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Abstract: The fisheries sector is currently contending with the hectic development of its own political economy framework being convulsed by the dynamics of decentralisation. This process is enshrouded in an environment of economic globalisation, taking place against the backdrop of the governance approach. Taking this situation as our starting point, our main goal is to quantify the effects that the Spanish port devolution process might have on the Spanish fisheries sector using a transfer function model; we take, as dependent variables, both the volumes of landings at State ports of general interest and their cash value.

**FISHERIES TRAFFIC: THE POOR RELATION OF PORT DEVOLUTION.
LESSONS FROM SPANISH STATE PORTS OF GENERAL INTEREST.**

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FISHERIES TRAFFIC: THE POOR RELATION OF PORT DEVOLUTION. LESSONS FROM SPANISH STATE PORTS OF GENERAL INTEREST.¹

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The fisheries sector is currently contending with the hectic development of its own political economy framework being convulsed by the dynamics of decentralisation. This process is enshrouded in an environment of economic globalisation, taking place against the backdrop of the governance approach. Taking this situation as our starting point, our main goal is to quantify the effects that the Spanish port devolution process might have on the Spanish fisheries sector using a transfer function model; we take, as dependent variables, both the volumes of landings at State ports of general interest and their cash value.

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Introduction

Governance is becoming the dominant focus of marine management, particularly in port and fisheries policies. As a type of administration, it is more flexible and includes actors from different fields and tiers of government (government agencies, civil society, the media, the academic world and businesses) for which new game rules have to be devised [1], [2].

As far as ports and harbours are concerned, there has been a profound change in the relationship between the State and the ports since the nineteen-eighties. The reasons for this include both the globalisation of the economy, resulting in new, wide-ranging and more complex traffic and relationships between agencies [3], and the appearance of new management models which seek to increase management efficiency and responsiveness, with a consequent increase in financial autonomy and profitability. Port devolution is the most turned-to proposal in literature addressing the subject from a range of perspectives [4], [5]. Devolution is understood here in a broad sense as the transfer of responsibility for control, technical and financial organisation and the channel of economic activity from the central administration to other institutional agencies closer to the port [6], [4].

¹ State Ports of General Interest or National Ports: Act 27/1992, concerning State Ports and the Merchant Navy, establishes that ports will be classified as "State Ports of General Interest" on the basis of the importance of the role they play in the Spanish port system as a whole (Art. 2.5 and Art. 5). They are broad-based commercial traffic ports (including fisheries traffic) under the administrative control of the Central Government (exercised through the 'State Ports' public entity). Fishing ports in the strict sense which are not considered to be commercial are explicitly excluded from this category according to the Act (Art. 3) and are placed under the jurisdiction of regional governments (the Autonomous Communities).

1 It must be borne in mind that ‘devolution’ has taken place in all kinds of port systems,
2 from Anglo-Saxon [7] to Mediterranean countries [8], with Spain situated in the context
3 of the latter. Spanish ports have been defined under the maritime law as public domain
4 since the 19th century, although there had also been previous legislative precedents.
5 With the passage of time, the State has gradually loosened its control over ports and
6 harbours to the point of decentralising both management (Act 27/1992) and political
7 control from the central government to regional administrations² (Act 62/1997, which
8 amends the earlier Act³). Both of these initiatives set forth a new distribution of powers
9 and responsibilities for port issues: the central administration retains coordination of the
10 so-called State ports of general interest, as well as ports with intense commercial traffic
11 and broad hinterlands where fisheries traffic and the remaining commercial traffic exist
12 side-by-side. All remaining ports, essentially comprising fishing ports, with sparse
13 commercial traffic and marinas, are exclusively managed by regional governments [9].
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17 This same political and scientific framework has influenced fisheries activity since the
18 nineteen-eighties, with one of the most interesting proposals being the ‘governance
19 approach’ [10]. Symes [11] understands that, in a similar way to what is happening in
20 commercial ports [4], there are three different agendas necessary for the new model to
21 be achieved: privatisation, co-governance and regionalisation through, for example,
22 decentralization. This is the route that has been followed in Spain, including in fisheries
23 policy [12].
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26 Notwithstanding, since the nineteen-eighties, Spanish fisheries policy has been shot
27 through with contradictory principles: 'downwards' devolution - in the decentralisation
28 direction – has been uneasily combined with a transfer of political power to the
29 European Commission, which applies a more top-down approach [13]. Notably,
30 participation and devolution - in their respective embodiments of regionalisation and
31 decentralisation - do not have a linear relationship; more devolution does not mean
32 greater participation of local and regional agencies [14].
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36 The impacts that these processes have on the different types of traffic and the efficiency
37 of port operations are currently under study. Both quantitative models [15], [8], as well
38 as more qualitative methodologies are being used both for port policy [16] and for
39 fisheries management in keeping with the principles of integrated coastal management
40 [17].
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44 This article uses quantitative research to analyse the results of the convergence of port
45 economic policy and fisheries models in Spain, with the hypothesis that, in both cases,
46 we are witnessing a new political-port regime that displays the theory of governance, in
47 general, and one of its forms, decentralisation, in particular. Using transfer function
48 models, fisheries traffic and the value of the catches at State ports of general interest are
49 taken as variables in the analysis.⁴
50

51 52 **Methodology**

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56 ² France and Canada are parallel references [5].

57 ³ See [8] for an analysis of both Acts.

58 ⁴ The choice of State ports of general interest is justified by their good fisheries statistics. Unlike those for
59 regional fishing ports, these statistics are unbroken since 1962, which is essential if the methodology is to
60 be applied.
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This approach is a limited version of the model in [8]. Firstly, we used the Hodrick-Prescott filter with the adjustments proposed by [18] for annual series.⁵ The aim of this is to eliminate spurious effects, whether of a temporal nature, or due to changes in the way the variables are historically computed - for example, when adding the value of the fresh fish in the markets to catches over the 45 year period considered in the study (from 1962 to 2006). Secondly, to test the structural break hypothesis, we have chosen to estimate transfer function models, in the tradition of [29], although we have extended the latter approach to take into account ideas on endogenous-break testing, according to [20]. The models considered are:

$$\begin{cases} \partial HPT r_t^{\log(FT)} = \gamma_{FT,0} + \gamma_{FT,1} \partial HPT r_t^{\log(GDP)} + \gamma_{FT,2} \xi_t^{1985-2006} + \gamma_{FT,3} \xi_t^{1993-2006} + u_{FT,t} \\ u_{FT,t} = \sum_{j=1}^n \rho_{FT,j} u_{FT,t-j} + v_{FT,t}, \quad v_{i,t} \text{ iid } N(0,1) \end{cases} \quad (1)$$

$$\begin{cases} \partial HPT r_t^{\log(FV)} = \gamma_{FV,0} + \gamma_{FV,1} \partial HPT r_t^{\log(GDP)} + \gamma_{FV,2} \xi_t^{1985-2006} + \gamma_{FV,3} \xi_t^{1993-2006} + u_{FV,t} \\ u_{FV,t} = \sum_{j=1}^n \rho_{FV,j} u_{FV,t-j} + v_{FV,t}, \quad v_{i,t} \text{ iid } N(0,1) \end{cases} \quad (2)$$

where $\partial HPT r_t^{\log(FT)}$ denotes the first difference in the trends for the total fresh fish traffic logarithm at Spanish State ports of general interest; $\xi_t^{1993-2006}$ is a dummy variable included to account for the effects of the beginning of the Spanish port devolution process; $\xi_t^{1985-2006}$ is a dummy variable included to control for the effects of the entry of Spain into the EU (the European Economic Community as was); $\partial HPT r_t^{\log(GDP)}$ is the first difference in the trends for the Spanish GDP logarithm, under the hypothesis that the demand for fresh fish and, therefore, its price, depend on economic development; $\partial HPT r_t^{\log(FV)}$ denotes the first difference in the trends for the price per tonne of fresh fish logarithm (in constant 2006 euros) in Spanish State ports of general interest. Figure 1 presents the values of $\partial HPT r_t^{\log(FT)}$, $\partial HPT r_t^{\log(GDP)}$ and $\partial HPT r_t^{\log(FV)}$.

[FIGURE 1]

We have also included an error term, where $j = 3$, as well as a constant term ($\gamma_{i,0}$) in order to capture the effects of additional variables not directly included in the specification. For the dummy variables we have used step formulations (level shift)⁶. These formulations produced the best fit when estimating models (1) and (2).

⁵ The scant variability of the series of continuously diminishing Spanish fisheries traffic excludes a filter being applied using a non-observable component model, as the result would be a linear trend and a constant slope, in other words, the variance of the error term is zero.

⁶ $\xi_t^{1985-2006} = \begin{cases} 0 & \text{if } t \notin (1985, 2006) \\ 1 & \text{if } t \in (1985, 2006) \end{cases}$ & $\xi_t^{1993-2006} = \begin{cases} 0 & \text{if } t \notin (1993, 2006) \\ 1 & \text{if } t \in (1993, 2006) \end{cases}$

Results

The estimate of models (1) and (2) by non-linear least squares led to the following results (robust standard deviations are shown in brackets):

$$\partial HPT\hat{r}_t^{\log(FV)} = -2.107 - 0.581 \partial HPT r_t^{\log(GDP)} + 0.229 \xi_t^{1985-2006} + 0.105 \xi_t^{1993-2006} + u_{FT,t} \quad (3)$$

(2.869) (0.730) (0.318) (0.206)

where R2 = 0.97; Durbin Watson = 1.95; LM(1) = 0.87 (*p-value*).

$$\partial HPT\hat{r}_t^{\log(FV)} = -1.640 + 0.782 \partial HPT r_t^{\log(GDP)} - 0.058 \xi_t^{1985-2006} - 1.242 \xi_t^{1993-2006} + u_{FV,t} \quad (4)$$

(1.400) (0.390) (0.185) (0.205)

where R2 = 0.96; Durbin Watson = 1.84; LM(1) = 0.25 (*p-value*).

According to (3), the port devolution process that began with Act 27/92 had no effect on the development of fisheries traffic at State ports of general interest. However, according to (4), it had a negative effect on the economic value of said traffic, significant to 99 percent⁷. An approximation of the measurement of this impact from the port devolution process can be obtained from equation (5), in which we compute the distance between the estimate of $\partial HPT r_t^{\log(FV)}$ given by equation (4), $\partial HPT\hat{r}_t^{\log(FV)}$, and the estimate of $\partial HPT r_t^{\log(FV)}$ excluding the estimated impact of the reforms, $\partial HPT\hat{r}_t^{\log(FV)} + 1.242 \xi_t^{1993-2006}$. Thus we obtain the following port devolution impact (hereinafter PDI) measured in percentage growth points:

$$PDI = \frac{\int_{1992}^{2006} (\partial HPT\hat{r}_t^{\log(FV)} + 1.242 \xi_t^{1993-2006})}{\int_{1992}^{2006} (\partial HPT\hat{r}_t^{\log(FV)})} - 1 = 6.45 \quad (5)$$

It can thus be concluded that if this port devolution process had not occurred, the price in constant euros would have increased an average of 6.45 times more.

A significant positive relationship can also be seen between the growth of the GDP and the value of fish. Finally, it should be highlighted that Spain's entry into the EEC has had no significant effect on the variables being studied.

Discussion

A number of reasons could explain why the Spanish port devolution process has had no positive effect on fisheries traffic at State ports of general interest. Firstly, after receiving their autonomy under Act 27/92, these ports directed their management

⁷ In order to prove that the dummy variable that we associate with the date on which the Spanish port devolution process began (1st January, 1993) is indeed related to the legal reforms that were enacted on those dates, we endogenise the break by shifting it in time. In this way, we control for the fact that it is not related to other events that would have happened before or after the Acts. We systematically changed the starting year of both events backwards and forwards, up to 1989. In other words, model (2) has been re-estimated for different start years $\xi_t^{1993-2006}$ from 1987 (before that would be redundant with $\xi_t^{1985-2006}$) to 2000. The chosen year, 1983, is the one that maximises the R2 correctness-of-fit statistic and minimises Akaike and Schwartz's information criteria. The results are available from the authors upon request.

1 towards other types of traffic and port activities which are, *a priori*, more profitable
2 than fishing, such as container traffic and logistics areas. An example of this can be seen
3 in the percentage share of investments in the Spanish port system over the last 12 years.
4 On average, only 2.94% of investments have been made in fisheries compared to 7.14%
5 in logistics activities, for example. The investments made in (the currently over-sized)
6 fisheries structures in the past under the developmentalist model [21],⁸ probably act as a
7 curb on the planning of new investments. Perhaps profitability is not the only factor that
8 should be taken into account, however. Other traffic, such as container traffic, that
9 requires expensive vessels to be constantly at sea, is extremely sensitive to labour
10 disputes. The traditional labour disputes in the fisheries sector may have influenced
11 these investment decisions.
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14 The alternative logic is the process of locating and concentrating fisheries traffic at
15 regional ports specialising in said traffic that are not part of the “general interest”
16 network. This phenomenon is occurring both in the process of transfer to regional
17 governments (the fishing port of Bonanza ceased to belong to the “general interest” port
18 of Seville and became a regional port in the mid nineteen-nineties, for example), and in
19 the voluntary transfer of fleets (from the port of Vilagarcía to the regional port of Puebla
20 del Caramiñal, for example).
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24 The indifference of Spanish fisheries to institutional variables continues with the lack of
25 significance of Spain's entry into the EEC in models (1) and (2). As such, the appraisal
26 of the Common Fisheries Policy continues to be controversial [22], beyond any
27 bureaucratic issues that might be involved [23] and despite the positive effects on
28 particular aspects, such as an improvement in profitability of fishing fleets [24].
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32 Another interesting conclusion that can be drawn from this work is the indirect
33 relationship between fresh fish and the evolution of the GDP. At the end of the
34 nineteen-eighties, fisheries development stopped responding to the evolution of the
35 economic cycle (see panel A in Figure 1). Fishing-ground restrictions meant that the
36 foreseeably greater demand for fresh fish, linked to the expansion of the Spanish
37 economy, could not be met. This explains the non-significance of $\partial HPT_r_i^{\log(GDP)}$ in
38 model (3). And yet, the inflexibility of the offer faced with variations in demand caused
39 by the economic cycle is reflected in the significant positive effect of $\partial HPT_r_i^{\log(GDP)}$ in
40 (4). In short, the variations in fresh fish prices are reflected in economic fluctuations,
41 which overreact to these (see panel B in Figure 1).
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46 [FIGURE 1]
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57 ⁸The ports of Barbate and Malaga, in Andalusia, and Barcelona and Tarragona, in Catalonia, are good
58 examples of over-sized port infrastructure compared to the fisheries traffic they cater to. At the present
59 time, attempts to channel some of this infrastructure towards water-sport and tourism usages are being
60 encouraged.
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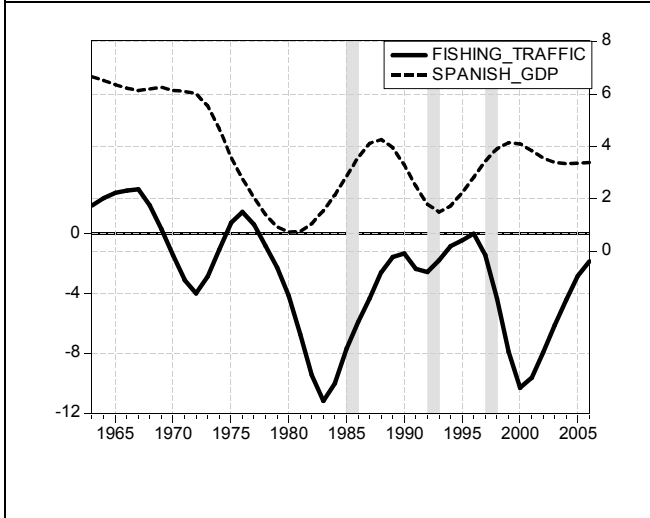
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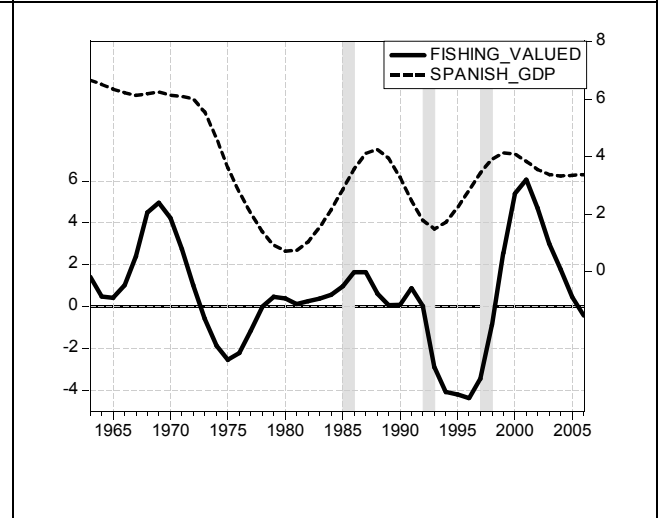
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Figure 1. Dependent and independent variables.

Panel A: Percentage change rate of the trend-cycle component of total fishing traffic of Spanish State ports of general interest (left axis) and the real GDP (right axis).



Panel B: Percentage change rate of the trend-cycle component in the price in constant euros of one tonne of fresh fish in Spanish State ports of general interest (left axis) and the real GDP (right axis).



Source: Own Drafting