Short communication

Fisheries traffic: The poor relation of port devolution. Lessons from Spanish state ports of general interest

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A B S T R A C T

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. With this situation as the starting point, the main goal of this paper is to quantify the effects that the Spanish port devolution process might have on the Spanish fisheries sector through the use of a transfer function model; the volumes of landings at State ports of general interest and their cash value are taken as dependent variables.

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1. 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 [4,6].

It must be borne in mind that 'devolution' has taken place in all kinds of port systems, from Anglo-Saxon [7] to Mediterranean countries [8], with Spain situated in the context of the latter. Spanish ports have been defined under the maritime law as public domain since the 19th century, although there had also been other legislative precedents. With the passage of time, the State has gradually loosened its control over ports and harbours to the point of decentralising both management (Act 27/1992) and political control from the central government to regional administrations[1] (Act 62/1997, which amends the earlier Act[2]). Both of these initiatives set forth a new distribution of powers and responsibilities for port issues: the central administration retains coordination of the so-called State ports of general interest,[3] as well as ports with intense commercial traffic and broad hinterlands where fisheries traffic and the remaining commercial traffic exist side-by-side. All remaining ports, essentially comprising

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[1] France and Canada are parallel references [5].
[2] See [8] for an analysis of both Acts.
[3] 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).

fishing ports, with sparse commercial traffic and marinas, are exclusively managed by regional governments [9].

This same political and scientific framework has influenced fisheries activity since the nineteen-eighties, with one of the most interesting proposals being the 'governance approach' [10]. Symes [11] understands that, in a similar way to what is happening in commercial ports [4], there are three different agendas necessary for the new model to be achieved: privatisation, co-governance and regionalisation through, for example, decentralisation. This is the route that has been followed in Spain, including in fisheries policy [12].

Notwithstanding, since the nineteen-eighties, Spanish fisheries policy has been shot through with contradictory principles: 'downwards' devolution—in the decentralisation direction–has been uneasily combined with a transfer of political power to the European Commission, which applies a more top-down approach [13]. Notably, participation and devolution—in their respective embodiments of regionalisation and decentralisation—do not have a linear relationship; more devolution does not mean greater participation of local and regional agencies [14].

The impacts that these processes have on the different types of traffic and the efficiency of port operations are currently under study. Both quantitative models [15,8] as well as more qualitative methodologies are being used both for port policy [16] and for fisheries management in keeping with the principles of integrated coastal management [17].

This article uses quantitative research to analyse the results of the convergence of port economic policy and fisheries models in Spain, with the hypothesis that what can be found in both cases is a new political-port regime that displays the theory of governance, in general, and one of its forms, decentralisation, in particular. Using transfer function models, fisheries traffic and the value of the catches at State ports of general interest are taken as variables in the analysis.[4]

2. Methodology

This approach is a limited version of the model in [8]. Firstly, the Hodrick–Prescott filter was used 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, in the tradition of [19], it was decided that an estimation of transfer function models should be made to test the structural break hypothesis, although the approach was extended to take into account ideas on endogenous-break testing, according to [20]. The models considered are:

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

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

where $\partial HPTr_t^{\log(FT)}$ 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 EEC (the European Economic Community); $\partial HPTr_t^{\log(GDP)}$ 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; $\partial HPTr_t^{\log(FV)}$ 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. Fig. 1 presents the values of $\partial HPTr_t^{\log(FT)}$, $\partial HPTr_t^{\log(GDP)}$ and $\partial HPTr_t^{\log(FV)}$.

An error term has also been included, 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. Step formulations (level shift)[6] have been used for the dummy variables. These formulations produced the best fit when estimating models (1) and (2).

3. 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):

$$
\partial H\hat{P}Tr_t^{\log(FT)} = \underset{(2.869)}{-2.107} - \underset{(0.730)}{0.581}\,\partial HPTr_t^{\log(GDP)}
$$
$$
\qquad + \underset{(0.318)}{0.229}\,\xi_t^{1985-2006} + \underset{(0.206)}{0.105}\,\xi_t^{1993-2006} + u_{FT,t} \tag{3}
$$

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

$$
\partial H\hat{P}Tr_t^{\log(FV)} = \underset{(1.400)}{-1.640} + \underset{(0.390)}{0.782}\,\partial HPTr_t^{\log(GDP)}
$$
$$
\qquad - \underset{(0.185)}{0.058}\,\xi_t^{1985-2006} - \underset{(0.205)}{1.242}\,\xi_t^{1993-2006} + u_{FV,t} \tag{4}
$$

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%[7]. An approximation of the measurement of this impact from the port devolution process can be obtained from Eq. (5), in which the distance between the estimate of $\partial HPTr_t^{\log(FV)}$ given by Eq. (4), $\partial H\hat{P}Tr_t^{\log(FV)}$, and the estimate of $\partial HPTr_t^{\log(FV)}$ excluding the estimated impact of the reforms, $\partial H\hat{P}Tr_t^{\log(FV)} + 1.242\xi_t^{1993-2006}$ is computed. Thus the following port devolution impact (hereinafter

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

[7] In order to prove that the dummy variable associated 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, the break is endogenised by shifting it in time. In this way, a control is put in place for the fact that it is not related to other events that would have happened before or after the Acts. The starting year of both events was systematically changed 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.
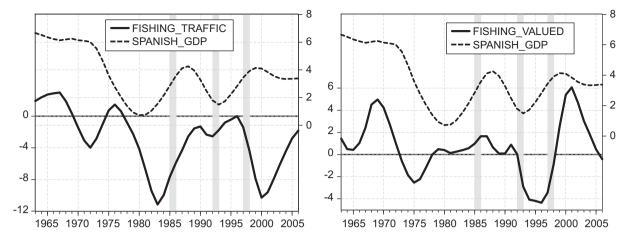
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[4] The choice of State ports of general interest is justified by their good fisheries statistics. Unlike those for regional fishing ports, these statistics are unbroken since 1962, which is essential if the methodology is to be applied.

[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.

Fig. 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).

PDI) measured in percentage growth points is obtained:

$$PDI = \frac{\int_{1992}^{2006}(\partial H\hat{P}Tr_t^{\log(FV)} + 1.242\xi_t^{1993-2006})}{\int_{1992}^{2006}(\partial H\hat{P}Tr_t^{\log(FV)})} - 1 = 6.45 \qquad (5)$$

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.

4. 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 towards other types of traffic and port activities which are, *a priori*, more profitable than fishing, such as container traffic and logistics areas. An example of this can be seen in the percentage share of investments in the Spanish port system over the last 12 years. On average, only 2.94% of investments have been made in fisheries compared to 7.14% in logistics activities, for example. The investments made in (the currently over-sized) fisheries structures in the past under the developmentalist model [21],[8] probably act as a curb on the planning of new investments. Perhaps profitability is not the only factor that should be taken into account, however. Other traffic, such as container traffic, that requires expensive vessels to be constantly at sea, is extremely sensitive to labour disputes. The traditional labour disputes in the fisheries sector may have influenced these investment decisions.

The alternative logic is the process of locating and concentrating fisheries traffic at regional ports specialising in said traffic that are not part of the "general interest" network. This phenomenon is occurring both in the process of transfer to regional governments (the fishing port of Bonanza ceased to belong to the "general interest" port of Seville and became a regional port in the mid-nineteen-nineties, for example), and in the voluntary transfer of fleets (from the port of Vilagarcía to the regional port of Puebla del Caramiñal, for example).

The indifference of Spanish fisheries to institutional variables continues with the lack of significance of Spain's entry into the EEC in models (1) and (2). As such, the appraisal of the Common Fisheries Policy continues to be controversial [22], beyond any bureaucratic issues that might be involved [23] and despite the positive effects on particular aspects, such as an improvement in the profitability of fishing fleets [24].

Another interesting conclusion that can be drawn from this work is the indirect relationship between fresh fish and the evolution of the GDP. At the end of the nineteen-eighties, fisheries development stopped responding to the evolution of the economic cycle (see panel A in Fig. 1). Fishing-ground restrictions meant that the foreseeably greater demand for fresh fish, linked to the expansion of the Spanish economy, could not be met. This explains the non-significance of $\partial HPTr_t^{\log(GDP)}$ in model (3). And yet, the inflexibility of the offer faced with variations in demand caused by the economic cycle is reflected in the significant positive effect of $\partial HPTr_t^{\log(GDP)}$ in (4). In short, the variations in fresh fish prices are reflected in economic fluctuations, which overreact to these (see panel B in Fig. 1).

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[8] The ports of Barbate and Malaga, in Andalusia, and Barcelona and Tarragona, in Catalonia, are good examples of over-sized port infrastructure compared to the fisheries traffic they cater for. At the present time, attempts to channel some of this infrastructure towards water-sport and tourism usages are being encouraged.

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