

Accounting and disciplinary methods in fishery management

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Abstract

Purpose – The purpose of this study is to contribute to the research related to “the interplay between accounting and the state, politics, and local authorities in the broad government and administration of food for sustainability of populations” (Sargiacomo *et al.*, 2016). Considering contemporary examples and investigating the genealogy of an 18th-century reform of fishery management (the New Plan), the authors explore the role played by accounting and calculative practices when local authorities intervene using forms of discipline based on control systems that acted on commons (fish), people and space.

Design/methodology/approach – This paper is historically grounded on archival research on a fish provisioning case during the 18th century in Ancona, an Italian town on the Adriatic coast. The investigation adopts an approach focussed on the use of disciplinary methods in the terms highlighted by Foucault. This perspective offers a lens capable of revealing the key role of accounting in a period when discipline became “general formulas of domination” (Foucault, 1977) and the Papal States were looking for food provisioning solutions (Foucault, 2007). The study highlights similarities with contemporary fishery management.

Findings – The paper shows that governability of fishery in a commons’ logic is not limited by the properties of the good, but rather “it is achieved through the objects and instruments that are deployed to make it possible” (Johnsen, 2014, p. 429). It reveals forms assumed by economic calculation in different eras and their contribution in the art of governing realised by the state (Hoskin and Macve, 2016). The study unveils how accounting effectively operates using “naming and counting” activities (Ezzamel and Hoskin, 2002) based on a system of documents and accounting registers; these have a pivotal role in redefining fishery management and in keeping goods (fish) and people (fishermen) under control. The investigation also highlights the importance of properly quantifying data in fishery management, confirming the literature on the topic (Beddington *et al.*, 2007, p. 1713). In contemporary situations, data refer to quantifying the fish stock in the sea and the consequent estimation of fish catch. In the historical investigation, although environmental protection was not an issue, quantification refers to the fish that entered the town of Ancona, whose estimation was the result of a new calculative approach adopted by local authorities facing fish needs. In addition, it offers early evidence of organised and rational-based control mechanisms that were the result of Enlightened ideas emerging in the Papal States context.

Originality/value – Despite the fact that fish represent a fundamental good for governments to act on in response to a population’s needs, there has been no attention paid to how governmental authorities have used disciplinary mechanisms to intervene in fishery management or the role played by accounting. This study’s novelty is its investigation of fishery, using Foucauldian disciplinary methods to understand accounting’s contribution in fishery governance. In addition, this investigation permits to unveil the role of accounting to support one of the main principles of the governance of commons that is represented by the congruence between rules and local conditions (Fennell, 2011, p. 11; Ostrom, 1990, p. 92).

Keywords Accounting, Disciplinary methods, Foucault, Food, Fishery management, History, Accounting history

Paper type Research paper



1. Introduction

Identifying successful systems for fishery governance is a problem that contemporary societies are trying to solve in relation to cases of commons governance, especially in contexts where fisheries are a fundamental element of the economy, such as in Canada and Norway (Waldman, 2014; Johnsen, 2014). In particular, the governance of commons, intended as common-pool resources, poses economic, social and environmental problems. Contemporary studies have attempted to analyse different approaches for fishery management; these investigations highlight how some states have been more successful than others in implementing effective regulations and controls. Norway is an example of success, while the Canadian approach did not produce the expected results (Waldman, 2014).

Management scientists, marine scientists and social academics have devoted great efforts to investigating fishery governance, often underlining the role of calculative practices (Charles, 1997; Parson, 1993; Pomeroy and Berkes, 1997; Jentoft and McCay, 1995; McCay and Jentoft, 1996). Nevertheless, this topic continues to be overlooked in the accounting field, despite the centuries-long presence of fishery regulations that involved the relationship between local communities and fishermen. To consider this overlooked perspective and with the goal of understanding accounting's role in the governance of fish provisioning, this paper considers a historical study of a fish governance system in an Italian case in the 18th century. Although the limitations of fishing instruments in the past made environmental protection unnecessary, the economic and social needs were similar to those of today, as the story in this paper will illustrate. In this regard, it is worth noting that the communality of contemporary cases and our historical analysis is related to the object of the governance, i.e. the commons, not to the specific problem to be solved, and the way calculative practices operate in a disciplinary relation between state and fishermen.

As Sargiacomo *et al.* (2016) emphasise, investigating “the interplay between accounting and the state, politics, and local authorities in the broad government and administration of food for sustainability of populations” (p. 15) is an important line of research. This is the research focus of the present study, which references a fish provisioning case in the 18th century to answer the abovementioned authors' calls for historical investigations.

Fishing has always played a central role in both coastal area economies and in meeting citizens' nutritional needs. Fishing has long been the most important activity in seaside towns and has provided food for communities whose diets were mainly based on fresh fish. Due to the importance of this food, political interventions have been used to facilitate a satisfactory level of local fish trade capable of responding to a population's needs (Caddy and Cochrane, 2001, pp. 654–57; Ciotti, 2005, pp. 334–39; MacDowell, 2012, pp. 286–90; Moroni, 2012, pp. 76–78). As already demonstrated in the accounting history literature in relation to cereals (Servalli and Gitto, 2016; Funnell, 2001), fish provisioning was also inseparably linked to politics, as rulers' interventions related to this good throughout the centuries can easily demonstrate (De Nicolò, 2016; Johnsen, 2014; Waldman, 2014).

Fish represent a fundamental good both in economic and in social terms for many countries around the world, whose impact on local communities have often implicated regulation systems involving different forms of relationships between the state (or local community) and fishermen in a logic of fishery governance. At this regard, with reference to contemporary experiences, we consider Canada and Norway regulations to offer an overview of current fishery management.

In historical perspective, this paper considers a reform issued under the Papal States in Ancona, Italy, a town located in the middle of the Adriatic coast. Ancona experienced fishery management problems, which led to a scarcity of fish for its population throughout the 18th century. This criticality generated a political debate and a series of interventions by the local government (Galeazzi, 2016; De Nicolò, 2009). In particular, the reform we consider was issued by the Ancona Municipality in 1791 titled, “*Nuovo piano creduto efficace e conducente a*

riparare il disordine della penuria del pesce nella città di Ancona” (New Plan considered effective and conducive to solving the disorder of the lack of fish in the town of Ancona); hereafter, the New Plan.

In this paper, specific attention is paid to understanding the effectiveness of this governmental fishery reform, considering the disciplinary mechanisms and the role played by accounting. The aim of the investigation is to explore the genealogy of the New Plan and accounting's influence in this important moment of discontinuity when authorities intervened in fishery management through an Enlightenment reform, adopting forms of discipline based on systems of control that affected commons (fish), people and space.

Within this disciplinary discourse, we also intend to show a comparison with contemporary fishery experiences for an understanding of the role of accounting and calculative practices in successful fishery management.

At the same time, in historical terms, the paper contributes to the accounting history literature of the Enlightenment period, which, despite a series of interesting contributions (Sanchez-Matamoros *et al.*, 2005; Gomes *et al.*, 2008, 2014; Maran *et al.*, 2014, 2019), has not yet explored the food provisioning issue, a problem the public authorities had to deal with in that period. The population growth in the 18th century (Rudé, 1972, p. 54) posed the problem of a food shortage; food scarcity was at the heart of a series of riots that called for a political solution. The time span of the historical investigation of this paper (the second half of the 18th century) corresponds with both the existence of food scarcity problems that public authorities faced (Foucault, 2007) and the emergence of discipline in terms of “general formulas of domination” (Foucault, 1977; Sargiacomo, 2009).

In this regard, our investigation aims also to answer to a call from recent Foucauldian literature for more works capable to differentiate the forms assumed by economic calculation in different eras and their contribution in the art of governing realised by the state (Hoskin and Macve, 2016, p. 130).

In so doing, in exploring the New Plan, the case analysis is informed by a Foucauldian framework. In methodological terms, this framework has been considered an effective lens for investigating the new logics adopted and processes defined in the New Plan through a disciplinary microphysics of power.

In particular, in light of this framework, the study explores the role of the new accounting practices adopted in fish governance reform about the control of goods (fish) and people (fishermen, fish sellers, contractors and citizens), considering both financial and non-financial archival sources. The study is situated within research that is firmly set in the “archives” (Carnegie and Napier, 1996, 2012), considered in its wider view “as comprehending not just records of profit-oriented businesses but also those of individuals, not-for-profit organisations, the public sector and other entities” (Carnegie and Napier, 1996, p. 30). Indeed, the analysis is primarily based on sources in the Ancona State Archive that came from local authorities who were involved in the adoption of the New Plan.

The paper shows that the governability of fishery, both in the past that in contemporary cases, “is achieved through the objects and instruments that are deployed to make it possible” (Johnsen, 2014, p. 429). In particular, the role of accounting appears “inherently administrative and political” (Mennicken and Miller, 2012) and fundamental in reshaping key actors' behaviours towards local authorities' objectives, aiming to environmental (e.g. Canada and Norway contemporary fishery) or social and economic goals (Ancona fishery). Our exploration reveals that successful fishery experiences, both in the present and in the past, are grounded on rational-based forms of measurements and imply control mechanisms where accounting plays a pivotal role in making actors and their behaviours visible and allowing forms of control and surveillance. It also permits to unveil forms assumed by economic calculation in different eras and their contribution in the art of governing realised by the state (Hoskin and Macve, 2016). In so doing, early evidences of disciplinary methods

and related accounting role are highlighted, revealing an 18th-century shift from sovereignty mechanism to administrative governance (Foucault, 2007).

The remainder of this paper is organised as follows. Section 2 offers an overview of fishery management, and Section 3 reviews the theoretical underpinnings of the study. Section 4 describes the methodological aspects, while Section 5 introduces a brief overview of local and central governance. Section 6 explores the case study considering the New Plan (6.1) and the organisation and functioning of the *Pescaria* (6.2). Using accounting registers, Section 7 calculates the effects of the New Plan in the first two years of its adoption. Section 8 discusses the case in light of the theoretical framework and reveals the findings, highlighting the disciplining power of accounting for better governance of fish resources. Section 9 concludes the paper and suggests possible future developments.

2. Overview of fishery management

To understand the field of fishery management in a commons' governance logic, this section offers an analysis of relative contemporary literature on the topic, distinguishing the main approaches adopted and considering examples from Canada and Norway.

The notion of commons is “an example of a term repeatedly used to refer to property owned by a government or by no one” (Schlager and Ostrom, 1992, p. 249). In contemporary literature, this concept is frequently adopted in relation to fish and fishery management (e.g. Burns and Stöhr, 2011; Johnsen, 2014; Schlager and Ostrom, 1992).

Fish represent a pivotal economic and social element for many countries where the survival of local communities is often related to implementing regulation systems that involve different forms of relationships between the state (or local community) and fishermen in a logic of fishery governance. This logic involves economic, social and environmental problems as shown by many case studies throughout the world (e.g. Hamilton *et al.*, 2004; MacDowell, 2012; Beddington *et al.*, 2007; Pomeroy and Berkes, 1997). These investigations address a variety of solutions in terms of controls and final results in fishery management. Hereafter, we briefly describe examples from Canada and Norway.

In the Canadian context, fish have always been a fundamental resource. It has largely shaped the communities of the eastern coast, whose wealth was based on fishing (Hamilton *et al.*, 2004). Since the 1950s, due to technological innovations in the sector, fishermen have been able to fish deeper and in large areas, increasing their catch. The number of foreign fishing trawlers has also risen, creating problems due to the large presence of foreign (offshore) fishermen and the negative impact on the fish stock; this led to complaints to the government from inshore fishermen (MacDowell, 2012, p. 289). The Canadian government faced this issue by adopting a hierarchical approach based on redefining the offshore fishery boundaries. In particular, with the aim of counteracting the reduction in fish stock, through an Order in Council made on 2 November 1976, the government declared its right to manage the fisheries in an exclusive economic zone that extended to 200 miles offshore (Fishing Zone of Canada [Zone 4 and 5] Order, 1977). Introducing fishermen quotas was another cornerstone of the Canadian Regulation. Indeed, Canada was a world leader in adopting quotas in fisheries management. The quota-based governmental programme required estimating the biomass for each fish stock using a model that determined the allowable harvest quota, the so-called “Total Allowable Catch”, which was further subdivided into individual quotas.

In Canada, knowledge of the fish biomass was fundamental for the quota system, but unfortunately, its results were wrong. Mistakes in the calculative practices resulted in misestimating the stock. On the one hand, the surveys covered only a small fraction of the fishable area, while on the other hand, the high fish rates were considered indicators of large fish stock (Charles, 1997, p. 107). Therefore, when the government introduced quotas for fishermen, there was an increase in the “Total Allowable Catch”, but this was because the

total stock was overestimated (MacDowell, 2012, p. 291). This disciplinary governmental intervention reshaped the behaviour of fishermen that usually fished in that area. Nevertheless, since foreign vessels were not allowed to catch in the area, many local fishermen took their place, consequently depleting the fish stock (Hamilton *et al.*, 2004, p. 199). This overfishing and the consequent destruction of the fish stock had dramatic business and social consequences, due to Canada's Fisheries Minister closing the Atlantic fisheries (Waldman, 2014, p. 3). This decision resulted in massive unemployment and loss of income for fishermen and plant workers, causing the largest job loss in Canadian history (Gien, 2000, p. 121). The main economic sustenance for the area was completely lost; there was a fall in the population (Hamilton *et al.*, 2004, pp. 205–206), and the few people remaining needed government assistance (Parson, 1993, p. 146).

Norway adopted a different perspective for fishery management based on forms of cooperation between the state and fishermen. A wide range of fishery policies and programmes testify to the results of an increased need for fishermen to actively participate (Pomeroy and Berkes, 1997, p. 465; Jentoft and McCay, 1995; McCay and Jentoft, 1996).

Scientists have also drawn attention to the growing awareness that fishermen have to become more involved in fisheries management (Jentof, 1989; Nielsen and Vedsmund, 1995). This perspective has been referred to as co-management and identifies an arrangement where the responsibility for fishery management is shared between the government and fishermen (Sen and Nielsen, 1996, p. 406).

Norway is one example of successful co-management that is included amongst cases of long-standing marine fishery co-management arrangements that work (Pomeroy and Berkes, 1997, p. 468). The fishery sector in Norway has always been an important political factor, and its government has to consider this aspect in its fishery policy decisions. Over the years, fishing regulations gained strength, and various mechanisms (licences, quotas, etc.) were adopted to face the problems of overcapacity and deterioration in stock. The most important change was the introduction of 200-mile economic zones in 1976 (Act of 17 December 1976 N. 91), which introduced exclusive rights to the fish stock within this area, similar to what occurred in Canada. Paragraph 4 of this Act refers to specific regulations about measuring the "Total Allowable Catch", terms and conditions regarding access by foreign fishermen, and other measures to protect the fish stock.

In Norway, requirements were also introduced for fish catch accounting and a logbook, which were applied to fishing vessels of all nationalities (Churchill, 2001, p. 118; FAO, 2005, p. 4). These kinds of reporting allowed collecting information about the fishermen's identities (vessel and licence), departure and arrival ports with relative dates, landing place, buyers and landed quantity per date (Act of 3 June 1983 N. 40; European Commission, n.d.). In addition, effective 1 January 1977, foreign vessels fishing in Norway's economic zone must submit weekly reports on the amount of catch harvested of each separate fish species and the catch areas to the Directorate of Fisheries for quota control purposes (Royal Decree N. 15 of 17 December 1976; FAO, 2005, p. 6). The information in the logbooks is an important source for controls and inspections (in addition to scientific uses), while the fishery areas indicated are used for cross-checks against sales notes (European Commission, n.d.).

It is worth noting that in Norway's case, the calculations underlying the quota system were the result of a scientifically modelled mechanism, as highlighted by the literature on fish catch (Jennings *et al.*, 2001). Indeed, the calculation of the "Total Allowable Catch" was set by the government based on recommendations from a scientific committee that was under the International Council for the Exploration of the Sea (ICES) (Johnsen, 2014). The governmental decision to apply "Total Allowable Catch" affected the conduct of fishermen, who "accepted stricter rules and procedures for catch and quota control and reporting" (Jentoft and Johnsen, 2015) that realised the disciplinary mechanisms. These rules were based on scientific measurements of quotas and required a mechanism for fish catch accounting for both

national and foreign fishermen, as well as periodic reporting by foreign fishermen, within a system of surveillance.

In both these examples, the mechanisms of control based on “naming and counting” activities (Ezzamel and Hoskin, 2002) are characteristic of the relationship between states and fishermen, such as timely reporting on catch and effort, maintenance and submission of fishing logbooks, and catch reports. At the same time, different forms of inspections are also used to check the regularity of a catch by boarding and inspection activities performed by the coastal states (Proulx, 2003, p. 1). These activities are based on verifying fishermen’s bookkeeping. In particular, the fishing vessel’s logs are examined, copied and, in some cases, seized as evidence of irregularity. This accounting evidence is also used to cross-check these data with other data, such as the captain’s log of positions, to identify the position of the vessel’s fishing activities (Proulx, 2003).

Our work is intended to show early evidence of rational-based controls and explore past fishery reform; the aim is to understand its genealogy and reveal the role of new accounting practices in the Papal States Enlightenment context. A Foucauldian theoretical framework is adopted, whose main concepts are illustrated in Section 3.

3. Theoretical underpinnings

This study is theoretically framed around disciplinary methods, in the terms highlighted by Foucault (1977). Historically, apart from critical theoretical works on the use of this approach (Armstrong, 1994, 2015), Foucauldian disciplinary methods have been used by a series of authors with focusses such as business organisations (Hopper and Macintosh, 1993; Fúnez, 2005), universities (Hoskin and Macve, 1986) and military academies (Hoskin and Macve, 1988). In the existing literature, investigations based on a disciplinary view related to the Enlightenment period – that is, the century in which disciplines were invented (Foucault, 1977, p. 222) and food scarcity became a problem for public authorities – are still lacking.

Nevertheless, this perspective offers a lens capable of revealing the key role of accounting in a period when the disciplines became “general formulas of domination” (Foucault, 1977, p. 137) and states proposed solutions to food scarcity issues. Indeed, as underscored by Foucault (2007): “For government [...] in the seventeenth and eighteenth centuries at any rate, scarcity is exactly the type of event to be avoided”.

In this setting, the disciplinary theoretical view will assist us in understanding how new accounting practices operated in the redefined relationships of power between local authorities and fishermen, offering a pivotal tool for supervising and regularising the circulation of a fundamental commodity (Foucault, 1977, p. 148) like fish. Indeed, as Sargiacomo (2009) highlights in his review of Foucault, although disciplinary methods had long been in existence, during the 17th and 18th centuries, they were adopted as “general formulas of domination” (Foucault, 1977, p. 137), creating a discontinuity with the past. In particular, discipline emerged as a “political anatomy of detail” (p. 139), a “discipline of the minute” (p. 140):

The meticulousness of the regulations, the fussiness of the inspections, the supervision of the smallest fragment of life and of the body will soon provide, in the context of the school, the barracks, the hospital or the workshop, a laicized content, an economic or technical rationality for this mystical calculus of the infinitesimal and the infinite (p. 140).

In this historic moment of discipline, the meticulousness of observing details is combined with the political awareness of minutiae and their use to control people through a variety of techniques, including descriptions, plans and data (p. 141).

These aspects are strictly related to what Foucault calls “problematization”. In his view, problematisation is both his particular method of analysis – “thinking problematically”

(Foucault, 1977, pp. 185–6) – that is, examining how the element of analysis is “questioned, analysed, classified and regulated” at “specific times and under specific circumstances” (Deacon, 2000, p. 127), and a two-stage process. This process includes “how and why certain things (behavior, phenomena, processes) become a problem” (Foucault, 1985, p. 115) and the way they are shaped as particular objects for thought (Deacon, 2000, p. 139; Bacchi, 2012, p. 1).

Comprehending the “problematization” sphere – intended as identifying and examining specific situations that call into question a governing activity (Dean, 2010, p. 38) – is fundamental for understanding the context where government, in its “conduct of conduct”, arises (Sargiacomo, 2008, p. 671, 2009a, b, p. 240, Servalli, 2013, p. 1311). Indeed, it is around difficulties that government programmes are elaborated, moving from the idea that reality is a domain authorities can act upon by calculating and normalising activities (Rose and Miller, 1992, pp. 181–83) to operating at the intersection of operational and administrative needs with population, territory and community wealth (Power, 2011).

In the century of this investigation, which coincided with the Enlightenment period, Foucault (1977, p. 222) asserts that liberties were discovered but also that disciplines were invented:

They have the precise role of introducing insuperable asymmetries and excluding reciprocities. First, because discipline creates between individuals a “private” link, which is a relation of constraints entirely different from contractual obligation; the acceptance of a discipline may be underwritten by contract; the way in which it is imposed, the mechanisms it brings into play, the non-reversible subordination of one group of people by another, the ‘surplus’ power that is always fixed on the same side, the inequality of position of the different “partners” in relation to the common regulation, all these distinguish the disciplinary link from the contractual link, and make it possible to distort the contractual link systematically from the moment it has as its content a mechanism of discipline.

In particular, discipline is grounded in the so-called “art of distributions”, intended as the distribution of subjects in space (in the case study, the town of Ancona), which is usually realised by adopting different techniques: (1) “enclosure”, (2) “partitioning”, (3) “functional sites” and “inter-changeability of the elements”.

Enclosure is identifying a specific place, different from all others. It is a closed and protected place where the disciplinary machine is at work. A series of different examples is offered by Foucault (1977), such as schools, monasteries and military barracks. Partitioning is another technique adopted to realise the art of distributions. It is based on combining individuals and places on the principle that each individual has his or her own place and *vice versa*.

Disciplinary space tends to be divided into as many sections as there are bodies or elements to be distributed. One must eliminate the effects of imprecise distributions, the uncontrolled disappearance of individuals, their diffuse circulation, their unusable and dangerous coagulation; it was a tactic of anti-desertion, anti-vagabondage, anti-concentration. Its aim was to establish presences and absences, to know where and how to locate individuals, to set up useful communications, to interrupt others, to be able at each moment to supervise the conduct of each individual, to assess it, to judge it, to calculate its qualities or merits. It was a procedure, therefore, aimed at knowing, mastering and using. Discipline organizes an analytical space (Foucault, 1977, p. 143).

The disciplinary machine was also based on “functional sites”. These were useful spaces, as clearly emerges in hospitals or other specific places such as military ports: places that operated as filters, “by dissipating the illegality and evil” (Foucault, 1977, p. 143). These places were the expression of a mechanism of distribution and portioning the space in a rigorous manner: things were counted, classified and registered in a way that was functional for the aim that was to be pursued. The interchangeability of elements derives from identifying an element by “the place it occupies in a series, and by the gap that separates it from the others” (Foucault, 1977, p. 145). In this way, a unit is represented by rank: that is, the

place an element occupies in a classification. “Places” and “ranks” determine “cells” as the result of disciplines that create “complex spaces that are at once architectural, functional and hierarchical” (p. 148). Indeed, these spaces were at the same time real and ideal. Their reality – linked to the use of different physical elements (buildings, rooms) – was combined with the ideal that was connected to transforming “dangerous multitudes into ordered multiplicities” (p. 148).

It is worthy of note that disciplinary mechanisms entail hierarchical observation and examination, as underscored by Foucault (1977):

The success of disciplinary power derives no doubt from the use of simple instruments; hierarchical observation, normalizing judgement and their combination in a procedure that is specific to it, the examination [. . .]. The exercise of discipline presupposes a mechanism that coerces by means of observation; an apparatus in which the techniques that make it possible to see induce (*sic*) effects of power, and in which, conversely, the means of coercion make those on whom they are applied clearly visible (pp. 170–71).

He also asserts that:

The examination combines the techniques of an observing hierarchy and those of a normalizing judgement. It is a normalizing gaze, a surveillance that makes it possible to qualify, to classify and to punish. It establishes over individuals a visibility through which one differentiates them and judges them (p. 184).

In so doing, the “technologies of government” are fundamental tools adopted by authorities to shape, normalise and instrumentalise the conduct and decisions of others to achieve the desired objectives (Miller and Rose, 1990, p. 8). In particular, technologies like notation, computation and calculation (e.g. accounting); surveys and tables are used by authorities to instantiate their governmental aims (Rose and Miller, 1992, p. 183).

In this regard, accounting operates both as “inherently administrative and political” (Mennicken and Miller, 2012), being at centre of what Foucault indicates as “calculated management of life.” (Foucault, 1981, p. 140). Indeed, life of different subjects depends on administrative practices of recording, and “calculative technologies of accounting are mobilized by a variety of political programmes for intervening in economic and social life” (Mennicken and Miller, 2012). In recent Foucauldian literature, Hoskin and Macve (2016) have called for more works capable to differentiate the forms assumed by “such economic calculation in different eras and how (and indeed how far) a given art of governing draws on such calculations in prosecuting the running of the state” (p. 130).

This specific Foucauldian focus on disciplinary methods represents a powerful tool of knowledge for this study and also offers the possibility to answer to this call. The perspective offered by disciplinary methods permits important insights into the power relationships between local authorities and fishermen in their specific context, whose understanding is pivotal in fishery management (Johnsen, 2014). The genealogy of the New Plan and the role of related accounting practices are explored in this light.

4. Methodological aspects

The historical investigation presented here can be situated within accounting history research that is based firmly on archival research, as highlighted by Carnegie and Napier (1996, 2012). In particular, different typologies of archival sources – located within the State Archive of Ancona – were considered to understand the genealogy of the reform (New Plan) issued in 1791 and introduced in 1792 to solve the problem of fish scarcity in the town of Ancona.

To achieve this aim, a combination of financial and non-financial documents was explored to understand the government programme and the disciplinary methods and techniques

adopted by different institutions and their reasons for acting upon people (fishermen, fish sellers, public officers), goods (fish) and places (town gates, the *Pescaria*).

The following primary sources attributable to different typologies were analysed:

- (1) Edicts issued by the Governors (AMSA, 1709; 1726; 1727; 1731; 1775; 1786a, b);
- (2) Preparatory reports elaborated by local institutions (AMSA, 1790; n.d.a; n.d.b [1]);
- (3) New Plan (AMSA, 1791a);
- (4) Regulations and deliberations issued to introduce the New Plan (AMSA, 1791b; 1792; n.d.c [2]);
- (5) New and mandatory accounting documents and registers adopted in compliance with the reform (AMSA, 1792–93; 1793–94; 1793).

Exploring the Edicts issued by different Ancona Governors allows us to recognise the existence of a problem (paucity of fish) that was never solved by these single and unsystematic interventions by local authorities. The preparatory reports produced by local authorities to underpin the reform (AMSA, 1790; n.d.a; n.d.b) provide a clear understanding of the economic and social rationale underlying the New Plan (AMSA, 1791a), while the various regulations and deliberations investigated permit an understanding of the new fishery management operationalisation. Different types of financial documents and registers introduced by the reform were explored to gain a sense of the role played by accounting and an understanding of the New Plan's effectiveness (AMSA, 1792–93; 1793–94; 1793).

In addition, secondary sources were investigated to provide proper knowledge of the study's institutional and social context and to identify the main pillars of its theoretical framework. These sources provide a means of comprehending the *status quo* of the town of Ancona in the second part of the 18th century in terms of fish provisioning and the elements that can theoretically support an understanding of the New Plan.

5. Brief overview of local and central governance

Before considering the case study, a brief overview of the governance of the town of Ancona is necessary to understand the genealogy of the New Plan. In this regard, the reform's context, and the relationship between local (Municipality) and central government (Papal States) and the reform's main institutional actors are described.

The Ancona local government was based on two main bodies: the *Consiglio Generale* (General Council) with legislative power and the *Consiglio degli Antiani* (Elder Council) with executive power. The General Council consisted of a varying number of Ancona noblemen (from a minimum of 81 to a maximum of 200 delegates, usually about 150), while the Elder Council was composed of six noblemen from different *Terzieri* [3] (Giacomini, 2009, pp. 17–18).

The institutional bodies of the Papal States that are of major interest for this study were the *Sacra Congregazione del Buon Governo* (Holy Good Government Congregation), the Governor and the *Maggiorente*.

The Holy Good Government Congregation was a national body whose aim was to overview the finance – intended as taxation, public contracts, local fiscal systems, real estate register and public work – of the Municipalities under the Papal States domination. This body included a variable number of Cardinals. In each Municipality, there was a Governor who exercised judicial power. Governors were foreign noblemen nominated by the Pope, whose jurisdiction was about properties, food, damages in local territories and fairness of salaries (Tabacchi, 2007). The *Maggiorente* was a fiscal inspector (based in Ancona) who acted as a control for the sake of the public interest (De Nicolò, 2016, p. 205).

In relation to the New Plan, the object of our analysis, it is important to emphasise that it was issued by the General Council after consultation with the Holy Good Government

Congregation; the latter was always involved with regard to the fiscal effects of reforms. Indeed, fiscal changes required the local communities of the Papal States to send a request to the Holy Good Government Congregation, which usually asked the Governor further information. In general, its policy was to accept the requests of local communities if they were not contrary to the interests of the central government. Before the New Plan was adopted, the Governors frequently attempted to deal with the lack of fish in towns (AMSA, 1709; 1726; 1727; 1731; 1775; 1786a; 1786b) by intervening through Edicts but without success, as we note in next section. The *Maggiorente* had an important role, especially in relation to the local forms of resistance to the reform by the fishermen (AMSA, 1794b), as shown in Section 7.

6. Case study

In seaside towns, fish have always been a fundamental food resource, and in a Catholic context, it was also important for respecting the religious requirements during days of fasting (e.g. Lent) (Franco *et al.*, 1991, p. 22). Moltò, the 18th-century author of “Economic Observations for the benefit of Papal States” (*Osservazioni economiche a vantaggio dello Stato Pontificio*) (1781, p. 298), calculated 160 days where people were required to abstain from meat.

Nevertheless, in the 18th century, the town of Ancona, located in the middle of the Adriatic coast and under the domination of the Papal States, was characterised by a scarcity of fish; the town’s Governors had begun to regulate the town’s fish market to guarantee enough fish for the population (Galeazzi, 2016; De Nicolò, 2009).

In 1709, “in order to protect the public interest”, Governor Negrone established that all fish should be taken to the *Pescaria* within half an hour from its unloading and that taking fish out of the town or loading or unloading fish from beaches without a licence was prohibited (AMSA, 1709).

Similar dispositions were also issued by other Governors, such as Governor Acquaviva de Aragona (AMSA 1726, 1727) and Governor Luca Tempi (AMSA, 1731). These Edicts (AMSA, 1709; 1726; 1727; 1731) required fishermen to take all their fish to Ancona, but these requirements were constantly disregarded.

Despite these dispositions and Pope Clement XII’s 1732 declaration of Ancona as a free trade city, the situation did not change, and the paucity of fish continued (De Nicolò, 2016, p. 111). In addition, some of the already few fishing boats were transformed into mercantile boats in response to the trade increase caused by free trade (De Nicolò, 2016, p. 147, AMSA, 1791a, f.1). Fish were excluded from free trade, and its taxation was based on a three years long public contract, assigned by the Municipality. This contract was constantly won by the few local fishermen, that acted by a network, with a mechanism of rotation (AMSA, 1791a, f. 2r). In so doing, the Municipality did not intervene in the duty collection, and fishermen duty collectors applied a 15% duty on all the fish sales. At the same time, these latter tended to send most of the imported fish out of the town, diverting it to the countryside (De Nicolò, 2016, p. 147). Therefore, if they had the advantage of keeping prices for fish high, the population would only be able to rely on the few local fishermen, thus damaging the Municipality’s fiscal revenues. These aspects affected different social classes in different ways; while nobles could afford the high prices for fish, the poor were unable to do so. Monsignor Altieri, Governor of Ancona, suggested creating different duties for different social classes (AMSA, 1775) although this proposal remained theoretical and was never effectively adopted. After recognising the great disorder in the fish trade and the difficulties of sufficiently supplying the population, an even further attempt in the second half of the 18th century, based on the obligation to take all fish to the *Pescaria* as ordered by Governor Spreti (AMSA, 1786a, b), resulted in failure. Indeed, the lack of any control mechanisms for supervising and regularising fish circulation did not counter the monopolistic conduct of local fishermen.

These critical aspects and the inability to solve them using Edicts was a problem that the government decided to face through an in-depth and systematic analysis and the introduction of disciplinary mechanisms and supervision activities to shape the conduct of the key actors (including fishermen and duty collectors). The New Plan represented a new fishery management response to the population's fish needs. The next sub-sections explore the New Plan and the new organisation of the *Pescaria*, which is addressed in the discussion (Section 7) in light of the theoretical framework.

6.1 New Plan

The New Plan was conceived to solve the disorder in controlling fish and the criticalities due to operators who acted in their self-interests without regard to the population's needs. The local fishermen, who operated as duty collectors (*pescatori-dazieri*) – as permitted by the previous regulation – were at the core of the “departure and the diversion of the foreign fishermen” who became victims of “tedious search and delays that caused them damages and losses” (AMSA, 1791a, f. 3r). The situation was so serious that the foreign fishermen preferred to throw fish out of their boats rather than take them to Ancona (AMSA, 1791a, f. 3r). Before the New Plan, regulations did not permit controlling the quantity of fish, and fish duty collectors were often accused of creating a monopoly condition in favour of a small number of local fishermen (five boats), who in rotation also assumed the role of duty collectors (AMSA, 1791a, f. 2r). The local fishermen excluded foreign fishermen to maintain high prices for the fish they provided to the town. Fish sellers were also part of this network, which acted in the interests of a few operators and to the population's detriment.

The New Plan was approved by the Ancona Municipality in 1791 (11 June) (AMSA, 1791b) and applied starting from 1792 (1st March [4]). A trial period of one year was required (AMSA, 1791a, f. 5r). The aims of the New Plan were:

To remove the obstacles that make the paucity of fish much more evident in a contest of increasing of the population [...] by a constant competition realised by foreign fishermen [...] intervening on duty [...] and duty collectors [...].

To reach a duty objective of 2,160 *scudi* a year, based on the application of a 1.5 *quattrino* per *libbra* (instead of the previous calculation of 15% of the fish price), founded on an average of 60,000 *libbre* of fish entrance a month.

This reform was the result of a new rationality adopted by the government, founded on an investigation of the real causes of the problem and a series of calculations that referred to the expected amount of fish entrance and the corresponding duties (AMSA, 1790; n.d.a).

The authorities identified the origin of the fishery management criticalities in the roles and behaviours of local fishermen:

Fishermen are eager to keep their role of duty collectors and they adopt network mechanism [...], and they are rigid duty collectors, especially with foreign fishermen, that renounce to enter in Ancona Port [...].

As we can see from the declared aims, the New Plan intervened to favour competition amongst fishermen and change the mechanism calculating and collecting duty. These aims were realised by:

- (1) reorganising fishery management based on detailed information (quantity of fish, amount of duties, names of fishermen and their origin, etc.) and a new system of controlling fish and people, which is considered in sub-Section 6.2;
- (2) a new mechanism for calculating duties that implied payment of 1.5 *quattrini* (local currency unit) per *libbra* (local weight unit).

Preparatory reports (AMSA, n.d.a, n.d.b) show the preliminary calculations done by the local authorities to estimate the expected duty amounts, indicated as one of the goals of the New Plan (AMSA, 1790).

The New Plan abolished the role of the fishermen-duty collectors and introduced a check of all fish by public officers in a specific place, the *Pescaria*. This mechanism avoided weighing fish at the moment of unloading to favour the entrance of all fish into the town.

6.2 Organisation and functioning of the *Pescaria*

The “Memories for the execution of the *Pescaria* Plan” (AMSA, n.d.c) allows us to identify the principles of the transformation realised by the reform. A specific place was required for weighing the fish just after unloading. This place (the *Pescaria*) needed to be on the Port to operate in both good and bad weather (AMSA, n.d.c, art. 5). With the adoption of the New Plan, different Municipality delegates (Ministers) worked to calculate and register fish entry and collect payments:

- (1) The Minister for Fish Weight (art. 8),
- (2) The Minister for Registering Fish Entrance (art. 8) and
- (3) The Minister for Duty Collection at the *Pescaria* (art. 6 and 8).

Two other Ministers were involved in Port activities, without specific accounting or accountability duties, but were responsible for sanitary checks and docking authorisations; they were the Minister for Health and the Minister for Docking. A specific licence (authorisation) of the *Maggiorente* was required to take fish out of the town.

The organisation and functioning of the *Pescaria* is represented in Figure 1.

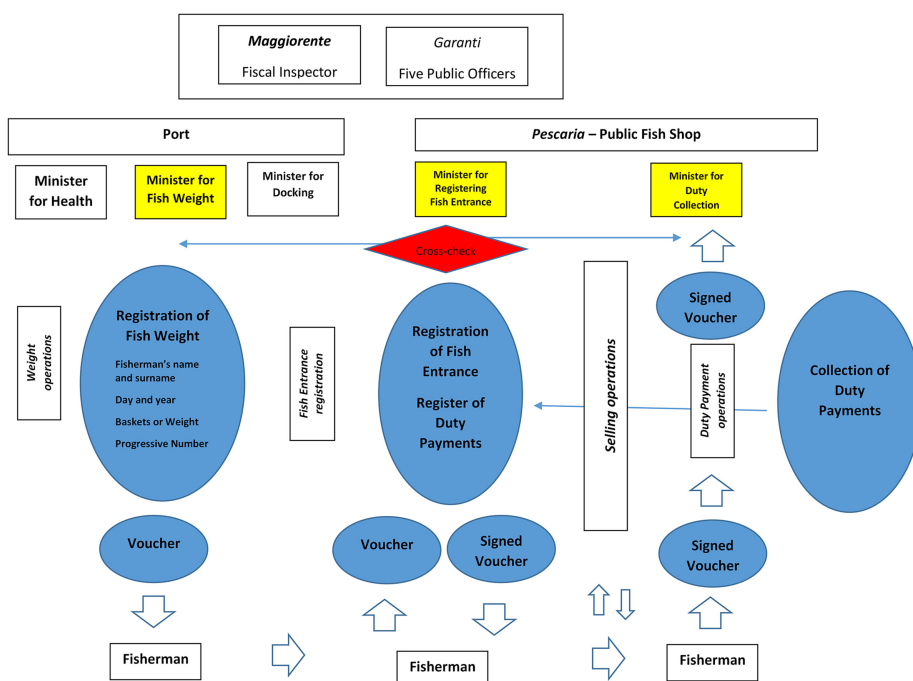


Figure 1. Organisation of *pescaria* (public fish shop)

After appearing at the Health Office, all local or foreign fishermen docking in the Port of Ancona were to go to the Minister for Fish Weight, who was located on the Port. The Minister for Fish Weight was to weigh and prepare a register with the following information (AMSA, 1792, art. 1 e 2):

- (1) Fisherman's name and surname;
- (2) Day and year;
- (3) Baskets and weight of the fish;
- (4) Progressive number attributed to the fish batch.

After this registration, the fishermen, who received vouchers, were to go to the Minister for Registering Fish Entrance, located next to the *Pescaria*, who then signed the vouchers (AMSA, n.d.c, art. 8). After selling the fish in the *Pescaria*, the fisherman paid the duty [5] (AMSA, 1792, art. 4). The signed voucher was to be given to the Minister for Duty Collection, who kept it in a strand (*filza*) for a cross-check with the Minister for Fish Weight (AMSA, 1792, art. 5). Foreign fishermen could sell directly or use an approved local fish seller to sell their fish (AMSA, n.d.c, art. 9).

The "Memories for the execution of the *Pescaria* Plan" established that once a week, the Minister for Fish Weight and the Minister for Duty Collection were to account to the Municipality Accounting Office and deposit the collected duties (AMSA, n.d.c, art. 8); however, looking at the accounting registers, this was done once a month (AMSA, 1792–93; 1793–94).

The New Plan was based on a full check of all possible entry points for fish. This included not only the Port area, where the *Pescaria* [6] was located, but also three town gates (AMSA, 1792, art. 7) – Pia, Capodimonte and Calamo – the beaches (AMSA, 1792, art. 6), and the *Portelle* (AMSA, 1792, art. 8).

The three gates (Figure 2) were the overland entry points; these were checked by Gate Guardians who prepared entrance vouchers for the fishermen to take to the Minister for Fish Weight under penalty of fraud (AMSA, 1792, art. 7).

At the same time, specific rules were issued for beaches and the *Portelle*. A duty of 10 *baiocchi* per basket of fish unloaded on the beaches was to be paid on the spot to a Delegate (AMSA, 1792, art. 6). The introduction of fish through the *Portelle* required a preliminary weight of the fish by the Minister of Weight, who gave the fisherman/fishseller a voucher to be shown to the *Portelle*'s Guardians (AMSA, 1792, art. 8).

The organisation described above was strictly linked to a "naming and counting" activity (Ezzamel and Hoskin, 2002) realised by a system of accounting based on documents (vouchers, notes, lists) and accounting registers maintained by key delegates (Ministers) who were identified in the New Plan.

An example of the registration made by the Minister for Fish Weight is shown in Figure 3 (AMSA, 1793), where we can see the name of the fishermen, their origin and the weight of the fish. Upon completing this registration, the fishermen received a voucher that was registered and signed by the Minister of Fish Entrance (Figure 1).

The main register was the Register of Duty Payments (*Libro dell'amministrazione del Dazio di quattrino uno e mezzo a libbra sulla pesa del pesce*) (AMSA, 1792–93) (Figure 4).

In this Register, the Minister for Duty Collection reported all duties collected in the *Pescaria* (indicated as *Porta di Mare*), in the different Town Gates, and from beaches. The accounting currency was based on *scudi* and *quattrini*. The names of the fishermen, fish weight and duty paid were reported monthly and cross-checked by the Municipality Accountant (Figure 5).



Figure 2.
Ancona map (1790)
with indication of
individual and places
of fish discipline

A periodic cash account was prepared to summarise financial movements. In the cash account reproduced in [Figure 6](#), on the debit side, we can identify the weight and duty collected, which were classified according to their place of entry (*Porta di Mare*, Town Gates); the monthly transfer of duty to the Municipality Accounting Office and Ministers' salaries is shown on the credit side.

The New Plan introduced a so-called “*privilegio della libbra*” (privilege of *libbra*) (AMSA, n.d.c, art. 3), an old medieval practice that granted some authorities extra monetary compensation to avoid corruption (Angelini, 1968, p. 78). Indeed, a substantial increase in the salary of the three Ministers for calculating, registering, and collecting payments was introduced, as shown by the accounting books ([Figure 6](#)); we can see that they were paid 12 *scudi* for two months, while two other Ministers (Health Minister and Docking Minister) were paid only 3 *scudi* for the same period.

In this system, the *Maggiorente* exercised a role of control and overview over the fiscal aspects. Indeed, he could decide to verify the weight of the fish and cross-check it with the amount accounted for in the Registrations of Fish Weight (AMSA, 1794b, p. 22). The importance of this overview role is often recalled in primary sources, where it is emphasised that “the eye of the *Maggiorente*” (AMSA, 1794b, p. 7) is a fundamental tool for dominating the cupidity of the local fishermen who acted for the sake of their private interests in contraposition to the public interests entailed in the reform (AMSA, 1794b, p. 18). The cross-check permitted identifying possible irregularities in the fish weight and as a consequence for proceeding with a court process. A licence issued by the *Maggiorente* was required to take the fish out of the town, and guilty fishermen were arrested. Indeed, a system of punishment (fish

Fisherman' name and origin	date	weight
Luigi Carchetta Civitanova	30 Agosto 1793	100
Maria Brando Le Laranze d'Ancona		115
Giuseppe Naldi Civitanova		113
Luigi Maria Spagnoli		30
Antonio Gioia Civitanova		110
Vincenzo Marconi Sirolo		135
Giuseppe Naldi Civitanova		71
Alcebrando Altolivi Fermani		189
Antonio Savani Fermani		137
Giuseppe Naldi Fermani		65
Luigi Carchetta Civitanova		130
Paolo Puccolini Fermani		100
Giuseppe Buccolini Fermani		150
Giuseppe Buccolini Fermani		113
Giuseppe Buccolini Paganati		108
Francesco Perilli B. d'Ancona		108
Michèle Regino B. d'Ancona		110
Michèle Regino B. d'Ancona		119.54
Antonio Savani Fermani		110
Antonio Savani Fermani		115
Angelo Naldi Le Laranze d'Ancona		150
Giuseppe Buccolini Le Laranze d'Ancona		340
Angelo Perilli Savano d'Ancona		65
Giuseppe Naldi Sinigaglia		170
Angelo Perilli Savano d'Ancona		19
Michèle Regino B. d'Ancona		110
Michèle Regino B. d'Ancona		110
Giuseppe Buccolini B. d'Ancona		115
Francesco Perilli B. d'Ancona		110
		3538

Legenda

Symbol	Origin of fishermen	Local/Foreign
■	Civitanova	Foreign
●	Sirolo	Foreign
▲	Fermo	Foreign
◆	Senigallia	Foreign
●	Ancona	Local

Figure 3.
Example of
registration of fish
weight (minister for
fish weight), 30 August
1793 (AMSA, 1793)

sequestration, corporal punishments, financial penalties, detention) was in place, as testified by the local Tribunal's documentation (AMSA, 1794b).

Section 7 presents the effects of the fishery management reform (the New Plan), considering different key actors.

7. Effects of the New Plan

The case analysis shows that it took time for local authorities to reach an effective change in fishery management. The initial attempts to face the problem were unsystematic and based on single Edicts that could not deal with the situation in all its complexity. The new

1792

Libro dell'Amministrazione del Dazio di quattrino uno e mezzo a libra sulla Carne del Pesce fresco approvato dalla Sup. Comunità del B. Duca, che si regola a tenore dell'Editto di Monsignor Anon, e Reale Comandato Gio: del 10. Ottobre 1791.

Indice

Marzo 1792	---	---	---
Aprile	---	---	---
Maggio	---	---	---
Giugno	---	---	---
Luglio	---	---	---
Agosto	---	---	---
Settembre	---	---	---
Ottobre	---	---	---
Novembre	---	---	---
Dicembre	---	---	---
Marzo 1793	---	---	---
Febbraio	---	---	---
Conto di Cassa a contante	---	---	180
Spese di Amministrazione	---	---	---
Spese di Cassa di S. Andrea	---	---	1218
Cassa Di	---	---	1223
Cassa di Cassa di S. Andrea	---	---	1229
Cassa del Colano	---	---	1205

Figure 4.
Register of duty payments (Libro dell'amministrazione del Dazio di quattrino uno e mezzo a libra sulla pesa del pesce) (AMSA, 1792-93)

rationality expressed by the local authorities in the New Plan was based on an in-depth analysis of the causes–effects of previous fishery management mechanisms and founded on the rational identification of possible systematic solutions that entailed calculations, the introduction of new accounting practices and surveillance systems.

The New Plan impacted the behaviours and power relationships of different actors involved in fishery management (fishermen, fish sellers, contractors–Municipality and citizens). In particular, it reshaped the behaviours of local and foreign fishermen; the new organisation of fish duty collection relieved foreign fishermen from the pressure imposed by Ancona's fishermen-duty collectors. If before the reform, the foreign fishermen often renounced selling their fish in town because of the vexation of duty collectors (AMSA, 1791a, f. 3r); after the New Plan was introduced, foreign fishermen started to make landfall in Ancona to sell their fish in town. Indeed, the Registrations of Fish Weight testify to both the increased number of fishermen and the presence of a plurality of foreign fishermen. This aspect is visible in Figure 3, where, in addition to Ancona's fishermen, we observe a large number of foreign fishermen coming from different towns.

Collecting the data from the Register of Duty Payments for the first and the second years the New Plan was applied (March 1792 to February 1793; March 1793 to February 1794) (AMSA, 1792–93; 1793–94), Table 1 reveals the number of movements, intended as the number of fishermen entrances in the *Pescaria* and other Gates.

Libro de los Pesqueros de San Sebastián de la Nueva España

Date	Weight	Duty
71 - Michel Salsón	753	1125 1/2
71 - J. Salsón	438	135 1/2
72 - J. Salsón	748	1111 1/2
73 - Pedro Buesón	370	111
73 - Gregorio Salsón	382	110 1/2
76 - Pedro Buesón	367	110 1/2
77 - Michel Salsón	19	041 1/2
78 - Michel Salsón	350	105 1/2
79 - Luis Buesón	800	140 1/2
80 - J. Salsón	330	99 1/2
81 - Michel Salsón	779	1333 1/2
82 - J. Salsón	115	341 1/2
83 - J. Salsón	870	146 1/2
84 - Gregorio Salsón	460	138 1/2
85 - Michel Salsón	1135	340 1/2
86 - Luis Buesón	229	743 1/2
87 - Gregorio Buesón	350	1064 1/2
88 - Michel Salsón	295	88 1/2
89 - J. Salsón	317	138 1/2
90 - Gregorio Buesón	270	81 1/2
91 - J. Salsón	343	150 1/2
92 - Michel Salsón	88	160 1/2
93 - Gregorio Buesón	15	041 1/2
94 - Gregorio Buesón	30	09 1/2
95 - Michel Salsón	63	18 1/2
Σ 1784		Σ 5307 1/2

Uitro e...
Luis Salsón

Cross-check by the Municipality Accountant

Figure 5.
Duty Register, January
1793 (AMSA, 1792-93,
f. 162)

In Table 1, we note the high number of fishermen movements. In 1792–1793 and 1793–1794, there were close to 7,000 and above 6,000 entrances, respectively, evidence of the increased flows of fishermen.

Because of the reform, the local fishermen lost their powerful positions as duty collectors, which had allowed them to limit the quantity of fish entering the town and consequently, keep prices high. The shift from a private to public system of duty collection and the obligation to discharge the fish in specific locations (the *Pescaria* and others) changed the fish market competition from a monopolistic form to competitive one, due to the increase in the number of fishermen, which before the reform were only five plus all local ones (AMSA, 1791a, f. 2r).

The New Plan also redetermined the power relationships in duty collection. Before the reform, the market was influenced by the behaviours of local fishermen based on the power they had because of their position as duty collectors. The new public system in the regulation entailed a power loss for these fishermen, which returned them to the role of mere fishermen, equal to the foreign ones. At the same time, the local fishermen were now under the strict control of the Municipality and subject to the new calculative practices, where accounting was introduced as a “technology of government” (Miller and Rose, 1990; Miller, 2001; Dean, 2010). Before the reform, the bad practices of local fishermen could not be disrupted because

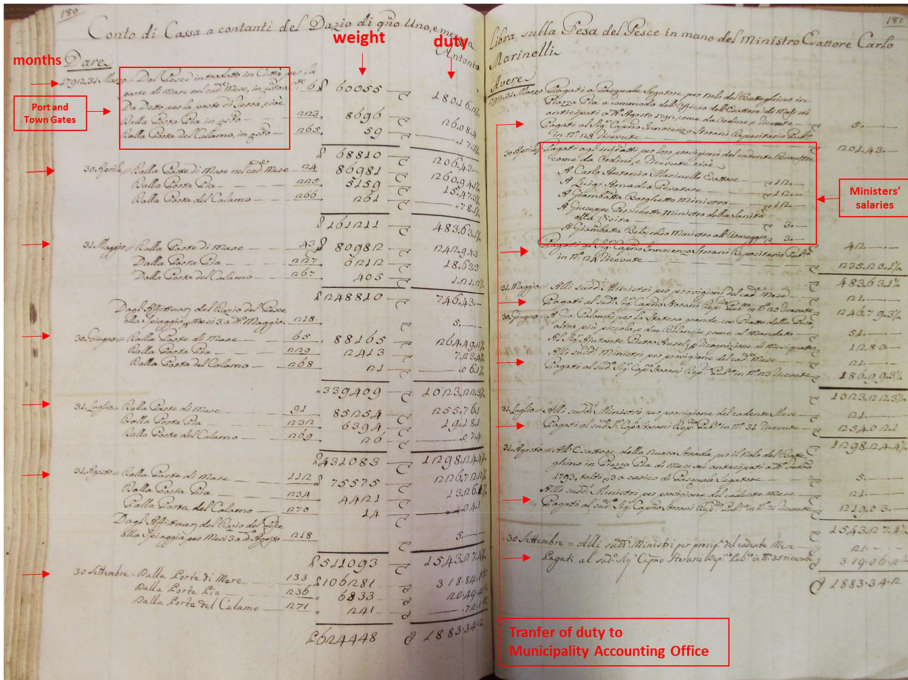


Figure 6. Cash Account in Duty Register (AMSA, 1792, f. 180–1)

Months	Movements											
	Porta del mare - port				Pia gate		Calamo gate		Capo di Monte gate		Total	
	1792/1793	1793/1794	1792/1793	1793/1794	1792/1793	1793/1794	1792/1793	1793/1794	1792/1793	1793/1794	1792/1793	1793/1794
March	284	271	28	48	3	9	0	2	315	330		
April	640	342	43	66	11	7	0	4	694	419		
May	711	709	56	74	12	6	0	5	779	794		
June	809	848	37	33	4	8	0	7	850	896		
July	978	694	71	46	4	2	0	0	1.053	742		
August	762	852	67	46	2	1	0	1	831	900		
September	824	662	66	46	7	1	0	2	897	711		
October	495	594	86	68	7	7	0	4	588	673		
November	282	275	98	67	16	29	8	5	404	376		
December	174	158	46	49	26	9	2	2	248	218		
January	95	116	45	36	26	7	3	1	169	160		
February	124	178	31	23	4	3	1	0	160	204		
	6.178	5.699	674	602	122	89	14	33	6.988	6.423		

Table 1. Fishermen movements (1792–1793; 1793–1794)

there was no form of accounting control or specific places for fish entrance. The New Plan's mechanism created the conditions for changing these practices. The local fishermen reacted to the reform because they did not like the control system and surveillance introduced by the New Plan. They wrote to the Governor to complain about the situation and ask for a change, but without success (AMSA, 1794a; Angelini, 1968, p. 79; Ciotti, 2006, p. 109). In a letter sent to

the Holy Good Government Congregation, the local fishermen asked that the obligation to take fish to the *Pescaria* be abolished and that it be possible to take fish out of the town without authorisation by the *Maggiorente* (AMSA, 1794b). They were attempting to re-establish the *status quo* that existed before the reform, instead of abolishing it. Indeed, their real intention was to suppress the *Maggiorente*, whose role of control and overview they considered unbearable (AMSA, 1794b, pp. 33–34).

Considering the goals of the New Plan to attain satisfactory fish entry for citizens' needs and the expected duties, we have quantified these targets, considering a period of two years: 1792–1793 and 1793–1794. The calculations for fish entry are based on the Register of Duty Payments, which considers the first two years in which the New Plan was applied (March 1792 to February 1793; March 1793 to February 1794) (AMSA, 1792–93; 1793–94).

Table 2 was prepared using the weight registrations included in the Register, classified by the different town gates, and includes the one-year trial period (March 1792 to February 1793) established by the New Plan (AMSA, 1791a, f. 5r) to test the new system and the second year (March 1793 to February 1794). The table shows that the main entry point was the Port, followed by Pia Gate, while Capo di Monte and Calamo Gates had only a residual role. Table 2 also demonstrates that the average quantity of fish was 75,048 *libbre* per month in the trial period, which was above the 60,000 *libbre* per month that had been identified in the New Plan as the target (AMSA, 1791a). The target was also achieved in the second year, with a monthly average 67,442 *libbre*. The Port remained the main entry point, followed by Pia Gate. The ability of the reform to meet the town's needs is also attested to by *Maggiorente* Benincasa who reported that the New Plan allowed having a quantity of fish consistent with the citizens' needs, thanks to foreign fishermen (AMSA, 1794b, p. 13–14).

The calculation of the amount of duty was based on duty registrations included in the same Register of Duty Payments for the same periods (1792–1793 and 1793–1794), classified by the town Gates. Table 3 shows that the duty goal expressed in the New Plan of 2,160 *scudi* per year was also realised, with an annual entrance of 2,712 *scudi* [7] in the first year and 2,429 *scudi* in the second one.

The data illustrate the New Plan's ability to reach the expected goals. Indeed, the values of fish entrance and duty collection were both above the targets pre-defined in the New Plan [8].

It is also worth noting that accounting registrations were used by the *Maggiorente* and his inspectors to check respect of the rules. Primary sources show that the comparison between the fish possessed by fishermen and the amount registered in the accounting documents permitted discovering frauds that were punished in local Tribunals (AMSA, 1794b, pp. 26–27). In this regard, we see that accounting cross-checks were essential for discovering the attempts of local fishermen to react to the New Plan. Fishermen tried to avoid the transfer of fish in the *Pescaria*, asserting that the New Plan did not imply this obligation (AMSA, 1794a). In addition, in their letter to the Governor, local fishermen required that it be possible to take fish out of the town without authorisation by the *Maggiorente*. Benincasa, the *Maggiorente* at the time, was able to demonstrate that the New Plan did not abolish the obligation to take the fish to the *Pescaria* and used accounting documents to cross-check the quantity of fish unloaded in the Port to that transferred at the *Pescaria*. He often went to the *Pescaria* to attend the fish weighing and asked for a cross-check with the voucher produced by the Minister of the Fish Weight. This activity, which was badly tolerated by local fishermen, permitted the discovery of differences between the weight on the voucher and the weight registered at the *Pescaria* (AMSA, 1794b, pp. 27–28) and offered evidence for the punishments adopted. Examples of this use of accounting data are offered by primary sources (AMSA, 1794b) that show their use in the trials (AMSA, 1794b, pp. 26–27).

In general, the success of the New Plan emerges in Benincasa's Note, which clearly expresses a positive evaluation of the results of this reform in terms of fish provisioning, emphasising the importance of having a strict link between the local government and the

Months	Porta del mare - port		Pia gate		Calamo gate		Capo di Monte gate		Total	
	1792/1793	1793/1794	1792/1793	1793/1794	1792/1793	1793/1794	1792/1793	1793/1794	1792/1793	1793/1794
March	60,055	70,183	8,696	12,551	59	183	0	25	68,810	82,942
April	86,811	52,413	5,159	6,552	261	107	0	96	92,231	59,168
May	80,982	93,292	6,212	5,251	405	239	0	112	87,599	98,894
June	88,165	89,188	2,413	2,470	21	94	0	133	90,599	91,885
July	85,254	70,197	6,394	2,146	26	22	0	0	91,674	72,365
August	75,575	80,038	4,421	3,159	14	5	0	9	80,010	83,211
September	106,281	77,004	6,863	2,433	241	32	0	15	113,385	79,484
October	87,540	73,809	7,085	4,480	277	422	0	244	94,902	78,955
November	50,272	46,082	11,471	1,614	584	732	354	72	62,681	48,500
December	37,044	41,999	6,684	1,643	559	282	30	58	44,317	43,982
January	17,691	21,245	9,416	5,086	672	96	99	20	27,878	26,447
February	33,097	39,050	13,275	4,329	104	92	8	0	46,484	43,471
Total	808,767	754,500	88,089	51,714	3,223	2,306	491	784	900,570	809,304
Month average									75,048	67,442

Table 2.
Fish entry (weight in
libbra) March 1792/
February 1793 and
March 1793/
February 1794

Table 3.
Fish duty (*scudi*) March
1792/February 1793
and March 1793/
February 1794

Months	Porta del mare – Port		Pia gate		Calamo gate		Capo di Monte gate		Total	
	1792/ 1793	1793/ 1794	1792/ 1793	1793/ 1794	1792/ 1793	1793/ 1794	1792/ 1793	1793/ 1794	1792/ 1793	1793/ 1794
March	181	210	27	37	1	1	0	1	209	249
April	261	157	15	19	1	1	0	1	277	178
May	243	279	19	15	2	1	0	1	264	296
June	265	267	8	7	1	1	0	1	274	276
July	255	210	20	6	1	1	0	1	276	218
August	227	240	14	9	1	1	0	1	242	251
September	318	231	21	7	1	1	0	1	340	240
October	262	221	22	13	1	0	0	1	285	235
November	151	138	35	4	2	3	2	1	190	146
December	112	125	21	4	2	1	1	1	136	131
January	54	63	29	15	3	1	1	1	87	80
February	100	117	30	10	1	1	1	1	132	129
<i>Total</i>	<i>2,429</i>	<i>2,258</i>	<i>261</i>	<i>146</i>	<i>17</i>	<i>13</i>	<i>5</i>	<i>12</i>	<i>2,712</i>	<i>2,429</i>
<i>Month average</i>									<i>226</i>	<i>202</i>

Ministers to always be able to defend the interests of the town and its population (AMSA, 1794b, pp. 30–33).

Section 8 discusses the case, theoretically informed by the Foucauldian concepts highlighted in Section 3.

8. Discussion

In fishery management, the relationship between governments and fishermen is fundamental, as the literature on this topic clearly shows (Johnsen, 2014; MacDowell, 2012; Sen and Nielsen, 1996). The contemporary examples of fishery management in Canada and Norway show the importance of measurements in terms of quotas and the roles played by different forms of accounting (fish catch accounting, logbooks, periodic reports).

As underscored in Section 2, in both contemporary fish management examples, technologies such as rational quantifications, the use of fishing logbooks and accounting/reporting activities regarding catch were used to reshape the behaviour of fishermen and as a reference for State authorities' inspections.

In comparison with contemporary fishery management, the historical case of Ancona provides early evidence of accounting's role in a new governance regime, emerging in the Enlightenment period in the Papal States context. The novelty of the Ancona case is related to its New Plan reform, which shows early evidence of organised and rationale-based control mechanisms that were the result of Enlightened ideas emerging in the Papal States context. In the 18th century, Ancona, as a territory under the Papal States, was not at the forefront of the change (Guerci, 1986; Rao, 2005). Even if we do not find mere immobility in the Papal States – as well as Venice, Genoa and Piedmont – as recognised by Guerci (1986, p. 573),

If we examine the reforms that were attempted or enacted there, it can be argued that they were not in sum inferior (indeed, in some cases they were superior) to what was achieved in the kingdom of Naples, a state that generally occupies a post of honor when we consider eighteenth-century reforms.

In particular, the New Plan expresses a feature of the Italian Enlightenment that was characterised by a reformism more focussed on practical issues (Chadwick, 1981, p. 90). In this context, the reforms faced practical problems, economics, prosperity and governmental aspects (Chadwick, 1981, p. 90). From the sixties, the Italian reality started to express a “new

policy made up of programs, of economic transformation, of administrative reform, of the abolition of old laws and the formation of new codes, of the reorganization of the schools, of the universities, of culture in general" (Venturi, 1976, pp. 217–8). In the 18th century, an awareness of injustices and inefficiencies emerged in the Italian context at both the city level and in the countryside (Venturi, 1976, p. 218). The backwardness of the dominant economic mentality was recognised, as well as "the prejudices which guided the conduct of the peasants, the merchants, the administrators; the widespread and profound indifference toward the lot of the people; the incompetence, or at least the difficulty, in using the international market to try to remedy the food shortage; the insufficiency of the old Italian states" (Venturi, 1976, pp. 218–9).

Considering the context of our investigation, forms of injustice and inefficiency were also dealt with by Moltò (1781), in his work, "Economic Observations for the benefit of Papal States" (*Osservazioni economiche a vantaggio dello Stato Pontificio*). This author highlighted the importance of facing the fish provisioning problems, derived from the system of fishermen duty-collectors adopted in the Papal States. In particular, his suggestion was to overcome the monopoly of this private system to favour increasing the suppliers and decreasing fish prices, without reducing the duty entrance for the central State (pp. 386–8).

The New Plan expressed these new rational and economic ideas. Its focus was on the fish provisioning problem, which had negative social implications due to the shortage of this good for meeting the population's needs (AMSA, n.d.a). At the same time, this reform realised the proposal expressed by Moltò of shifting from a private duty collection system, based on fishermen collectors, to a public system. The reform was not generated by a reaction to the central government, but it expressed the exigence of a change in governing the local fishery (Moltò, 1781).

The preparatory reports underscore these aspects as the origin of the design of a new government programme (Rose and Miller, 1992, p. 181–3) issued by the Municipality to reshape the relationship between the authority and fishermen. This need to change the relationship is also confirmed in the contemporary literature on fish management (Johnsen, 2014; MacDowell, 2012; Sen and Nielsen, 1996), where states have intervened to redefine roles, obligations, data measurement and reporting.

Moving from the idea that the disordered reality of fishery management was a domain to act upon by calculating and normalising activities (Rose and Miller, 1992, p. 181–3), the government applied a new method to analyse and solve the problem. In this new logic, the first part of the investigation undertaken by the authorities is represented by an analysis of "how and why certain things (behavior, phenomena, processes) become a problem" (Foucault, 1985, p. 115). The government scrutinised the factors at the origin of the problem (why) and the modalities through which the key actors were regulated and organised (how) (AMSA, 1790, n.d.a, n.d.b; Deacon, 2000, p. 127). At the same time, rational-based mechanisms were introduced to quantify the catch, similar to successful contemporary experiences (Jennings *et al.*, 2001; Johnsen, 2014).

The duty system – based on a percentage (15%) of the fish price – and how it was applied – by using local fishermen – became objects for extensive thought (Deacon, 2000, p. 139, Bacchi, 2012, p. 1), finalised by finding alternative solutions (AMSA, n.d.a) in the logic of facing and solving practical issues, characterising the Enlightenment of that context (Chadwick, 1981).

The new rationality adopted by the government also generated the idea of putting the organisation and control of both fish entry and duty collection under the public authority, as recognised by the enlightened economic ideas of the period, which highlighted that the power of fishermen duty collectors in the Papal States was an element to overcome (Moltò, 1781).

In Ancona, by adopting the New Plan, the government was able to regain the "surplus" of power (Foucault, 1977, p. 222) that had been put at risk by the previous mechanism, which was based on a contractual link between the Municipality and the network of fishermen

collectors. Adopting a hierarchical observation in fishery management, the New Plan eliminated the contractual link and introduced an asymmetry (Foucault, 1977, p. 222) founded on a public system where the Municipality appointed Ministers with specific competencies to check, register fish entry and collect duties.

This asymmetry was the outcome of a new way of “thinking problematically” (Foucault, 1977, pp. 185–6), that resulted in new distributions of the key subjects in the space, represented by the town of Ancona. The town was the “enclosure”, that is, a close and protected place with the identification of specific *loci* (*Pescaria* [*Porta di Mare* – Port], Gates, the *Portelle* and beaches), where discipline concerning fish entry was adopted (Figure 2). The New Plan realised the “art of distribution, absent in previous Edicts, not only by creating an enclosure but also through a partitioning activity that combined people (fishermen, fish sellers, Guardians, Ministers, and Delegates) and places (*Pescaria* (or *Porta di Mare* – Port), Gates, the *Portelle*, and beaches). Different functional sites (*Pescaria* (*Porta di Mare* – Port), Gates, *Portelle* and beaches)” were also created that operated as filters “dissipating the illegality and evil” (Foucault, 1977, p. 143). Thus, the illegality – represented by opportunistic local fishermen’s behaviours (AMSA 1791a, f. 3r) – was avoided through a rigorous mechanism of distribution and partitioning the space. Indeed, in identified places, fish were the object of calculative practices that permitted counting, classifying and registering them in a way that allowed achieving the goal.

Fishermen were obliged to engage in certain behaviours by an apparatus in which a series of techniques that permitted observation – such as identification of specific places, a system of registrations and inspections – induced effects of power on the different actors (local and foreign fishermen) making them clearly visible (Foucault, 1977, pp. 170–71). Consequently, the surveillance made it possible to qualify, classify and punish the fishermen, realising what Foucault calls a “normalizing gaze” (p. 184).

In this regard, the *Pescaria* was the most important functional site involved, where these activities were conducted using different accounting instruments (vouchers, lists, registers) entailing a “naming and counting” activity (Ezzamel and Hoskin, 2002) (e.g. names of fishermen, town origin, fish weight, amount of duty, and so on).

The discipline realised by the New Plan created what Foucault calls “complex spaces that are at once architectural, functional and hierarchical” (1977, p. 148). The *Pescaria* was a clear example of these complex places. It was located on the Port in a specific building (architectural dimension) where detailed operations were conducted to control fish entry and duty collections (functional dimension) by public officers specifically identified in the New Plan, such as Ministers, Guardians and Delegates (hierarchical dimension).

It is not difficult to imagine the Ancona *Pescaria* as a “*tableaux vivants*” (Foucault, 1977, p. 148) where the “dangerous multitudes” of key actors (fishermen, fish sellers, duty collectors), previously without effective forms of control, were transformed into an “ordered multiplicity” (p. 148). This “ordered multiplicity” accessed the town in specific places and performed a succession of operations that were registered and controlled through accounting tools. Indeed, the New Plan introduced a “political anatomy of detail” (p. 139) and accounting played a pivotal role in the “discipline of the minute” (p. 140). Starting with the regulation, we note the meticulousness used in the discipline of different situations, including the accounting aspect, which was a novelty introduced by the New Plan. Inspections and supervisions were also part of the New Plan. They were realised by Ministers who had access to the boats to check the possible presence of fish hidden by fishermen to avoid duty (AMSA, 1792, art. 1) and to take it out of the town. Forms of control were also applied at the accounting level by cross-checks between vouchers and registrations (Figure 1) as well as supervision and checks by the Municipality Accountant (Figure 5).

The novelty of introducing accounting in the New Plan was a rational answer both in the design of the reform and support of its governance mechanism. The aim of reshaping

“dangerous multitudes” into an “ordered multiplicity” could be realised only by using accounting as a technology of government (Miller and Rose, 1990, p. 8). The achievement of the New Plan’s aims, represented by an increase in fish provisioning, required also different forms of measurements and notations where accounting played a pivotal role. Without accounting’s contribution, the New Plan risked being similar to previous interventions realised by different Governors: a form of local sovereignty that could be easily overcome by fishermen without the possibility of opposing counter-checks of fish entrance and/or fish duties. Introducing accounting technology allowed moving toward an administrative government, guided by emerging ideas of a political economy, as expressed by Moltò (1781). In so doing, this confirms Foucault’s assertions when he notes:

In short, the transition from an art of government to a political science, the transition in the eighteenth century from a regime dominated by structures of sovereignty to a regime dominated by techniques of government, revolves around population and consequently around the birth of political economy (2007, p. 106).

In this context, accounting also offers a fundamental contribution to surveillance and punishment, establishing over individuals “a visibility through which one differentiates them and judges them” (Foucault, 1977, p. 184).

This historical case aids in understanding the new governance of fishery introduced by the New Plan, which in the Enlightenment logic was realising the emerging ideas of political economy (Moltò, 1781). It shows the contribution of accounting technologies to this transition from an art of government to a political science (Foucault, 2007, p. 106). In addition, early evidence of government tools adopted in contemporary fishery management have emerged, such as areas to act upon, the actors involved, accounting registers and reports, as highlighted in Table 4, which shows a comparison between the historical and contemporary dimensions.

Apart from similarities related to defining an area of regulation, the actors involved and the accounting registers and reports illustrated above, we can stress the inspection dimension, which continues to be an important element in contemporary fishery management. Indeed, Monitoring Control and Surveillance (MCS) programmes are pivotal in the governance of fishery (James *et al.*, 2019). They require boarding and inspection activities to obtain compliance with conservation and management measures (Proulx, 2003) and accounting tools – such as catch registers, reports and logbooks – are used for data

	Historical dimension (Ancona)	Contemporary dimension (e.g. Canada; Norway)
Area of action	Town of Ancona	200 miles fishing zone
Actors	Ancona Municipality Local and foreign fishermen Inspectors	State Local and foreign fishermen Inspectors
Accounting registers/ reports	Register of fish weight Register of fish entrance Register of duty payments Vouchers	Weekly/monthly catch reports on catches brought on board Reports of number of fishing days, volume of catch, live weight Logbooks
Inspections	Inspections on board/ <i>Pescaria</i>	Inspections on board/Costal states

Table 4.
Historical and contemporary comparison in fishery management

cross-checks and make it possible to discover illegal fishing activities. For example, logbooks permit surveillance and information checking activities and are tools used in an integrated system of control and enforcement, where their data are counter-checked with other documentation, such as landing declarations and sales notes (FAO, n.d.).

These historical and contemporary evidences support the “inherently administrative and political” role of accounting (Mennicken and Miller, 2012). Political programmes on fishery, intervening in economic and social life, mobilise administrative practices that require different forms of recording and calculative technologies (see Table 4). In addition, answering to Hoskin and Macve call (2016, p. 130), our historical analysis has allowed to differentiate the forms assumed by these economic calculation and registrations and to highlight how the running fishery by the state/local authority drew on such calculations deriving from disciplinary forms.

9. Conclusions

Our work was conducted considering the fish governance literature in commons’ logic (Burns and Stöhr, 2011; Johnsen, 2014; Schlager and Ostrom, 1992). In this literature, the relationship between state/local governments and fishermen has always been considered pivotal for understanding fishery management throughout the world (Hamilton *et al.*, 2004; MacDowell, 2012; Pomeroy and Berkes, 1997; Jentoft and McCay, 1995; McCay and Jentoft, 1996). Our historical investigation studies the fundamental relationship between local governments and fishermen to understand accounting’s contribution to achieving a desired level of fish provisioning in a reform in the Papal States during the Enlightenment period.

Our study was framed using the disciplinary framework (Foucault, 1977). Indeed, this Foucauldian view has been considered an effective lens for understanding the new logics adopted and processes defined in the fishery reform that operates through the disciplinary microphysics of power reshaping the conduct of fishermen and other actors.

The paper has shown that the governability of fishery “is achieved through the objects and instruments that are deployed to make it possible” (Johnsen, 2014, p. 429). In the New Plan, the fishery management reform based on both disciplinary mechanisms and the adoption of accounting technologies (Miller and Rose, 1990, p. 8) represented the methods used to achieve the desired goal of fish provisioning. The introduction of accounting tools realised by the New Plan gave local authorities the potential to move beyond the sovereignty logic adopted in previous interventions (Edicts). In those situations, the absence of calculations and accounting tools did not permit controlling people (fishermen) and goods (fish), thus failing to realise the fish provisioning objectives. Adopting accounting as a new “technology of government” (Miller and Rose, 1990; Miller, 2001; Dean, 2010) allowed shifting towards an administrative government, led by new ideas of political economy, that emerged in the Papal States context (Moltò, 1781). In this administrative government logic, the different kinds of accounting registrations that were imposed by the reform were used to build an economic “truth”, based on “counting and naming” activities realised in specific *loci*, by diverse subjects (fishermen, fish sellers, Municipality). These documents permitted control based on cross-checking activities that enabled the discovery of fraud attempts (AMSA, 1794b, pp. 26–27).

The role of accounting appears fundamental in reshaping key actors’ behaviours towards local authorities’ aims that were realised in a disciplinary microphysics of power. In particular, after the reform, accounting’s contribution in the fishery management permits to support one of the main principles of the governance of commons, that is the “congruence between appropriation and provision rules and local conditions” (Ostrom, 1990, p. 92).

The investigation has also shown early evidence of calculations, data collection and accounting technologies in fishery management (Table 4), confirming the contemporary

literature on the topic (Beddington *et al.*, 2007, p. 1713). Today, data refer to the quantification of the fish stock in the sea and the consequent estimation of fish catch. In our historical investigation, excluding the environmental aim because of the limited technologies of sea exploitation, the quantification referred to the fish catch entering the town.

In particular, the unicity in the Ancona case is represented by the early evidence of disciplinary methods capable of showing the shift from a sovereignty mechanism to administrative governance (Foucault, 2007) and how accounting has operated in such a context. If similar disciplinary forms are present in contemporary fish management, the study has shown the emergence of a new rationality since the 18th century, where accounting and fishery management played a “constitutive” role in the building of an economic “truth”. The possibility of representing and interpreting the data from different accounting sources – a novelty of the new Plan, which for the first time adopted an accounting system in fishery management – was fundamental for introducing an administrative governance logic with a goal of solving the town’s fish provisioning problem using a logic of economic government, as theoretically asserted by Moltò (1781).

In historical terms, this study complements and extends the existing literature on the Enlightenment period, investigating the food provisioning dimension that had remained unexplored in relation to that temporal context, despite its importance for local populations (Foucault, 2007).

In particular, the contribution to the literature is derived from explaining the key role of accounting in food provisioning in a period when the transition from a sovereignty approach to an administrative logic was realised by adopting disciplines intended as general formulas of the new administrative domination (Foucault, 1977, p. 137).

In addition, this paper has allowed uncovering how the government, moving on a new rationality, isolated the economy of the fishery as a “specific sector of reality” (Foucault, 1991, p. 102) and intervened on it via a political economy in the terms expressed in the New Plan.

In so doing, adopting “general formulas of domination” (Foucault, 1977, p. 137) has entailed accounting’s constitutive role within the range of disciplinary mechanisms. Calculations at different times (unloading, selling and duty payment moments) and in different spaces (Gates, Portelle, Pescaria) and the variety of accounting registers (fish weight, fish entrance, duty payments registers; vouchers) were technologies of governance that made fishermen and their behaviours visible. Their new adoption allowed forms of control and surveillance based on data cross-checks that were used to discover eventual fraud and apply related punishments.

The case study embodies evidence of “thinking problematically” (Foucault, 1977, pp. 185–6), intended as the origin of what Foucault identifies as forming the new science of political economy that emerges at the intersection of operational and administrative needs related to population, territory and community wealth (Power, 2011).

The object of observation in our analysis is the context of fishery governance, where the local government’s goal was satisfying the community’s needs by having a proper amount of fish catch enters the town. The evidence has shown that the hierarchical approach (Johnsen, 2014) adopted in the relationship between local authorities and fishermen (Johnsen, 2014; MacDowell, 2012; Sen and Nielsen, 1996), characterising fishery management in light of the New Plan, determined the shift from a contractual link (between local government and the network of fishermen collectors) to a disciplinary link. This shift generated an asymmetry (Foucault, 1977, p. 222) in favour of the local authority (Municipality), which regained the “surplus” of power in the redefined power relationships.

The reform has shown the approach adopted by the Municipality to reach a level of fish provisioning in “socially and economically acceptable limits and around an average that will be considered optimal for a given social functioning” (Foucault, 2007, p. 5). In this regard, we observe the New Plan’s ability to reach the expected goals. Indeed, the data on fish entrance and duty collection were both consistent with the targets pre-defined in the New Plan (Table 4).

Accounting played a fundamental role in these reshaped relationships. Indeed, the study has shown early evidence of government tools that are still employed in contemporary fishery management, included the use of accounting technologies. In addition, the work has unveiled the use of this information in the control and surveillance system adopted by the New Plan, which can be seen as analogous to the role assumed by logbooks and fishermen reports in contemporary fishery.

In theoretical terms, the paper has shown that in the context of fishery management, the disciplinary power of accounting can create better governance of fish resources. More specifically, the work has revealed that successful fishery experiences are grounded on rational-based forms of measurements and imply control mechanisms where accounting plays a pivotal role in making actors and their behaviours visible and allowing forms of control and surveillance. Historical and contemporary political programmes on fishery show the “inherently administrative and political” role of accounting (Mennicken and Miller, 2012), where an ensemble of administrative practices based on a variety of recording and calculative technologies are at work to reach social and economic aims. In addition, our historical analysis has allowed to answer to Hoskin and Macve call (2016, p. 130), showing the early forms assumed by these economic calculations and registrations and more in general to highlight how in the fishery management the state/local authority draw on such calculations deriving from disciplinary forms.

The investigation, in the novelty of its topic of fish provisioning and the use of disciplinary mechanisms in a time frame not previously highlighted by the existing literature of the period, shows the need for further in-depth analysis, both in different time and space dimensions, and in relation to different kinds of foods. Such further studies could contribute to increasing understanding of accounting’s role in disciplinary mechanisms that reshape the conduct of different subjects towards economic and social aims.

Notes

1. [AMSA, n.d.a](#) and [n.d.b](#) are preparatory reports without explicit indications of dates, the content of which allows them to be identified as dating several months before the issuance of the New Plan ([AMSA, 1791a](#)).
2. [AMSA, n.d.c](#) is a document titled “*Memorie per l’esecuzione del Piano della Pescaria*” (Memories for the execution of the *Pescaria* Plan), without an explicit indication of the date, the content of which allows it to be identified as dating several months after the issuance of the New Plan ([AMSA, 1791a](#)).
3. *Terzieri* are the Districts of the town.
4. The start date of the New Plan was postponed to 1 March, just after the expiration of the Municipality’s last contract with the previous fishermen-duty collectors ([AMSA, n.d.b](#)).
5. As indicated above, the rate of duty on weight was 1.5 *quattrino per libbra*.
6. In the accounting registers, *Pescaria* is often indicated as Port, or *Porta di Mare* (Sea Gate).
7. 226 *scudi* (monthly average) multiplied by 12.
8. Due to the lack of primary sources, it is not possible to extend the data analysis beyond two years.

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