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AN ECONOMIC ANALYSIS OF FISHERIES AND MOLLUSCAN FISHERIES NEXUS IN PAKISTAN 1950-2014

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ABSTRACT

This is the first attempt to analyze Pakistani fisheries sector, in general, and molluscan fisheries sector, particularly, and their markets for the period 1947-2014 on an economic basis. This investigation includes landing as well as trade figures in terms of imports and exports. Since the independence, Pakistan's economy has gone through many fluctuations due to indigenous and exotic shocks. These perturbations include the separation of East Pakistan in 1971, exponential population growth, nuclear testing in 1998 and political instability. In addition to these factors, fisheries sector also faced several distresses of its own such as onset of small-scale artisanal fisheries, lack of technologies, meager institutional development and lack of awareness among fishing communities. These factors have led to the collapse of fisheries sector. Consequently, overall fisheries in general and molluscan fisheries sector particularly experienced tremendous changes. It is noteworthy that the trade in terms of exports of fish and molluscs (including their products) were recorded maximum in 2013 (238,757 t) and 1999 (9,440 t), respectively. Overall fish landings steadily increased from 21,540 t (1950) to a peak of 612,444 t (1999) and declined afterward. Similarly, total molluscan landings also showed increasing trend from 49 t (1982) and peaked at 10,208 t (1999) but decreased afterward.

Key words: molluscan fisheries, trade, economic analysis, Pakistan.

INTRODUCTION

Pakistan is a semi-industrial state because 70% of the population is directly dependent on the agricultural sector and fisheries is an important agricultural sub-sector. Since independence, fisheries sector in Pakistan faced many shocks along with other macroeconomic disruptions. Soon after liberation in 1947, Pakistani fisheries started from claw mark as small-scale fisheries consisting of non-mechanized local wooden vessels, single functional trawler and no harbor and fish processing plant. Pakistan claimed 200 nm, Exclusive Economic Zone (EEZ) in 1976 (approximately 240,000 km^2) that led to increasing in its fishing limits (Khan, 2006; Wijeratna, 2007). Fisheries sector was exposed to many technical and non-technical problems which are reflected by the low increase in marine catch and also low fish yield in inland fisheries. As a consequence, these problems hindered its development (Akhter, 1995). As a result of these shocks, Pakistan's fisheries sector has undergone huge transformations. The reason and consequences of these transformations are analyzed in this article.

There are several studies that have been conducted on Pakistan's fisheries sector. These studies mainly address the marine fisheries sector. For instance, Akhter (1995) discussed fisheries sector in the context of socio-economic, demographic, its impact and sustainable use. Mohsin *et al*. (2015) and Nazir *et al*. (2014) investigated economic role and management of fisheries sector in Pakistan. Hornby *et al*. (2014) have described various trends of catches in marine fisheries in the last six decades and the importance of seafood in earning foreign exchange was evaluated by Memon (2015). Qureshi (2011) and Sayied (2007) highlighted costal resources, threats to Pakistan's costal ecosystem, environmental and managerial issues and solution of these issues through integrated coastal zone management plan for Pakistan. WWF-Pakistan launched a project for small-scale fisheries in order to improve livelihoods of coastal communities in Pakistan. Siddiqui (2012) described the role of fisheries industry of Pakistan in trade, GNP (Gross National Product) and various problems faced by this industry. In general, several authors addressed the economic role of fisheries, its management and degradation in Pakistan.

The innovative idea of this analysis is that it is encompassed on seven decades time series on Pakistan's fisheries generally and molluscan fisheries particularly from post-independence to the recent era. Additionally, these both, fisheries and molluscan fisheries sectors, will be analyzed within the sphere of macroeconomic developments, landings, trade and consumption. Meager information is available on the economic perspective of Pakistani fisheries sector. Mostly, the relevant literature is available in form of reports or web pages.

This study is composed of five sections: first, macroeconomic development in Pakistan from 1947 to recent period with the prominent effect of macroeconomic shocks; second molluscan landings; third, trade in terms of imports and exports; and finally fish and molluscan fisheries products consumption is presented. Afterwards, summary of this study is also given at the end. It should be noted that the role of fish processing industry is beyond the scope of this research paper.

Macroeconomic development in Pakistan 1947-2014: Pakistan came into being after the partition of British Indian Empire on August 14, 1947 (GoP, 2012a). Soon after independence, State Bank of Pakistan was established and the first five-year plan was started by Economic Coordination Committee (ECC) under the governance of Liaqat Ali Khan to boost up economic infrastructure in the state (GoP, 2012a). At that time, the share of agriculture in GDP (Gross Domestic Product) was 50% which is the highest as compared to other periods in the history of Pakistan (GoP, 2012a; Blood, 1996). This first five-year plan (1955-1960) was invigorating by Prime Minister Muhammad Ali Bogra in 1955 and re-launched in 1956 by next Prime Minister Huseyn Suharwardy by focusing on agricultural development. The ruling authorities from 1949 to 1958 focused on the growth of the industrial sector and many biased policies were introduced to stimulate industrial growth (GoP, 2012b; GoP, 2012c). Consequently, the growth of agricultural sector remained only 1.8% but still had huge share in GDP with 47.7%. The agricultural growth was emphasized through the implementation of various policies at the end of the 1950s (Ahmed, 1985; Amjad, 1984; Zaidi, 2005). So, in 1958, the first fish harbor was constructed in Karachi, which resulted in the rise of capture fish landings from 21,540 t (tons) (1950) to 71,430 t (1960).

The first dictatorship regime in Pakistan started when Ayub Khan took complete control of the state in October 1958 and ruled over the golden era of Pakistan's economic history. Despite incompetency of first five-year plan, military government dynamically applied the Planning Commission on Economic Management and Reforms with the help of Harvard advisors with influential consequences (GoP, 2012d). Consequently, Pakistan GDP per capita accelerated significantly. GDP, 1960-2014, is presented in the form of graph in Figure 1. However, growth rate changed considerably over time (Figure 2).

The second five-year plan (1960-1965) was introduced with the objective "to develop the state as far as possible" by giving the highest priority to heavy industrial development, advancement in literature and science. However, between 1959 and 1964, agriculture sector grew at an impressive rate of 3.7% but this rate was overshadowed by the even greater growth rate of 6.3% between 1965 and 1970. This was mainly due to the Green Revolution which was at its peak in 1966-68 (Zaidi, 2005).

The third five-year plan (1965-1970) was developed by an immediate predecessor of Ayub Khan by focusing on GNP. There was a remarkable increase up to 5.1% in agriculture growth rate with the contribution of 45.8% due to the introduction of Green Revolution Technology. Although, this plan very efficiently ran for the first three years but in the end this plan proved to be even more dismay due to its modest growth and lack of achieving manifested production goals (Ahmed, 1985; Amjad, 1984; Zaidi, 2005). Nevertheless, the annual fish capture production in Pakistan was increased throughout this decade from 65,730 t (1961) to 153,900 t (1970). The eradication of Ayub Khan's political system resulted in the decline of the economic system that in the end became the cause of severe economic instability in the country. Pakistan was an ideal developing economy for outsiders but this economic model totally refused domestically.

After the emergence of Bangladesh in 1971, fourth five-year plan (1970-1975) was dumped and avoided by Prime Minister Zulfikar Ali Bhutto. The annually populist nationalization program was initiated in place of the fourth five-year plan under the governance of Bhutto (GoP, 2012f) but this program hindered the Pakistan's journey towards modernization and faster economic growth. This concept of nationalization manifested in a huge decline in growth of the agricultural sector in Bhutto regime from 5.1% of the 1960s to 2.4% in 1970s and the contribution in GDP also declined to 38.9%. However, according to FAO data, the annual fish capture production of Pakistan fluctuated in the period 1971 to 1980. The lowest and the highest productions were recorded in 1971 and 1979 as 153,900 t and 271,373 t, respectively.

The fifth five-year plan (1978-83) was an effort to balance economy and enhancing living standards of the poorest class of the population. Nevertheless, some of the goals of plans were achieved, however, the resources were drawn away from expected investments due to increase in the defense budget, a speedy increase of oil prices in 1979-80. The conditions became more severe with the population explosion in Pakistan along with about 3.1 million refugees came to Pakistan after the Soviet invasion of the Afghanistan. The growth in population is presented in Figure 3.

In 1980, the military government introduced the new policies. The government increased the acquisitions/support prices of major crops and chose free trade policies. These policies led to the agricultural growth of 4.4% in 1979-1983 but the contribution of the agricultural sector in GDP was decreased to 32.9%. The main factor in this decline was the increase in total factor

productivity of agriculture of 2.24% which contributed 53% to increase the growth rate (GoP, 1980).

The sixth five-year plan (1983-1988) showed a remarkable switch to the private sector. Despite economy grew at 6.5% per annum with 4% agricultural and 9% manufacturing sector contribution, facials deficit increased to 8% of GDP (Hussain, 2004). Finally, Pakistan had to approach the International Monetary Fund (IMF) for assistance in 1988. The high growth rate of 5.4% in the 1980s was due to the huge investments in 1970s. In the period 1980-85 the GDP share of agriculture was 32.9% and 35% in 1985-90 and the growth rate was 3.28% and 4.57%, respectively. The annual Pakistani fish capture production was almost doubled with the continuous increasing trend throughout this ten year period (1981-1990). The production increased from 281,976 t (1981) to 436,392 t (1990).

The political instability, frequent changing governments, reversal of decision taken by previous governments, bypass institutions, bad governance, lack of potential to take bold decisions were the factors that lead to the total collapse of economic growth of the state in 1990s. Two five-year plans i.e. seventh (1988-1993) and eighth (1993-1998) were implemented during this era. A working group which included leading industrialists, presidents of chambers of commerce and senior civil servants submitted a report in late 1992 for the eight five year plan (1993-1998). In the first five years from 1990-1995 the agricultural growth rate was 4.19% and in 1995-2000 the growth rate was 4.88%. The biasedness that existed in opposition of agricultural sector had significantly decreased due to changes in trade policies and modification in the supposed and actual exchange rates. The productivity remained sustainable in this decade mainly due to the betterment in the lure for farmers (Ali *et al*., 2008). Consequently, annual Pakistani fish production fluctuated from 463,922 t (1991) to 573,568 t (2000) and the highest fish production in the history of Pakistan recorded during this period was 612,444 t in 1999.

The improvement in economic governance and structural policy reforms by military regime laid the foundations for boosted growth from 2002 to 2007. The rate of economic growth increased to 7% from 3.1% in 2001-2002. The ninth five-year plan gave a new name medium term development framework (MTDF) by planning commission from June 2004 and thirty-two working groups developed this MTDF (2005-2010). However, in the decade of 2000s the agriculture sector's share fell to 22.1% and grew at 3.2% rate. Severe water shortage along with salt-affected soil, soil erosion, natural calamities, mechanical and technical deficiencies and structural problems were the main factors contributed to slow growth rate (Ali *et al*., 2008; Alam and Naqvi, 2003; GoP, 2010a; GoP. 2011).

The tenth five-year plan (2010-2015) was implemented to rectify shortcoming through suitable solutions in all major sectors of the economy. However, due to paying fewer attentions towards economic issues, the economic conditions became more and more unstable. The average annual growth rate fell from 5.1% (2009) to 3.5% (2014) because of more intense energy shortages, declining external inflows, higher food and oil prices in 2011, floods in 2010 and 2011, the residual impact of the 2008 global financial crisis, and domestic security challenges (GoP, 2010b). As the result of all these shocks, from 2001 to the present, the total annual fish production sharply declined from 503,095 t (2001) to 436,960 t (2014). The overall trends of annual Pakistani fish production from 1950-2014 are pointed in Figure 4.

Analysis of Fisheries and Molluscan fisheries landings in Pakistan 1950-2014: The numerical data of Pakistani fish landings from 1950-2014 is provided by the Food and Agriculture (FAO) FishStat, that is based on national fisheries statistics given by its member countries (Garibaldi, 2012). The overall molluscan fisheries landings (1982-2014) are highlighted in Figure 5.

Soon after independence (1947), Pakistani marine fishery was completely small-scale with totally non-mechanized locally made wooden vessels and single inherited used fish trawler. The marine catches in 1947 were about to 33,000 t and at that time, fresh fish was either sold to the coastal area or dried and exported to Sri Lanka, Myanmar and other countries in Southeast Asia (FAO, 1977). In 1950-1960, the highest quantity of overall annual fish landing was recorded 72,130 t in 1956 as compared to 21,540 t in 1950. Afterward, landings were declined for next three years and at the end after some increase in 1960 reached to 71,430 t. This rapid increase in Pakistani landing between 1950 and 1960 was resulted through mechanization of traditional fishing vessels by fishers along Sindh coastline and furthermore, the first fisheries landing center was established in Karachi in 1958 (Ahmed, 1985).

The total landings increased up to two folds from 67,530 t (1961) to 153,900 t (1970). Several reasons explain this increase. Not only, the development of mechanized fishing fleets, which were considered to contribute about 60% to the total landings while the rest being shared by small-scale fisheries (Hussain *et al*., 1968), but also some others. The other reasons were dynamic steps taken politically to enhance economic especially agricultural growth, technological and industrial improvement, an increase in local fish consumption demand, shortage of food perceived globally in the late 1960s and fish stock assessment through research vessel (1960-1967) and commercial vessel (1966-1969) (Siddiqi, 1992).

Pakistani economy especially fisheries sector faced various determinants domestically and globally in

the 1970s. These determinants were division of Pakistan in 1971, limit approach to the waters of former colonies, the introduction of EEZ in 1976, and the oil shocks in 1970s that greatly influenced the growth of distant water fishing because of considerable fuel price increases. Nevertheless, annual fish landings continuously and significantly increased 153,900 t (1971) to 248,120 t (1980). The annual fish production in this period resulted to 53.6 million USD (1979-1980) and the fishing fleets extended from 3 vessels (1958) to 897 vessels (1980) (Khan, 2006; Van Zalinge *et al*., 1986; Sami, 1994).

The total fish demand and consumption rose in the 1980s because the population of the world sharply increased which result in an increase of annual global fish landings till the end of 1980s. Consequently, the annual Pakistani fish landings increased dramatically and almost doubled from 281,976 t (1981) to 436,392 t (1990). The record of annual Pakistani molluscan landings is available from 1982 to 2014 in the database of FAO Fishstat. This data record included commercially five major molluscan groups; first, cuttlefish and bobtail squid nei (G1); second, various squid nei (G2); third, spiral Babylon (G3); fourth, clams etc. nei (G4); and fifth, Razor clams, knife claims nei (G5). The first record of Pakistani molluscan landing included only single group G1 reported 49 t (1982) by Food and Agriculture Organization (FAO) FishStat which gradually and continuously reached to the peak of 3,889 t (1990) which included two major molluscan groups; G1 and G2 with share of 2,254 t and 1,635 t, respectively.

The progress of Pakistani fisheries seen in the 1980s was actually begun in the late 1970s as the consequence of five-year project invested by Asian Development Bank (ABD) in this sector. In the Punjab, NWFP and Sindh, the objectives of this project were achieved in the form of improvement of fish hatcheries in Punjab and Madyan Trout Hatchery in NWFP, construction of two big hatcheries in Chilya and Sukkur (Sindh), establishment of Trout farming units, fish pond development, nurseries, acquisition of nursery equipment and technical knowledge, provision of consultants, foreign training and up gradation of already available biological and physical facilities. This project provided the primary thrust in the fish industry through which capabilities increased in both warm and cold water species and provided an encouragement to potential fish farmers (Akhter, 1995).

Total world fisheries landings have increased from 19 million t (1950) to 100 million t (1989). The production of global marine capture fisheries increased to about 80 million t until the end of the 1980s and stagnated afterward at that level which shows that we now have attained the maximum potential of global marine capture fisheries. The proportion of overexploited stock rose from about 10% in the mid-1970s to 25% in the early 2000s but overall, the proportion of overexploited stocks almost remains stable since the late 1980s (TWB, 2006).

With respect to above mentioned factors, consequently, the annual Pakistani fish landings almost remained same throughout the 1990s with a nominal increase from 463,922 t (1991) to 573,568 t (2000) with the peak of 612,444 t (1999). The annual molluscan landings sharply increased in the 1990s from 5,572 t (1991) to 9,377 t (2000) with the peak of 10,208 t (1999) which included two major groups (G1 and G2). The landings of both molluscan groups almost doubled; G1 from 2,424 t (1991) to 5,307 t (2000) and G2 from 3,148 t (1991) to 4,070 t (2000) with the peak of 5,062 t (1999).

The overall fish landing in Pakistan has declined by nearly 2% per year since 1998. This downward trend in the marine capture and also inland freshwater resources is due to many forces faced by fisheries sector. These constraints include overexploited stocks below long-term potential level, low productivity, high poverty levels among fishing communities, lack of feed, seed, land and technology, post harvest losses, low awareness for fish consumptions and insufficient volume of stakeholders. Despite, all these constraints Pakistan ranked 28th among fishing nations in terms of production and 50th in term of export earnings (GoP, 2007).

The annual fish landings from 2000 to onward declined and stabilized with the same trend throughout this period from 503,096 t (2001) to 436,960 t (2014). The annual molluscan landings of various groups fluctuated in an above said period, the highest landing of various molluscan groups was recorded 12,617 t (2014) and lowest was recorded 6,071 t (2007). In the first trimester, (2001, 2002 and 2003), the molluscan landings were recorded 9,280 t, 8,502 t and 7,235 t, respectively, which included two groups (G1 and G2). The share of G1 in 2001, 2002 and 2003 was recorded 5,256 t, 5,302 t and 5,105 t, correspondingly. The share of G2 in 2001, 2002 and 2003 recorded 4,024 t, 3,200 t and 2,130 t, in that order.

In the second trimester, the landings were recorded 7,990 t (2004), 6,191 t (2005) and 6,162 t (2006) which included three groups (G1, G2 and G3). The quantity of G1 was 4,005 t (2004), 3,310 t (2005) and 3,255 t (2006). The share of G2 was recorded as 3,430 t (2004), 2,504 t (2005) and 2,176 t (2006). The contribution of G3 was 555 t (2004), 377 t (2005) and 731 t (2006). The annual molluscan fish landings from 2007 to 2014 steadily increased from 6,071 t (2007) to 12,617 (2014) which included all five major groups. The landings of various molluscan groups are presented in Figure 6.

Imports and Exports of Fish and Molluscan fishery products in Pakistan 1976-2013: *A: Aggregate imports and exports of fish and fish products*: Data on quantity and values of exports and imports of fish and fish

products are only available from 1976 onward. The complete record of this data is presented in Figure 7 and Figure 8. Although there were considerable fluctuations in exports of fish products from year to year, the total export quantity and value has shown a steady increase trend during the period 1976-2013, from 8,374 t with the value of 4,134 million USD (1976) to the peak of 116,502 t with value of 238,757 million USD (2013). The quantity and value of exports of fish products doubled from 8,374 t with a value of 4,134 million USD (1976) to 16,096 t with a value of 9,361 million USD in 1983. Afterward, the trend has been positive throughout the period from export quantity 22,577 t with a value of the value of 17,730 million USD (1985) to the peak of quantity 116,502 t with a value of 238,757 million USD (2013).

The total fish product imports quantity and values to Pakistan have shown a varying trend with a nominal increase. The first import quantity was recorded 2 t with a value of 15 million USD (1979) which reached to 27 t with a value of 128 million USD (1981) and this trend has been declined from 1982 to 1997. There was an increase once again in imports to Pakistan from the quantity of 64 t with a value of 128 million USD (1998) to the peak of quantity 4,208 t with a value of 11,887 million USD (2013). It should be noted that net imports were zero in first three years from 1976-1978 which increased later on. In other words, Pakistan recently showed more and more rely on imports of some fish products. *B*: *Aggregate imports and exports of molluscan products*: The data of export and import quantities and values of molluscan products are only available from 1985 onwards which presented in Figure 9 and Table 1. As highlighted in landing section that the actual progress of Pakistani fisheries revealed in the 1980s when a five-year project invested by Asian Development Bank (ABD) initiated for development of this sector. The various objectives of this project were achieved in different provinces. This project provided the primary thrust in the fish industry through which capabilities increased in both fish and molluscan products.

Consequently, the exports of molluscan products increased during the period of 1985-1990 from 7 t with the value of 19 million USD (1985) to 2,731 t with the value of 4,837 million USD (1990). Before 1990, the exports of only oysters (live, fresh or chilled nei) were recorded 7 t (1985) and 2 t (1988). The trend was shifted to the export of another group, cephalopods (frozen nei), in the period 1990-2002. The exports quantities and values of this group changed in this period from 2,731 t (1990) to 1,741 t (2002) with the peak of 19,440 t (1999). The exports of other groups which included miscellaneous molluscs (live, frozen or chilled), miscellaneous molluscs (prepared or preserved) and cephalopods (Live, frozen or chilled) were also recorded as 75 t (1997), 20 t (1993) and 14 t (1994), subsequently, in the period 1990 to 2002.

After 2002, exports of cephalopods (frozen nei) totally diminished and were replaced by various other molluscan products. The exports of various molluscan products with reference to quantity and value varied during the period of 2003-2013 from 210 t with a value of 354 million USD (2003) to 1,636 t with a value of 3,391 million USD (2013). These total exports (quantity/value) in period 2003-2013 were belonged to; cuttlefish other than live, fresh or chilled (3,441 t/7,254 million USD), molluscs nei prepared or preserved (1,882 t/4,143 million USD), scallops other than live, fresh or chilled (1,681 t/3,247 million USD), miscellaneous molluscs live, fresh or chilled (144 t/1,018 million USD), miscellaneous molluscs other than prepared or preserved (485 t/846 million USD), mussels nei live or chilled (305 t/491 million USD), octopuses fresh, live or chilled (167 t/287 million USD), cuttlefish & squid prepared or preserved (130 t/370 million USD), octopuses other than live, fresh or chilled (116 t/240 million USD), Oyster nei live, fresh or chilled (91 t/245 million USD), cuttlefish and squid nei live fresh or chilled (90 t/103 million USD), cephalopods nei live fresh or chilled (40 t/84 million USD) and scallops nei live, fresh or chilled (6 t/11 million USD). It should be noted that the overall trend of exports of molluscan products first increasing from 1985 to the peak in 1999 but then represented the declining trend afterward.

The data of total imports of various molluscan groups in quantity and value to Pakistan is sporadic and discontinuous because there is historically no trend to eat molluscs. The first import quantity was recorded 5 t with the value of 25 million USD (1990) which reached to 36 t with the value of 335 million USD (1999). There was an increase once again in imports to Pakistan from the quantity of 4 t with a value of 4 million USD (1998) to the peak of quantity 251 t with a value of 358 million USD (2010).

The exports from Pakistan increased with the annual increase of 19% during the period 1974-1987 due to the introduction of new technologies and the establishment of new international marketing channels. The high market values of fish and fish products also boosted the growth in the 1980s. The local agents emerged due to increased demand for shrimps and fauna, who bought fish and fish products from local small-scale fishermen for release to large processors, who ultimately sell to large international companies (Siddiqi, 1992). The total exports from Pakistan rose from 26,859 t with a value of 33,724 million USD (1988) to 40,607 t with a value of 52,795 million (1995).

The inspectors of EU Food and Veterinary Organization (FVO) noticed poor hygienic conditions in Karachi Fish harbor in 1997. Pakistan banned the exports to EU markets which were lifted after the betterments

make in the harbor. Thus, Pakistani exports markets diverted to other regions between 2003 and 2010 because of ban Pakistani seafood export to EU. The total share of Pakistani seafood export to Europe market was 31% which after ban became zero. The share to Japan was also reduced from 7% in 2003 to 2% in 2010 due to less interest in Pakistani seafood after EU ban. The countries which benefited more from this ban were China, UAE, and new markets also Vietnam, Thailand, and Indonesia. It should be noted that fishery products first exported of UAE, then re-labeled and exported as UAE origin (van der Pijl *et al*., 2012).

Fish and Molluscan fishery products consumption in Pakistan: In Pakistan, there is no trend of seafood eating (Ahmed, 1985). However, a large proportion of fish landed in the coastal area is domestically consumed by local communities. Most of the fish products are distributed from Karachi's market and fish consumption is higher in Sindh and Baluchistan coastal areas than the other regions of the country (Ahmed, 1985; Feidi, 1995). Generally, in Pakistan, fish is considered unsuitable for consumption during summer (April to October). Nevertheless, domestic marine fish consumption has been steadily increased from 11% (1973) to 20% (1977) and reached to 30% with the quantity of 50,000-60,000 t in 1985. The rest of the landing was either export or used for manure and fishmeal (Ahmed, 1985; Anon, 1977). Pakistan's per capita fish consumption remained low, in early 1960 was 2.3kg/person/year (Qureshi, 1961). In 2011 and 2015 per capita consumption was 1.9 and 2.0 kg/person/year (AD, 2015).

In Pakistan, among the major groups of molluscs, mostly squids and cuttlefish are being exploited with only stray catches of octopus, mostly from coastal waters. There is no targeted fishery for molluscs and almost the entire quantity landed is obtained as a by-catch from shrimp fishery (FAO, 2015). The Pakistani molluscan exports and imports are also nominal. Consequently, this represents that there is no proper attention given to the development of this sector and there is no trend of molluscan consumption also.

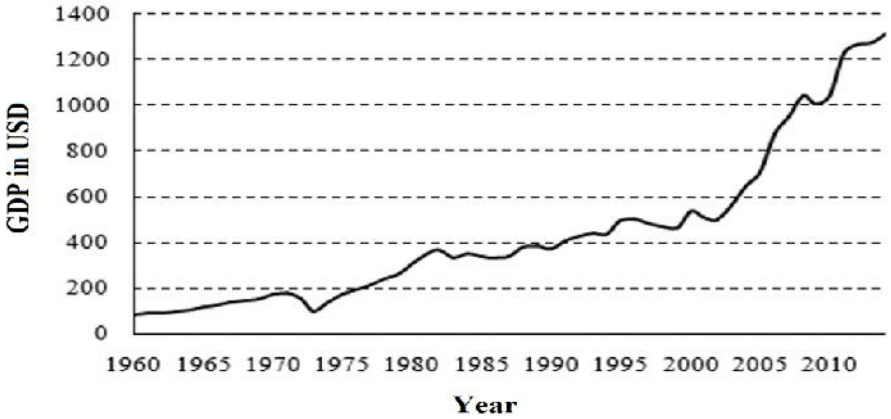

Fig. 1. GDP per capita 1960-2014.
Source: The World Bank.

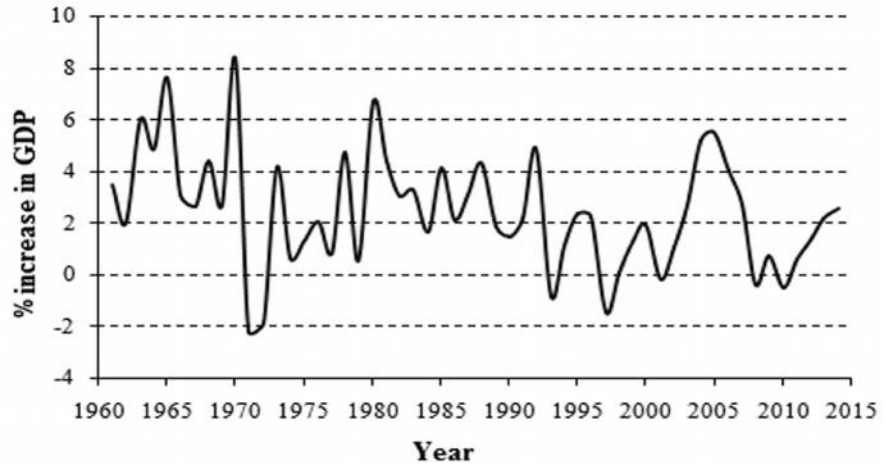

Fig. 2. GDP per capita – % change year on year.
Source: The World Bank.

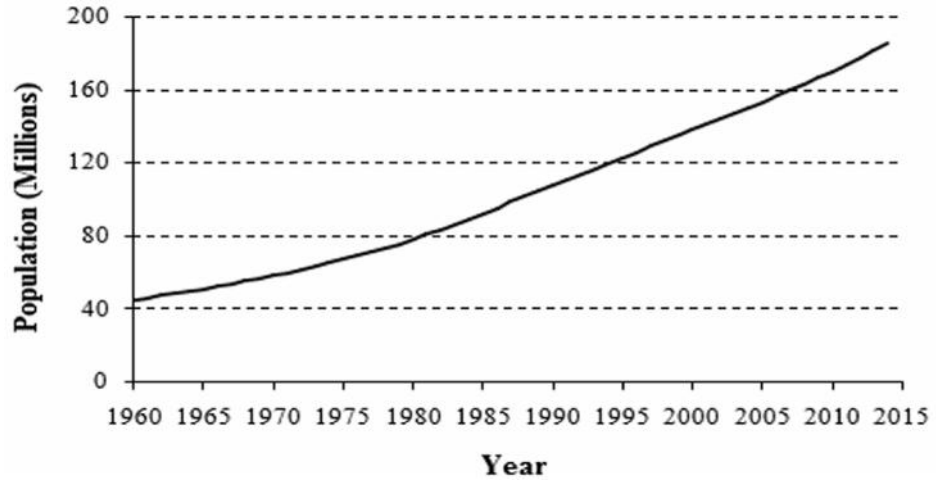

Fig. 3. Population growth in Pakistan (1950-2014).
Source: The World Bank.

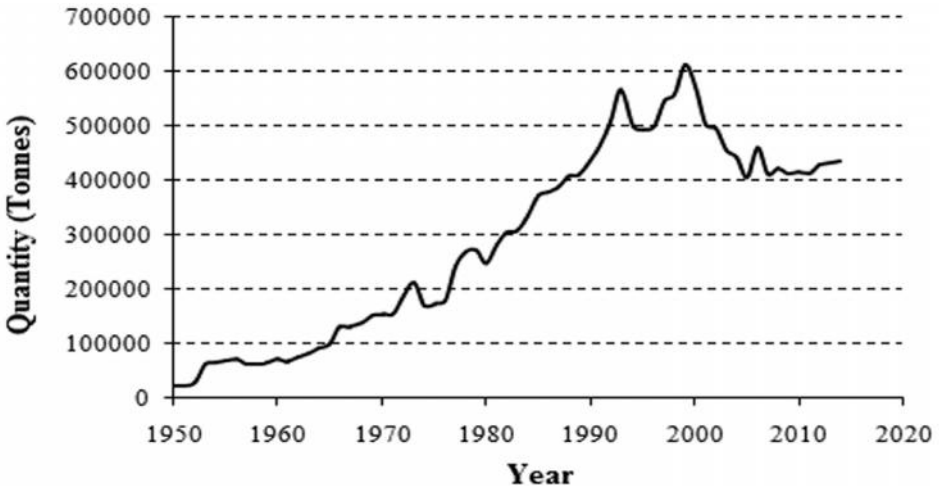

Fig. 4. Total Fish production in Pakistan (1950-2014).
Source: FAO FishStatJ Fishery Software.

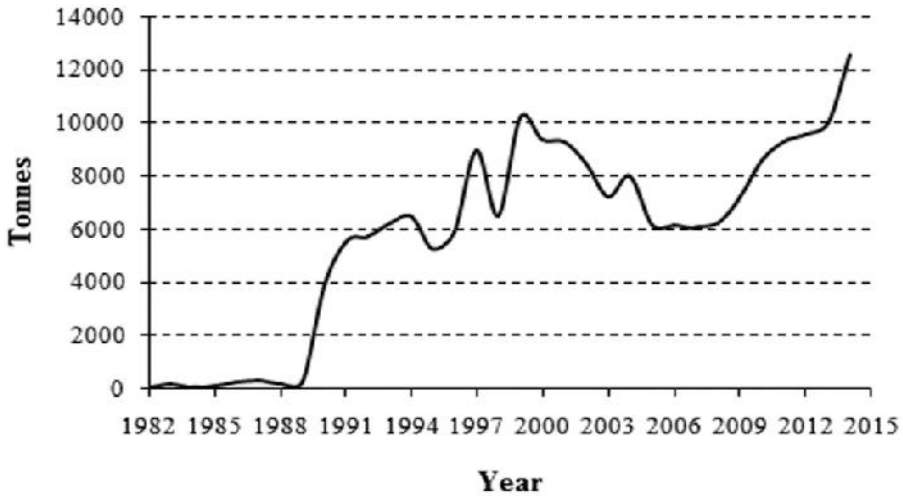

Fig. 5. Total Molluscs production in Pakistan (1982-2014).
Source: FAO FishStatJ Fishery Software.

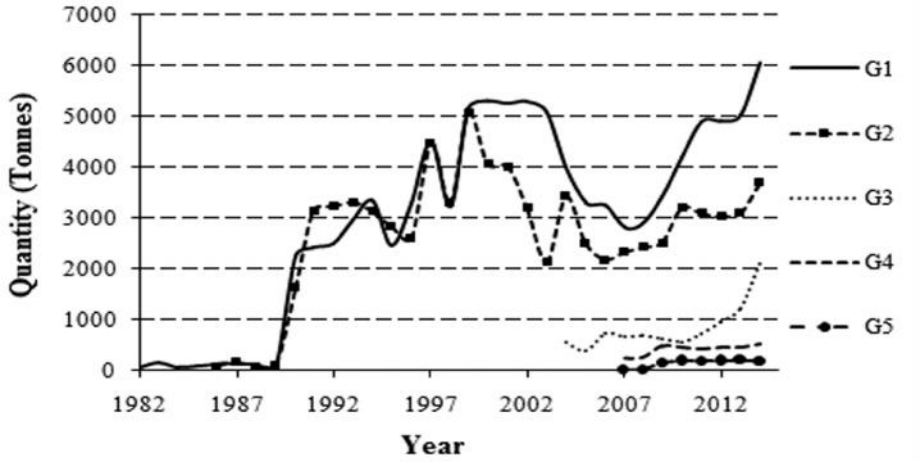

Fig. 6. Landings of various groups of Molluscs (1982-2014).
Source: FAO FishStatJ Fishery Software.
Note: G1: Cuttlefish, bobtail squids nei; G2: Various squids nei G3: Spiral Babylon; G4: Clams, etc. nei; G5: Razor clams, knife clams nei.

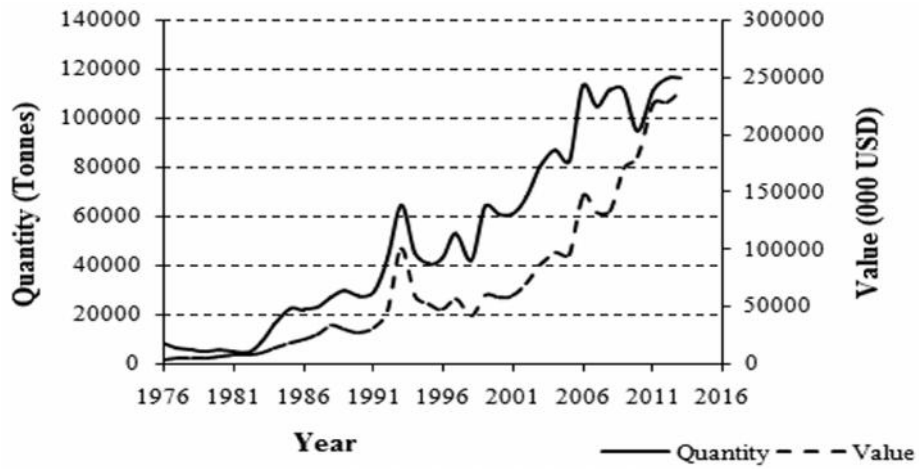

Fig. 7. Total export of Fish in Pakistan (1976-2013) in terms of quantity and value.
Source: FAO FishStatJ Fishery Software.

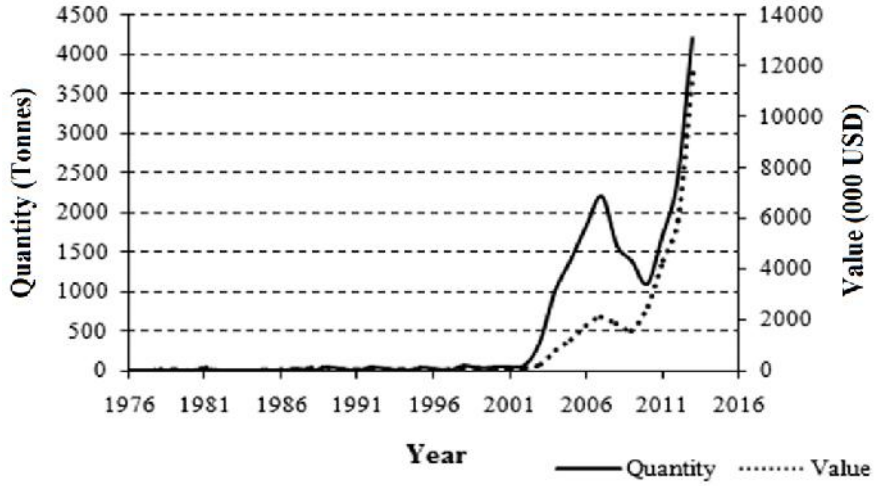

Fig. 8. Total import of Fish in Pakistan (1976-2013) in terms of quantity and value.
Source: FAO FishStatJ Fishery Software.

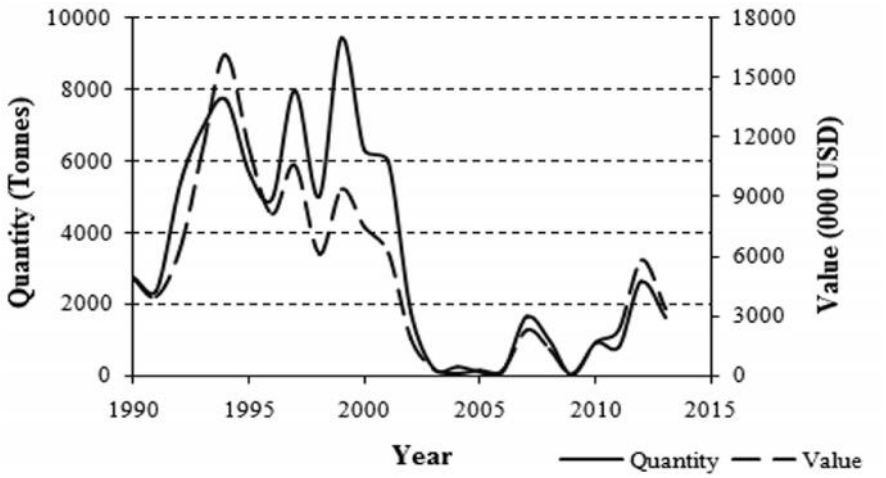

Figure 9: Total export of Molluscs (including its products) in terms of quantity and value.
Source: FAO FishStatJ Fishery Software.

Table 1. Total import of Molluscs (including its products) in terms of quantity and value.

Year	Quantity (t)	Value (000 USD)
1990	5	25
1995	7	43
1999	36	335
2004	4	4
2008	6	3
2009	30	31
2010	251	358
2011	15	20

Source: FAO FishStatJ Fishery Software.

Conclusion: The Pakistani fisheries, in general, and molluscan fisheries, in particular, have changed considerably since the independence. Fish and molluscan fisheries landings peaked at 612,444 t (1999) and 12,617 t (2014) in that order because of government policies, abundant fish resources, awareness to local communities, increase in global food demand, institutional and technological improvements. Nevertheless, there were indications of decreasing trend from 2000 onwards. After the decline, the landings of fish and molluscan fisheries were recorded with the lowest quantity of 404,721 t (2005) and 6,071 t (2007), respectively. This declining trend is the result of OE, poor living standard in fishing communities, lack of feed, seed, land and technology, post-harvest losses, low awareness for fish consumptions and limited stakeholders.

The trade in terms of exports of fish and molluscan fisheries products from Pakistan considerably change over the period. The exports of fish products raised from 4,134 t (1976) to 100,741 t (1993) and remained at a low level up to 2001 then after increase peaked at 116,502 t (2013). The exports of molluscan products first show an increase from 2,731 t (1990) to 9,440 t (1999) and then decreased at lowest quantity 26 t (2007) because there is no targeted fisheries for molluscs in Pakistan and almost the entire quantity landed is obtained as a by-catch from shrimp fisheries.

Thus, Pakistani fisheries and molluscan fisheries have changed considerably in terms of landings, trade (exports + imports), and consumption of fish generally and molluscan particularly. Consequently, the trend in the market has also changed.

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