Figure 7a: Trend Component

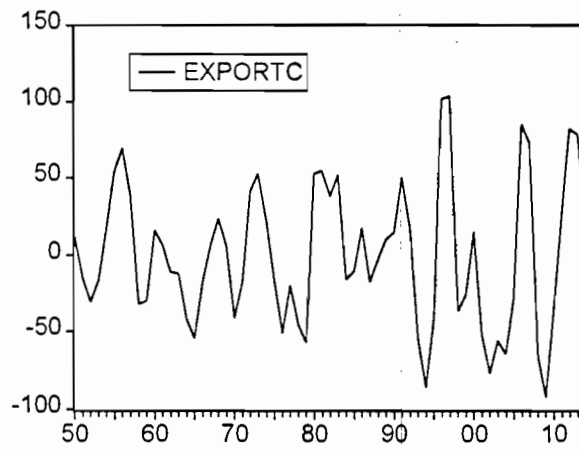


Figure 7b: Business Cycle Component

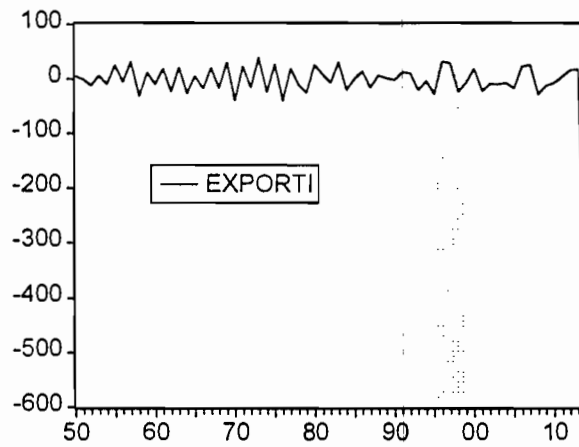
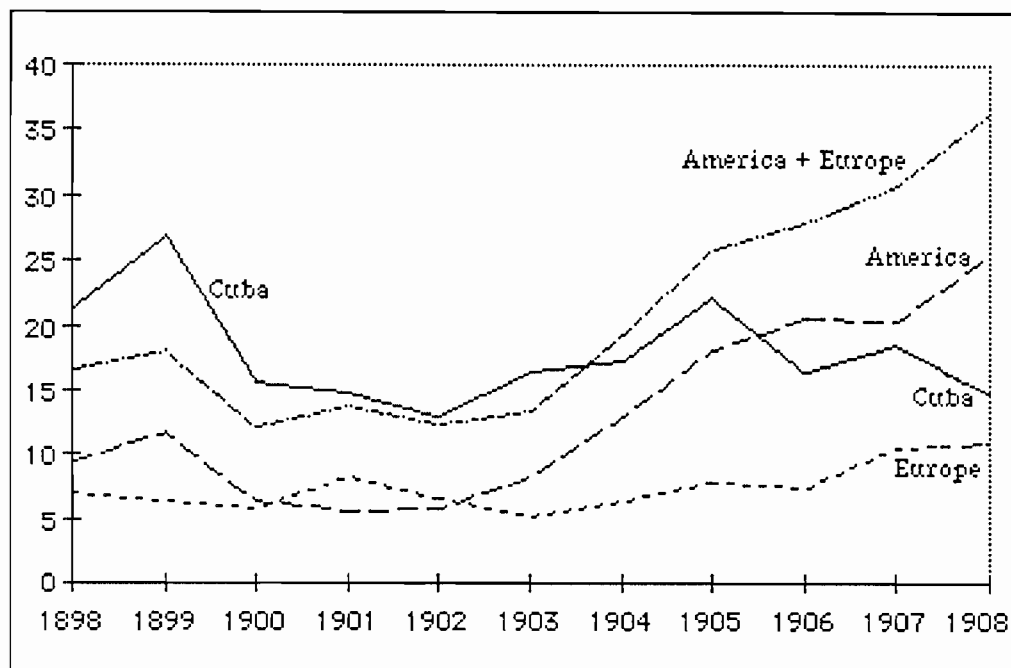


Figure 7c: Irregular + AO Outlier

Figure 8
Textile exports by destination, 1898-1908
(thousands of metric tons)



Source: Carles Sudrià, "La exportación en el desarrollo de la industria algodonera"
Revista de Historia Económica, I, n.2, 1983, pp. 383-385.

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