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A Thorpe, A A Ibarra and C Reid

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Centre for the Economics and Management of Aquatic Resources
(CEMARE), Department of Economics, University of Portsmouth,
Locksway Road, Portsmouth PO4 8JF, United Kingdom.

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The new economic model and fisheries development in Latin America

Andy Thorpe

Department of Economics, University of Portsmouth, UK.
email: andy.thorpe@port.ac.uk

Alonso Aguilar Ibarra

Instituto Nacional de la Pesca, Mexico.

Chris Reid

Department of Economics, University of Portsmouth, UK.

Abstract

The New Economic Model (NEM) has profoundly influenced fisheries development in Latin America, facilitating the emergence of new and increasingly influential interest groups within the industry. It has also stimulated new forms of production and prompted new legislation to regulate fishing in the region's most important fishing nations. These changes have coincided with Latin America's increasing importance in world fisheries production and trade. However, the NEM has not resolved the sector's fundamental problems, such as overfishing, overcapitalization and conflict, and has arguably exacerbated them.

Keywords: Latin America; Argentina; Chile; Mexico; Peru; Fisheries; Neo-liberalism

1. Introduction

Marine fisheries and aquaculture directly employ about one million people in Latin America, 90% of whom are artisan producers (Bermudez and Aguero, 1994, p. 38-39). The region contributes approximately one-fifth to world marine fish production, while fishing and fish processing account for around one-fifth and one-eighth of Peruvian and Chilean export earnings respectively (FAO, 1995; IADB, 1996). However, fisheries development and management in Latin America is poorly covered in the literature, especially with respect to the impact of the NEM. This is curious considering the generous coverage of the NEM's impact upon other primary product industries, such as agriculture and forestry (IICA 1988, 1992; Conroy *et al.* 1994; Thrupp 1994; Weeks 1995; Silva 1997).

This paper seeks to redress this anomaly. In particular, it hypothesizes that NEM policies encouraged the unfettered expansion of production and trade. It also suggests that while Neo-liberal regimes in the region introduced legislative changes to regulate the sector, these have not fully confronted the main characteristic of marine fisheries, namely the absence of clearly defined property rights over fisheries resources. The result has been an intensification of overfishing, overcapitalization and conflict. Current efforts to manage the fisheries more effectively are constrained by both the shortage of management resources and the influence of new and increasingly powerful interest groups that have appeared within the sector.

The paper is organized as follows. Section Two outlines the main problems inherent in marine fisheries, and indicates how they can be exacerbated by NEM-type policies. Section Three delineates the pattern of fisheries development in the region's four main fishing nations - Chile, Argentina, Mexico and Peru - highlighting how the NEM has influenced national fisheries development and policy. Section Four examines whether the NEM encouraged fleet growth, and

whether fleet ownership has become increasingly concentrated among larger firms. In Section Five, we indicate how NEM policies have given rise to new conflicts. The conclusion suggests that the tendency to 'privatize the fleet before privatizing the resource' has, by introducing new interest groups into the fisheries environment, accentuated management problems while failing (presently) to resolve distributional concerns.

2. Fisheries Development and the Latin American NEM

(a) The Problems of Fisheries Development

The outstanding fisheries development issues in Latin America are overfishing, overcapitalization and conflict. Each originates from the absence of clearly defined and enforceable rights to fishery resources. Property rights create incentives to use resources efficiently. In their absence, the ability of open access fisheries to yield an economic surplus or rent above the costs of harvesting attracts an excessive level of effort into the fishery.ⁱ Competition between fishing enterprises - the so-called 'race for fish' - continues until an equilibrium is reached. At this point, rising costs equal declining revenues and firms earn no rents. Catches exceed the resource's maximum sustainable yield [MSY], and resources are biologically overfished.ⁱⁱ Attempts to raise productivity through innovation are destined to fail in the long-run, as initial improvements in productivity cause the fish population to decrease and catch rates to fall. The task of regulation is to alleviate these problems and resolve the conflicts they engender, although fisheries management can itself be a source of conflict (Charles, 1992; Smith, 1980).

Christy (1997, p. 19) has observed that Latin America's fisheries have passed through the stages of neglect, nationalization and privatization before arriving at the present stage of fisheries management. This last stage is the most complicated because society demands that resources are not only conserved, but also contribute to food production, export earnings, and employment. As these goals are often contradictory (Bailey and Jentoft, 1990), management strategies are advocated as a way of preventing conflicts.

Difficulties in effectively measuring and controlling inputs to a fishery, however, focused management strategies on controlling output. Two output controls are especially important in this context, each offering distinct costs and benefits (OECD, 1997, pp. 61-122). Total allowable catches (TACs) cap output at its MSY level. TACs curb overfishing, but because the fishery remains open access, do not tackle the problem of overcapitalization. Individual transferable quotas (ITQs) address the issue of property rights. By 'privatizing' the resource through allocating shares of the TAC, ITQs create incentives for owners to conserve resources and use inputs efficiently, thereby eliminating overcapitalization. The drawback is that ITQs are costly to regulate and enforce, and Latin American states have limited management resources (de G. Griffith et al, 1991). Regulation and enforcement are not the only concerns, as there are also substantive distribution issues associated with the allocation of ITQs (Cunningham, 1994). Nonetheless, as we illustrate below, ITQs are not out of place within the context of Latin American NEMs.

(b) The NEM and Its Expected Impact on Fisheries Development

Identifying the full impact of the NEM upon the fisheries sector is beyond the scope of this paper. However, it is possible to recognize common outcomes. First, the sector will be indirectly affected by NEM macroeconomic policies. Competitive real exchange rates will encourage greater participation in the industry, while reinforcing its traditional export-orientation. Privatization and deregulation will stimulate domestic and foreign direct investment in the sector. Although this new investment is welcome in many respects, the relative immobility of fishing capital will ensure that new vessels are likely to complement, rather than replace, existing boats. Consequently, unless matched by incentives to decommission older vessels, the net result will be greater

overcapitalization. This in turn will raise the likelihood of overexploitation. Furthermore, if these incentives attract larger domestic and foreign firms - who are able to invest in bigger, more efficient, vessels - then the NEM will herald not only a greater dominance of large vessels within the fleet, but also a concentration of ownership within the sector.

Second, the scale and scope of such changes will ultimately be determined by sector-specific policies. As with land, NEM protagonists view insecure access as a critical constraint on efficient resource use and development. By implication then, fisheries policy should clearly designate access rights. If NEM preferences for land titling (Feder and Feeny, 1991, Stanfield, 1990) were translated to the fisheries sector we would expect to see amendments to the prevailing legislation so as to privatize the underlying resource. Furthermore, to be most effective, such amendments should ensure that access rights are both enforced and tradable. Hence, an ideal NEM strategy would create incentives to use resources in an efficient and sustainable fashion. The most suitable instrument to ensure this would be through the allocation of ITQs. Introducing ITQs would be easier in emerging or under-exploited fisheries, less so in mature fisheries functioning at or above MSY where conflicts are probable.

In sum, then, we hypothesize that NEM macro-policy will tend to support overcapitalization and size concentration. These tendencies are, moreover, likely to rapidly exacerbate overfishing unless there is a concomitant introduction of a new resource rights regime, most typically through the approval of new national fisheries laws.

3. Neo-Liberalism and the Evolution of Marine Fisheries Management in Latin America

As shown in Table 1, the main commercial fisheries in Latin America are mostly harvested at or beyond their maximum level.

Table 1. Status of Principal Latin American Marine Fisheries: 1995^a

| Status | Number of Species | Species |
|-------------------------------|-------------------|--|
| Overexploited | 1 | <i>Brazilian Sardinella</i> |
| Fully to overexploited | 8 | <i>Peruvian anchovy; South American pilchard; Araucanian herring; Argentine, South Pacific, and Patagonian hake; Patagonian grenadier; shortfin squid,</i> |
| Fully exploited | 1 | <i>Yellowfin tuna</i> |
| Moderately to fully exploited | 4 | <i>Chilean jack mackerel; Californian pilchard; Pacific anchovy; Southern blue whiting</i> |
| Moderately exploited | 1 | <i>Club mackerel</i> |
| Unknown | 1 | <i>Round sardinella</i> |

^a Criteria for inclusion: landings exceeded 50,000 tons in at least one country between 1980 and 1995. Pelagic species are italicized.

Sources: FAO (1997, 1997a).

Four main types of fishery are represented. First, there are fisheries for highly migratory species, such as tuna. Second, there are industrial fisheries for small pelagic species, italicized in Table 1, which are most densely concentrated around the upwelling Humboldt current off Chile and Peru. These provide the inputs to the fishmeal and oil industry, and historically have been the most important in economic terms. Third, there are continental shelf fisheries for species such as hake, whiting and squid. Finally, there are socially important inshore fisheries, the most significant of

which are for shrimp. A brief synopsis of the development of these fisheries and the role of the NEM in each of the main fishing nations is given below.

(a) Chile

Most Latin American nations were ill-prepared to exploit the fisheries resources contained within the 200-mile exclusive economic zones (EEZs) created by the Third United Nations Conference on the Law of the Sea (UNCLOS III), held in Caracas in June 1974.ⁱⁱⁱ Chile was an exception. Recently turned Neo-liberal, an aggressive exchange-rate policy in 1974/5 substantially improved export earnings. Deregulation of the domestic capital market and creation of the quasi-governmental Pro-Chile (*Instituto de Promoción de Exportadores de Chile*) in 1974 to promote exports further encouraged trade expansion. The fisheries sector was a major beneficiary. The decision to privatize the Northern fleet between 1974 and 1978, limit foreign fishing activities^{iv}, and rescind the permit-based access system to pelagic stocks in 1978, saw additional effort enter the industry. By 1980, Chile had surpassed Peru as the region's leading fish exporter.

However, as the rapidly expanding Northern industrial fleet quickly depleted anchovy stocks, vessels either switched to fishing for jack mackerel and South American pilchard or moved southward into underexploited fishing grounds. Fisheries investment was further encouraged in the early 1980s by substantial Inter-American Development Bank (IADB) credits.^v Although initially profitable, these steps ultimately extended the problem of overfishing to new fisheries. Government attempts to resolve the problem in the early 1980s by imposing minimum catch sizes and closed seasons met with little success or support. A similar fate befell the 1986 edict which sought to indirectly curb the problem of overcapitalization by freezing the capacity of the Northern industrial fleet.

As evidence emerged that other fisheries were also threatened by overfishing, including those for hake and the Venus Antiqua clam around the Bay of Ancud (Schurman, 1996, pp.1702-3), the government moved to develop a new regulatory framework. A new fisheries law was recommended in 1989, but industry opposition delayed its approval until September 1991. The new Fisheries Law (Decree 430) ended open access to fisheries defined as 'emerging', 'fully-exploited' or 'recuperating'. Instead, a complex system of ITQs was introduced which is currently applied in the recuperating southern hake and red shrimp fisheries, and the emerging patagonian toothfish and orange roughy fisheries. A controversial bill to privatize the industrial fisheries through ITQs was withdrawn in August 1999 in response to protests from artisanal fishermen, fishing workers and environmentalists regarding its distributional effects ((Fish Information Services, Sea-World 27 Aug. 1999).

(b) Argentina

Argentina's military governments during the 1970s and early 1980s pursued a dualistic fisheries strategy, licensing foreign boats to operate within the Argentine EEZ, while encouraging joint ventures with foreign firms. This changed sharply after 1982. British restrictions on Argentine naval movements following the Falklands/Malvinas war allowed foreign boats to fish the Argentine EEZ with impunity. Consequently, an estimated 600 vessels were active in the region by 1986 (Weidner and Hall, 1993, p.270). Additionally, local companies were prevented from applying for permits to fish the 150-mile Falklands Protection Zone overlapping Argentina's EEZ, as this would have implied recognition of British territorial claims to the Islands (Marine Fisheries Review, 1989, p.58). These constraints were exacerbated by a combination of an over-valued peso, capital shortages, escalating inflation, and limited domestic markets due to the relative cheapness of beef. As a result, there were few incentives to invest in the fisheries during the 1980s. Nonetheless, there were already concerns regarding the overexploitation of the country's main continental shelf groundfish fishery for hake (Samudra, May 1998, p.3).

The Menem (1989-present) administration's NEM revitalized the Argentine fishing sector. By 1991, economic stability had been restored, exchange-rate overvaluation eliminated, and tariffs and interest rates reduced. Investment in the sector increased noticeably, encouraged by the exemption of new vessels from trade taxes, simplified procedures for 'naturalizing' foreign vessels introduced under the 1992 Fisheries Law, an Executive 1992 Decree that permitted Argentine firms to lease foreign vessels, and improved international hake prices. Exports were further encouraged in September 1993, when EU vessels were granted permission to fish Argentine waters in return for a two-thirds reduction in EU tariffs on Argentine fish products.

The result was increased pressure on resources, which the 1997 Federal Fisheries Law sought to abate by introducing TACs. By mid-1998, thirty species were subject to annual TACs. Unfortunately, the assignation of TACs was a source of conflict (Section 5.c) and, with the country's hake stocks on the verge of collapse, the Menem administration approved an Emergency 1998 Fisheries Law that proposed draconian restrictions on fishing effort during the next five years. Pressure from the Argentine fishing industry ensured that the EU access agreement was not renewed in May 1999, but the passing of an emergency law the following month to restrict hake fishing has exacerbated tensions between the Argentinean fishing industry and EU firms engaged in joint ventures, each accusing the other of having received favorable treatment (Fish Information Services, Sea-World 2 Aug. 1999).

(c) Mexico

Mexican ratification of UNCLOS III in mid-1976 was followed by the 1977-82 National Fisheries Development Plan that aimed to raise Mexico from 28th to 5th place among the world's fishing nations. The plan's major beneficiary was the country's hitherto underexploited tuna fisheries, private entrepreneurs quickly moving in to exploit the open access nature of the resource and the government incentives on offer. As it transpired, markets were the most pressing problem. The US, Mexico's major tuna export market, embargoed Mexican tuna imports following the seizure of US vessels within the Mexican EEZ in 1980 (de Andrade, 1999, p. 23). The peso's collapse in 1982 exacerbated the sector's problems, doubling the costs of boats on order from foreign shipyards, and the government capitulated to industry pressures and offered substantial support funds. Rescue operations severely decapitalized both the state fisheries bank Banpesca and the marketing/processing parastatal PROPEMEX. Although the situation improved following the end of the embargo in 1986, its re-imposition between 1990 and 1999 in response to the Mexican failure to adopt dolphin-excluder devices on tuna nets effectively discouraged new commissions during the NEM period.

Mexico's most significant fisheries in terms of export revenues and employment are its inshore fisheries. The most important of these are the shrimp fisheries, which accounted for between one-half and three-quarters of the sector's export earnings between 1986 and 1996 (SEMARNAP, 1997, p.124). Historically, cooperatives enjoyed exclusive access to shrimp and eight other inshore fisheries. Yet, despite this, there were clear signs of overcapitalization; an FAO/World Bank (1988) study suggested that reductions of 29% and 49% in the Pacific and Gulf fleets respectively were necessary to restore profitability. The situation worsened after the NEM introduced by the Salinas de Gortari (1988-94) administration substantially curbed state support to the cooperative sector. Banpesca was closed and PROPEMEX's role reduced. Significantly, the NEM also revised access arrangements to the country's inshore fisheries. The 1992 Fisheries Law withdrew the cooperatives' historic rights, replacing them with a system of permits and concessions. This provided a clear signal to private investors. There had been no privately-owned shrimp trawlers in 1990. By 1992, there were 450, and by 1993, 90% of the vessels in the North Pacific offshore shrimp fisheries were privately owned (Vásquez León and McGuire, 1993, p. 61), a

trend duplicated elsewhere. Although cooperatives remain active in the inshore fishery, catching smaller shrimp for domestic markets (SEMARNAP, 1996, pp.20-1), these changes in property rights have provoked widespread conflict (Section 5.a).

(d) Peru

By the 1960s, Peru had developed the world's largest industrial fishery, catching anchovy to manufacture fishmeal and oil for export (Roemer, 1970; Appleyard, 1973). Overfishing, combined with the effects of a strong El Niño, caused anchovy stocks to collapse in 1972 (Boerema and Gulland, 1973; Csirke, 1980), and the Velasco government nationalized both fleet and processing companies in May 1973 (Caviedes and Fik, 1993). Nationalization enabled the state to regulate the anchovy fishery, although it did not prevent private firms from entering the unregulated pilchard or jack mackerel fisheries, nor licensed foreign vessels from fishing for hake and tuna (Weidner and Hall, p.440ff). While the overexploitation of pilchard stocks prompted new management measures in 1980, the government stopped short of assigning resource rights (Marine Fisheries Review, 1981, p.27).

The NEM introduced by Fujimori's administration (1990-present) stimulated new investment in the sector. A more competitive exchange rate, the establishment of an export promotion commission PROMPEX in 1996, financial and tax reforms, and privatization of the fleet and processing companies, led to investment of some US\$400 million between 1991 and 1995 (WorldFish Report, 7 Dec. 1995, p. SP/4; 13 Mar. 1997, p. SP/1). Although a new Fisheries Law was approved in 1994, resources were not privatized. Instead, auctions of annual permits for 'surplus' stocks were established.^{vi} Access to non-surplus stocks, including the principal pelagic fisheries, remains a 'free-for-all', with firms racing to capture the largest possible share of the TAC before the fishery is closed (Fishing News International, Nov. 1998, p.31). Recognizing that this encourages overcapitalization and ever shorter fishing seasons, the Fisheries Ministry is presently considering ITQs for unfished and under-fished species, as well as the overfished hake fishery, although not as yet the major pelagic fisheries. Consequently, the industrial fishery remains considerably overcapitalized and indebted: only 40% of current vessel and processing capacity is necessary to fully exploit the available resources, while debts were estimated at US\$1,200 million in April 1999 (Fish Information Services, Sea-World 12 April 1999). From the above discussion, it is clear that Neo-liberal regimes across the region have only belatedly recognized the importance of privatizing fisheries resources as opposed to privatizing government-owned fishing and processing companies. Consequently, the optimal firm strategy has been to 'gear up', to capture a greater share of these *de facto* open access fisheries in the short-term, while establishing a strong presence - and hence bargaining position - to guard against new regulatory controls in the longer-term. 'Gearing-up' is thus likely to accentuate overcapitalization, encourage concentration and provoke increased conflicts within the sector over time.

4. The NEM and Size, Structure and Concentration within the Latin American Marine Fisheries Sector

(a) Fleet Size.

As annual recorded landings may be volatile due to both biological and economic factors, fishing inputs (potential productivity) may offer a more reliable indicator of sectoral trends than fishing outputs (actual productivity). One of the most common input measures employed in this respect is the gross registered tonnage (GRT) of vessels. Using this measure, the growth of Latin America's fishing fleet over the last quarter century can be seen in Table 2.

Table 2. Gross Registered Tonnage (GRT),^a Latin American Industrial Fishing Fleets, 1970-1995
Average Annual Growth (% p.a.)

| Group ^b | Country | NEM Date ^c | NEM | | Average Annual Growth (% p.a.) | | |
|--------------------|-----------------------|--------------------------|-------------|-------------|--------------------------------|--------------|--------------|
| | | | 1970 GRT | Date GRT | 1995 GRT | 1970- NEM | NEM- 1995 |
| 1 | Costa Rica | 1986 | 0.0 | 5.2 | 3.1 | N/A | -5.59 |
| 1 | Mexico | 1988 | 8.1 | 288.5 | 299.6 | 21.96 | 0.54 |
| 1 | El Salvador | 1989 | 4.9 | 3.5 | 3.6 | -1.76 | 0.47 |
| 1 | Venezuela | 1989 | 26.5 | 88.1 | 95.5 | 6.53 | 1.35 |
| 1 | Guatemala | 1991 | 0.8 | 2.9 | 2.5 | 6.32 | -3.64 |
| 1 | Nicaragua | 1991 | * | 12.1 | 12.4 | N/A | 0.61 |
| 1 | Ecuador | 1992 | 15.7 | 49.1 | 52.7 | 5.32 | 2.40 |
| 1 | Honduras ^d | 1992 | 0.8 | 14.4 | 14.8 | 14.04 | 0.90 |
| 1 | Brazil | 1994 | 8.0 | 19.2 | 17.8 | 3.72 | -7.29 |
| 2 | Argentina | 1991 | 9.5 | 128.7 | 212.6 | 13.21 | 13.37 |
| 2 | Uruguay | 1991 | 1.8 | 14.4 | 20.6 | 10.41 | 9.36 |
| 3 | Chile | 1975 | 16.0 | 15.4 | 168.2 | -0.76 | 12.70 |
| 3 | Colombia | 1991 | 0.1 | 4.3 | 14.1 | 19.61 | 34.57 |
| 4 | Peru | 1990 | 61.6 | 128.6 | 157.0 | 3.75 | 4.10 |
| | Panama ^d | 1995 | 12.1 | 346.4 | 346.4 | 14.36 | - |
| TOTAL | | - | 165.0 | - | 1,400.9 | - | - |

^aGRT figures are in thousands, for vessels over 100 GRT. * signifies less than 100 GRT.

^bSee text for details.

^cFor current purposes, an economy is deemed to be following NEM policies once it has implemented a trade liberalization program *and* stabilized inflation (IADB, 1996, p.77ff).

^dThe Panamanian and Honduran figures should be viewed with some caution due to the registration of vessels under 'flags of convenience.'

Source: FAO (1998) and personal communications.

Four distinct groupings are evident. The first consists of those countries where adoption of the NEM has coincided with a marked decline in fleet growth rates. This group includes most of the Central American economies, Brazil (albeit a very recent reformer), Mexico, Venezuela and Ecuador. Here, as overcapitalization and/or overfishing was evident in the major inshore fisheries before the adoption of the NEM (Weidner and Hall, 1993, pp.188-9; Nadal Egea, 1996, pp.242-65), the new macroeconomic environment and regulatory regime offered few stimuli for additional investment. Furthermore, the Mexican and Venezuelan tuna fisheries, which had largely underpinned the fleet's growth in each country, were restricted by the US tuna embargo for most of the 1990s.

In the second group of countries, Argentina and Uruguay, fleet growth was high before the NEM and continued at around the same level thereafter. In Uruguay, the major contribution to fleet growth was the Clainsa company's acquisition of eight stern trawlers following the collapse of the Canadian cod fishery. In Argentina, the number of trawlers leapt from 263 in 1991 to 371 in 1995, despite concerns for continental shelf stocks. Two factors have underpinned this increase. First, the regulatory regime was relaxed, allowing some foreign and joint-venture vessels to be registered as Argentine. Second, tariffs on imported vessels were reduced to 4-10% of the vessel's value "[to help] Argentine fishermen take advantage of the large number of relatively modern, but inexpensive used vessels available on the international market" (Weidner and Hall, 1993, p. 267). While Argentine firms capitalized on this opportunity, the benefits derived from introducing these large second-hand vessels were questionable as, by exerting greater pressures on scarce resources, they provoked greater conflict between fishing enterprises.

The third group, comprising Chile and Colombia, have recorded markedly higher fleet growth since adopting the NEM. In Chile, the open access regime operating before the 1992 Law was a major

factor behind the eleven-fold growth of vessel GRT in the industrial fisheries between 1975 and 1995.^{vii} Although contrary to its intention, the 1992 Law actually contributed to overcapitalization, as firms in the industrial fisheries lobbied for a 27-month transitional period that allowed vessels 'under construction' to enter 'fully-exploited' fisheries (Art.3, transitory arrangements). Colombian fleet growth has been dramatic in the post-NEM period, although it remains a small player in the region's fisheries.

Finally, Peruvian fleet growth has been moderate since 1970, when it accounted for almost 40% of the region's industrial fishing capacity. Although the number of vessels and GRT doubled over the subsequent twenty years, lack of investment by the state - together with the crowding out of private sector investment - saw the fleet badly affected by obsolescence. Although the Fujimori administration's goal has been fleet modernization rather than expansion, total GRT increased during the NEM period. This can be attributed to the artificial distinction made between vessels catching pelagic species for fishmeal production as against consumption.^{viii} Although Article 24 of the 1992 Law required additions to the industrial fleet to be balanced by decommissioning older boats, there were few safeguards to ensure compliance. Predictably, many firms were authorized to commission vessels for the consumption fishery but subsequently illegally redirected their catches to the fishmeal industry. The recently completed privatization of PESCA PERU has increased the opportunities for non-compliance.

In sum, the evidence in Table 2 suggests that the NEM has had no clear effect on the growth of fishing fleets in the region. Growth has decreased in many countries, stayed high in a few, remained moderate in one, and increased in only Chile and Colombia. The greatest fleet growth took place in the 1970s and 1980s, before the NEM in most of the countries, stimulated by developments in extended fisheries jurisdiction. In a number of cases, therefore, the limits to growth had been reached in advance of the NEM.

(b) Size Concentration and Ownership.

The composition of the region's fishing fleets varied considerably before the NEM reforms, and the effect of the NEM on the size of boats has been mixed. Concentration ratios presented in Table 3 show that the dominance of large boats in national fleets increased in most countries between 1970 and the NEM, with this increase being quite large in some cases. In the period between the NEM reforms and 1995 there was little change in concentration ratios in most countries. The ratio increased slightly in Mexico, Venezuela, Uruguay, and Argentina, decreasing in Guatemala, Ecuador, Nicaragua, and Costa Rica. The only countries exhibiting a sharp increase in fleet concentration after the NEM were Chile and Colombia - the two countries with rapid fleet growth in this period.

Table 3. The Latin American Fishing Fleet (Decked Vessels): Concentration by GRT^a

| | Concentration in 1970 | Concentration at NEM Date | Concentration in 1995 |
|-------------|-----------------------|------------------------------|-----------------------|
| Chile | 0.234 | 0.241 | 0.517 |
| Colombia | 0.356 | 0.33 | 0.526 |
| Uruguay | 0.813 | 0.864 | 0.891 |
| Venezuela | 0.354 | 0.431 | 0.458 |
| Mexico | 0.25 | 0.335 | 0.357 |
| Argentina | 0.518 | 0.681 | 0.697 |
| Honduras | 0.161 | 0.15 | 0.155 |
| Peru | 0.663 | 0.822 | 0.825 |
| El Salvador | 0.016 | 0.134 | 0.136 |
| Brazil | 0.267 | 0.283 | 0.284 |
| Nicaragua | 0.148 | 0.387 | 0.379 |
| Costa Rica | - | 0.745 | 0.704 |
| Ecuador | 0.403 | 0.500 | 0.443 |
| Guatemala | 0.092 | 0.468 | 0.401 |
| Panama | 0.475 | - | 0.577 |

^aConcentration ratios calculated in accordance with the class method recommended by Yao and Lui (1996). Concentration ratios across the region are not strictly comparable, as only Costa Rica, Peru and Uruguay record decked vessels of less than 5 GRT in their annual FAO returns, and El Salvador does not record vessels of less than 25GRT.

Source: FAO (1998) and personal communications.

As might be expected, given its long record of industrial fisheries development, concentration is particularly evident in Peru. The lack of evidence of changes in size concentration since the adoption of the NEM is almost certainly related to the longevity of fishing capital. For most firms, it will not have been worthwhile to replace older but economically viable boats in the short time between the introduction of NEM policies and 1995.

In Chile, on the other hand, NEM-type incentives have been in operation for over twenty years. Here, with the number of fishing vessels exceeding 500 GRT increasing from three in 1975 to 142 by 1995 (FAO, 1998),^x size concentration went hand-in-hand with ownership concentration (Peña-Torres, 1996, pp. 76-82; 1997, pp.259-62). The main beneficiary of fleet privatisation was the Angelini conglomerate. Through buying four enterprises from the state, it came to account for around 55-60 per cent of Northern industrial fleet landings during the late-1970s. The group maintained its catch share of the catch in the 1980s, buying-out the Tocopilla company in 1984, Guanaye in 1985, and Punta Angamos in 1989. In August 1999 it formed the Consorcio Pesquero del Norte with its nearest competitor, the Coloso company, another product of the 1974 privatization programme. The consortium, which accounts for about 80% of landings in the Northern Zone, intends to restructure its operations to restore profit levels in the fishery (Fish Information Services, Sea-World, 1 Sept. 1999).

Foreign investment was also attracted into the sector, although outright foreign ownership is precluded by the country's Navigation Law.^x Consequently, joint ventures have proliferated, most

particularly with Japanese companies but also with interests from Iceland, New Zealand, Norway, South Africa, China and the Ukraine (Weidner and Hall, 1993).

Elsewhere in the region, increased ownership concentration is rather more difficult to discern. While the Argentine and Uruguayan trawl fisheries have long been dominated by large vessels, there has been a tendency for vessel sizes to increase since the introduction of the NEM as new factory and freezer vessels have been incorporated into the fleet. These developments not only spawned increased conflict, but also pushed many long-established vertically integrated Argentine fishing companies close to bankruptcy (Weidner and Hall, 1993, p. 264). Nonetheless, ownership remains highly fragmented.^{xi} Foreign involvement in the sector has also noticeably increased, with Spanish, Japanese, Korean and Taiwanese companies entering into joint ventures in accordance with the 1992 leasing scheme.

Peru has also permitted firms to lease or charter foreign vessels (Fisheries Law 1992, Art.48), although this is not reflected in the statistics on fleet growth and concentration as these vessels need not be transferred to Peruvian registration for five years. The legislation, seen as the most attractive ever offered to foreign firms (Weidner and Hall, 1993, p. 451), has also encouraged direct foreign investment,^{xii} although the dollar value of such investment remains unquantified.

The situation is similar elsewhere. Larger trawlers, purse seiners, long-liners and fish carriers are recruited into the fisheries, encouraged by liberal NEM policies towards inward investment.^{xiii}

5. New Fisheries Conflicts

Although conflict may be endemic to fisheries development, NEM policies have contributed to the emergence of new fisheries conflicts, although we limit ourselves to three of the forms of conflict identified by Charles (1992). The first highlights the jurisdictional conflicts arising from the removal of historic fishing rights in Mexico's shrimp fisheries. The second considers enforcement conflicts in the emerging Chilean Patagonian toothfish fishery. Finally, we examine interest group conflict in Argentina, focusing upon the hubbsi hake fishery.

(a) Jurisdiction Conflicts in Mexico

The ultimate source of conflict in most fisheries is the absence of clearly defined rights. Recent conflict in Mexico's Pacific coast shrimp fisheries, in contrast, is attributable to the removal of the clearly defined exclusive fishing rights historically possessed by cooperatives. The conflict emerged in 1990 when the Mexican Cooperative Confederation reluctantly agreed to a reform of the shrimp fisheries proposed by the Ministry of Fisheries (SEMARNAP), which would ensure the "best conditions of coexistence between cooperatives and the private sector" (SEMARNAP, 1990, p.39- 43). In return for the promise of funds to recapitalize ailing Pacific shrimp cooperatives,^{xiv} the Confederation was required to limit participation to its 1990 level and accept 'privateers' into the fishery. This paved the way for the 1992 Fisheries Law to abolish the cooperatives' exclusive rights, replacing them with a system of transferable permits and concessions open to cooperatives and privateers alike. Private entrepreneurs quickly bought up antiquated cooperative vessels to acquire their permits.^{xv} Subsequent modernization or replacement of vessels heightened pressures on offshore shrimp stocks. Conflict was exacerbated following the collapse of the peso in 1994/5 as large numbers of unregulated 'free-fishermen' entered the inshore shrimp fisheries, attracted by the potential of harvesting a stock primarily destined for the export market.

In September 1996, the private-sector pressure group CANAINPES (the Chamber of the Fishing Industry) withheld payments to the government enforcement agency PROFEPA in protest at its failure to prevent inshore fishermen from illegally operating beyond the five-mile coastal zone in

Sinaloa and Sonora. While inshore fishermen openly accepted that they were breaking the 1992 Law by fishing outside the five mile zone, they argued that they had few realistic alternative employment opportunities. Low catches during 1998 led to escalating violence with no obvious acceptable solution for all parties. McGoodwin's (1987, p. 231) prescription for reducing conflict in the inshore shrimp fisheries - reducing shrimp exports and improving local and regional domestic shrimp markets B contradicts the objectives of the NEM regime. Vásquez León's (1994, p.79) recommendation - co-management with the active participation of cooperatives, private firms and government officials - is echoed in official policy, as SEMARNAP encourages meetings of participants to try and gain local support for proposed fishery closures. Nonetheless, complete reconciliation is likely to prove problematic and/or costly as the re-allocation of rights has, by encouraging new stakeholders into the fishery, reduced the likelihood of a mutually agreeable negotiated settlement.

(b) Enforcement Conflicts in Chile

In Chile, NEM policies not only induced overfishing of traditional demersal fish stocks (Schurman, 1996; Ecoceanos, 1998, p. 3), but stimulated the development of new commercial fisheries. Overfishing and conflict quickly emerged in these new fisheries due to regulatory and/or enforcement failures, as in Chile's Patagonian toothfish fishery which straddles the Chilean EEZ, the Antarctic region and international waters. Recognition of the species' commercial value led to the establishment of a 'research fishery' within the Chilean EEZ between August 1991 and July 1992. Its findings saw the government auction off a 4,500 mt TAC to eleven operators in December 1992. This was raised to 6,500 mt in 1993, a subsequent government resolution allowing Chilean flagged vessels to land an additional 3,350 mt from the region protected by the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR). Chilean vessels, however, harvested more than double the established quota from 1992-5 due to four factors.

First, there was a scarcity of alternative species. The collapse of the southern hake and pink cusk eel fisheries, traditional targets for the Chilean southern fleet, in the early-1990s encouraged boats to transfer to the toothfish fishery. Second, the fishery offered considerable financial returns: Ecoceanos (1998, p. 8) estimated that each clandestine 45-60 day fishing trip could yield profits of US\$3m. Third, there was regulatory failure. As vessels were not obliged to carry an onboard monitoring system, skippers could declare that their catches were taken in international waters. Finally, there was enforcement failure as Chilean courts refused to take punitive action against Chilean registered vessels caught illegally fishing in the CCAMLR area.^{xvi}

Local enforcement improved after the Fisheries Secretariat insisted that monitoring devices be installed from June 1993. This had two effects. First, it encouraged vessels to relocate to Uruguay or Argentina, where toothfish quotas were not set until 1995, to avoid prosecution by the Chilean authorities. Second, it encouraged marginal firms to leave the fishery, concentrating ownership of quotas for Patagonian toothfish within the Chilean EEZ among seven companies, the main purchaser Pesca Chile acquiring 33.8% of the 1997 quota (ISOFISH, 1999:60). Conflict has resulted as other companies, most notably the Roberto Verdugo Gormaz group, challenged this preeminence. Although Verdugo Gormaz, the Fisheries Undersecretary during the early-1980s, had participated in opening up the fishery, his companies had largely forsaken toothfish fishing in favor of controlling the more lucrative export processing trade.^{xvii} However, as tighter regulations reduced opportunities to buy illegally landed toothfish, the group attempted to register two boats in the fishery. Its application was initially rejected by the Fisheries Secretariat in early 1996 because the boats had been deployed outside Chile for more than a year, but the ruling was overturned by the Supreme Court in April 1997. Despite this victory, Verdugo Gormaz maintains that three of Chile's largest fishing companies (Pesca Chile, Emdepes and Friosur) exploited political contacts to obtain strategic information and preferential access to toothfish quotas (ISOFISH, 1999, p.31).

This example indicates some of the difficulties in managing a dynamic industry in which firms are more mobile than their regulators. In surveying Chile's fisheries management policies, Christy identified "ineffectual monitoring surveillance and implementation of regulatory measures [and] lack of infrastructure and personnel" (Christy, 1997, pp. 81) as the main problems. Adopting ITQs, whatever the outcome of current debates, will increase the burden of enforcement without increasing management resources, and seems unlikely to halt the emergence of conflict within new fisheries.

(c) Interest Group Conflict in Argentina

Powerful vested interests emerged in Argentina's fishing industry between 1992 and the passing of the 1997 Fishing Law, most notably in the hubbsi hake fishery. While catches peaked at 574,000 mt in 1995, continued concerns over the underlying resource stock finally persuaded the government to address the issue in 1997. An informal accord between the government and industry representatives in May which agreed to a 20% reduction in the annual catch proved ineffectual, and was superseded by the new Federal Fisheries Law in November 1997. This quickly encountered opposition. CedePesca, the Center for Defense of Ports and the National Fishery, opposed Article 27 of the new Law as it established hake quotas for each vessel on the basis of average catches between 1989 and December 1996. They were supported by CAABPA, the Association of Highseas Fishermen, who complained that the Law discriminated in favor of the large factory and freezer vessels that had entered the fleet following the 1992 Executive Decree and the 1993 EU agreement. CaPeCa, the Freezer Vessel Owners' Association, on the other hand, argued that the law simply institutionalized inefficiency as it prohibited future quota transfers between refrigerated and freezer vessels.

Tensions rose in late August 1998 when Eduardo Auguste, a former President of CaPeCa, was appointed Fisheries Undersecretary. Although his appointment was backed by CaPeCa and CAPIP (the Patagonian Industrial Fishermen's Association), CedePesca questioned the wisdom of letting "the fox manage the hen-house" (Fish Information Services, Sea-world 31 Aug. 1998). Tensions eased following a series of meetings between the industry and officials in September when the 300,000 mt TAC set for 1997/8 was withdrawn and rules were agreed governing fishing until the end of the year. A month later, however, the Federal Fisheries Council's decision to ban freezer and refrigerated vessels from the fishery for a month angered the CAPIP, CaPeCa and the Argentine Fishing Company Council (CEPA). As the ban took effect, the Federal Fisheries Council met to determine hake quotas for the next year. Its main proposals - ITQs equivalent to half of each vessel's declared 1997 landings, plus partially segregated fishing grounds - garnered little support (Federal Fisheries Council, 1998). It was rejected by CaPeCa because it relegated freezer vessels to the poorest fishing grounds. CedePesca and CAABPA complained that this decision would give the freezer fleet 54% of the TAC as against 38% under Article 27 of the Federal Fishing Law (CedePesca, 1998). Nonetheless, the proposals became law on 14 January 1999. The controversy shows no signs of abating however. CaPeCa lodged an appeal with the Federal Fisheries Council the following month, while the Fisheries Director of the European Commission and the Buenos Aires and Chubut Provincial Fisheries Councils have argued that it discriminated against their interests. The situation has deteriorated further since the ending of the EU agreement in May 1999 and the imposition of a hake ban the following month. Currently, Argentine firms and those engaged in joint ventures with EU firms are pressing their respective cases for access to remaining resources, ensuring that fisheries policy will figure prominently in the October 1999 presidential election.

This form of conflict, between interest groups and the state over the design and implementation of fisheries management, has been intensified by the emergence of powerful new firms and interest

groups. This is not unique to Argentina: Peña Torres (1997, pp. 265-6) identifies a similar process of 'regulatory capture' in Chile during the passage of the 1991 Law. However, as long as NEM policies encourage the growth of large firms, such conflicts seem likely to become more widespread.

6. Conclusion

This paper has explored the relationship between the New Economic Model in Latin America and the commercial marine fishing industries. It is a relationship that justifies further investigation, not only because of the importance of fishing within the region, but because of the region's contribution to world fisheries production and trade. Although it is too early to appreciate the full impact of the NEM upon the sector in many countries, certain common patterns in the process of adjustment are discernible.

It is clear that commercial fisheries do not adjust smoothly to rapid structural adjustment as firms are unable to respond quickly to sudden changes in market signals and leave the industry. Yet the pace of reform has been swift. State-owned firms have been privatized, privileges withdrawn, and new regulations introduced. These changes have had profound distributional consequences, with large firms appearing to have benefited most from NEM incentives, particularly in those instances where they have allied with foreign capital. Their growing influence has been a feature of the NEM period, and will most likely result in more intense conflict with management authorities in the future. Small-scale producers have not been beneficiaries of the NEM reforms, and many - such as the fishing cooperatives in Mexico - have seen what little security they enjoyed under earlier regimes disappear.

What is also evident is that the conduct and management of fisheries under the NEM has not materially reduced the outstanding problems of overfishing, overcapitalization and conflict. In certain respects, these problems have worsened. This is not, perhaps, surprising. The logic of privatization and deregulation, that market signals direct resources toward their best use, is at best dubious in a common property resource industry. NEM policies clearly recognized the importance of clearly defined private property rights in agriculture and forestry. The failure to extend this logic to marine fisheries was a serious error. It is clear that the failure to 'privatize the commons' was more significant than the privatization of state-owned fishing companies. Recent efforts in the region's major fishing countries to introduce ITQs might be regarded as tacit acceptance of the earlier oversight.

In the long run, the transition to a system of fisheries management based upon clearly defined rights should be the goal of Latin American states. However, this will clearly not resolve the sector's problems in the short- to medium-term, and will mostly likely exacerbate them. Governments must therefore persuade the industry's powerful new interest groups that they will benefit from such a regime. If governments are to enforce the discipline of property rights they must acquire greater management resources and expertise, which are already scarce. Most importantly, though, governments must recognize that conflicts are indicators of the need to make new trade-offs between competing management goals. This requires a greater understanding of the distributional consequences of fisheries development policies, and consequently a greater appreciation of the impact of the NEM on the sector.

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Notes

- ⁱ. Fishing effort is a composite measure of the productive inputs in a fishery, defining capital and labor, technical efficiency, etc. As we do not attempt to measure fishing effort, we use the term in its simplest sense. Accordingly, an increase in effort may describe an increase in the number or size of boats, an improvement in their efficiency due to technological change, or simply their more intensive use by firms.
- ⁱⁱ. For an explanation of why overfishing occurs at this equilibrium, see Hannesson (1993).
- ⁱⁱⁱ. The history of Latin American maritime jurisdiction is dealt with succinctly in Orrego Vicuña (1984, 1995), Paolillo (1995).
- ^{iv}. Foreign vessels were initially restricted to Southern Chile and were gradually excluded as the Chilean industry grew. A small number of foreign factory ships were allowed into the hake fishery after a 'naturalization' process (Weidner and Hall, 1993, p.322).
- ^v. A 1982 loan, the IADB's biggest ever credit to the sector, injected US\$32.9m into Chile's industrial fisheries, and US\$13.5m into the artisanal fisheries (Christy, 1997, p. 25).
- ^{vi}. This regulation currently applies only in the squid fishery, where the main permit buyers are Japanese and South Korean firms.
- ^{vii}. Growth was not restricted to the industrial fleet. Schurman (1996, p.1699) documents the growth in the number of artisanal launches in Region VII's Southern hake fishery between 1979 and 1989.
- ^{viii}. Legislation following the 1972 collapse of the anchovy fisheries favored state-owned firms in the fish meal business, leaving food production to the private sector.
- ^{ix}. Chilean companies acquired vessels Europe, North America and other Latin nations when local shipbuilders were unable to deliver due to excessive demand (Weidner and Hall, 1993, p. 311).
- ^x. The Law requires a Chilean majority shareholding in all Chilean-flagged vessels.
- ^{xi}. The two largest fishing companies had a turnover in 1997 in excess of US\$40m, followed by eleven firms of between US\$30m and US\$40m, and a further ten with turnovers of US\$20-30m (Argentina Business, December 9, 1998).
- ^{xii}. In this instance, by French, Russian, Korean and Spanish companies.
- ^{xiii}. Other examples of post-NEM foreign investment in the region include: the re-flagging of Spanish tuna boats in Costa Rica, investment in Nicaraguan shellfish fisheries by Norwegian firms, Spanish-Venezuelan joint-ventures, and Taiwanese and US participation in Uruguayan fisheries (Fish Information Services, Sea-World, Various).
- ^{xiv}. The government rescued 94 cooperatives with outstanding debts of 264.7 million pesos in 1992 (SEMARNAP, 1996:40).
- ^{xv}. Permits were granted on an individual basis. Nadal Egea (1996, p.359) suggests that as indebtedness prevented cooperative boats from fishing normally during 1991/2, permits could be acquired cheaply.
- ^{xvi}. The UK is especially active in apprehending transgressors in the CCAMLR region, but Argentine and Chilean courts do not recognize the UK's actions due to the Falklands/Malvinas sovereignty dispute (ISOFISH, 1999, p.24).

^{xvii}. Verdugo Gormaz purchased 5% of the original toothfish quota in 1993, this increasing to 10% in the 1997 auctions. However, the group dominates the frozen toothfish trade, accounting for 62.1% of 1997 exports (ISOFISH, 1999, p. 31,69).