



**TRADE LIBERALIZATION AND SOCIO-ECONOMIC  
VULNERABILITY: A CROSS COUNTRY ANALYSIS ON THE  
SHRIMP SECTOR**

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KUS: 16/37:091116

Manuscript received: November 09, 2016

Accepted: September 25, 2018

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**Abstract:** This study attempts to capture the impact of trade liberalization on the shrimp sector of three countries, namely Bangladesh, India and Vietnam. By analyzing the country specific studies from these three countries, the study found that trade liberalization in the shrimp sector of these countries increases export earnings and creates gainful employment opportunity, especially for women. In spite of these positive impacts, the study finds that shrimp sector has been expanded at the cost of agricultural land, which increases household's vulnerability through replacement of subsistence farming by commercial aquaculture and reduced livelihood options. Increasing income gap reduces the ability of the poor to fight against risk and consumption volatility. By analyzing the comparable elements among three countries, this study reaches to the conclusion that structural shift from crop farming to shrimp farming in the respective areas affect the determinants of poverty, which can be explained for defining the status of vulnerability of the households. This study is important in case of providing a comparable base line for assessing the impact of trade liberalization of the respective countries. This might be an important insight to the policy makers while assessing the impact on the shrimp sector at the household level.

**Keywords:** Commercial aquaculture, Shrimp sector, trade liberalization, vulnerability

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### **Introduction**

Poverty impact of trade liberalization is a contested issue in the recent development debates, because of its multiplicity of upshots and complexities of interconnectedness among different economic, social and environmental factors. At the outset of global integration, countries in the developing world are increasingly adopting liberal trade policies as a vehicle of economic growth. Empirical studies show a strong bias in favour of trade liberalization and claim that outward oriented economies consistently have higher growth rates than inward oriented countries (Yanikkaya, 2003). Long run positive impact of trade liberalization at macro level is more apparent, but there is a growing concern about the short run

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DOI: <https://doi.org/10.53808/KUS.2018.15.1and2.1637-S>

adjustment costs, which arises from transferring resources from one sector to another during the period of transition (Cordoba *et al.*, 2005). More clearly, changes in the level of resource use during the transitory period have a welfare impact on the owners of the resources, such as land, labour and capital. But the globalization process does not necessarily exert a negative impact on household's poverty profile. The nature and magnitude of the poverty impact of this process is very much country specific and sector biased. This is also very closely related with the socio-economic characteristics of the households. Kanji and Barrientos (2002) in their study explore that placing significant emphasis on free trade and export specialization in Sub Saharan African (SSA) countries have dramatically changed the domestic economy as international demand of industrialized countries has shifted towards tropical fruits and vegetables, which is mainly produced by SSA small and marginal framers. Advantages of taking these opportunities have been disproportionately shared by farmers of different regions due to the differences in 'capacity to adapt and compete' in the changed liberalized economy.

Trade liberalization embraces deregulation of foreign investment through reduction or elimination of barriers to international trade. Trade liberalization also entails instituting macroeconomic reforms, such as export promotion under which countries are inclined to specialize in particular goods or services according to their comparative advantage (Atthill *et al.*, 2007). The present study considers the term trade liberalization, trade policy reform, economic integration and the forces of globalization synonymously, which corresponds to the notion that the sample countries have been facing the forces of globalization mainly through economic integration or trade liberalization.

On the basis of the regression analysis, Dollar and Kraay (2002) argue that international trade openness stimulates growth and this growth has the same positive impact on the poor as on the rich, because distribution of growth is normally neutral. Although they recognize the short term win-loss situation derived from trade liberalization but argue that it is not only poor who are disproportionately suffered from this process. Another argument in favor of trade liberalization recognizes that international trade would ensure better allocation of resources and promote the investments towards export sector. Protective measures applied since the 1960s were seen to have led to the misallocation of scarce resources and weak growth and productivity in developing economies. It would also revive economic growth and enable the developing economies to play a more competitive role in a globalized world (Hammouda, 2004).

Analyzing the level of economic performance of a sample of developing countries that have undertaken trade liberalization and structural adjustment policies in 1980s, Shafaeddin (2005) found that East Asian countries experienced rapid industrial and export growth whereas majority of the sampled low income countries of Africa and Latin America faced increased susceptibility of the economy along with de-industrialization and slow export growth. Wacziarg and Welch (2008) used a new data set over the period 1950-1998 on openness indicators and trade liberalization and suggested that liberalized economies experienced average annual growth rates by 1.5 percent higher than before liberalization. Post liberalization investment rates rose by 1.5-2.0 percent and average trade to GDP ratio

rose by roughly 5 percent. But they found these average effects mask large differences across countries. Another study by Yimer (2011) examined the relationship between trade liberalization and per capita income for Sub Saharan African countries. He found a positive impact of trade share on per capita income but negative association between tariff rates and per capita income. Yimer (2011) also captured significant positive effect of trade liberalization on per capita income and finds this result consistent and robust to changes in specifications and sample sizes.

Above set of literature found mixed evidences on the relationship between trade openness and growth. Winters (2004) found serious methodological challenges and disagreements about the evidences available on the linkage between these two. But he recognized the reasonable conclusion that liberalization is accompanied with temporary incidence of growth, which generally lasts long by interacting with other factors like increase in productivity, investments, institutions and other policies. Although no universal conclusion can be derived from the available literature on the linkage between trade openness and growth, it is evident that trade openness creates resources to raise income in the long run, and even if 'trickle-down' were insufficient to bring the benefits to the poor, government will undertake stronger redistributive measures, when income is higher and growth is faster (Winters *et al.*, 2002).

Mixed evidence from the available literature on the linkage between trade liberalization and growth motivates the experts to uncover the true impact of trade liberalization on household poverty from a wide variety of different contexts (McCulloch *et al.*, 2001). In this regard, McCulloch *et al.* (2001) argue that the implications of liberalization for poverty are case-specific and that identifying the effects requires a detailed understanding of the channels through which such influences may occur. They adopt a new framework of analysis which links trade reform (at macro level) and poverty at the household level (micro level). In that analytical framework, they tend to explore the static effects of trade liberalization on poverty through four broad groups of institutions.

According to this framework, trade liberalization has a direct effect on household's poverty profile via three important pathways: enterprises, distribution and the government channel. In this simple farm household model, welfare level of the households depends on income and prices of all goods and services that they face. Trade liberalization affects households' welfare through changes in relative prices as well as changes in wage and employment structure via enterprise channel (McCulloch *et al.*, 2001).

Most of the literatures discussed on the linkage between trade liberalization and poverty and/or growth focus on macro level impact. But the impacts of trade liberalization on the households' poverty and wellbeing (at micro level) are dynamic and need to be addressed profoundly to capture the real scenario. Very few studies concentrate their effort to unveil the households' poverty and welfare impact due to trade openness. Trade openness induced impact on households' poverty and wellbeing are diverse, which depends on the interconnectedness of local economy with the global economy. As for example, large majority of people in SSA countries greatly depends on small scale agriculture and natural resource base with weak and segmented local market, where investment is low and

institutions are fragile. Trade liberalization calls for increased specialization while small scale and marginal producers depend on diversified production to reduce risk and vulnerabilities. Within this backdrop, increased exposure to international market makes it difficult to mark out the effects of this exposure on the national economy separately (Kanji and Barrientos, 2002). Internal economic reform, competitiveness of important sectors to stand against the pace of foreign competition, governance, institutional structure etc. are the important determinants to affect the interconnectedness between international trade and household poverty. In relation to this, it can be said that trade is one of the components of development policy, which influences the determinants of poverty. This study is an attempt to capture how the impact of trade liberalization policy interacts with the economic agents at the local level under the context of socio-economic vulnerability of the households. “*Vulnerability has been defined as a set of conditions and processes resulting from physical, social, economic and environmental factors that increase the susceptibility of a community to the impact of hazards. The economic dimension of vulnerability acknowledges economic damage potential [.....] that affects the economy of a region and can be damaged by a hazard. It represents the risk to production, distribution and consumption. The social dimension of vulnerability acknowledges the vulnerability of people, and the emphasis is on coping capacity. Especially weak and poor population group are considered vulnerable*” (Kumpulainen, 2006: 66).

For the purpose of the analysis, the authors have selected country specific studies on the shrimp sector, which had rapidly expanded at 1990s in the countries namely Vietnam, India and Bangladesh. On the basis of these studies, some comparable elements (wage and employment, land use change, conflict over property rights etc.) have been observed within the sector for each of the country, which have implications on the extent of risk and vulnerability of the households. Main research question of this study is whether the structural shift from agro based to fishing based economy due to trade liberalization increase vulnerability of different small actors in the shrimp sector.

## **Background**

Asia is the leading producer of shrimp and about 80 percent of world’s cultured shrimp come from Asia. Total aquaculture production of brackish water tiger shrimp increased gradually from 21,000 tonnes in 1981 to 200,000 tonnes in 1988; then it sharply increased to nearly 500,000 tonnes with a value of USD 3.2 billion in 1993. Since then, production has been quite variable, ranging from a low of 480,000 tonnes in 1997 to a high of 676,000 tonnes in 2001. The major producers of tiger shrimp include Thailand, Vietnam, Indonesia, India, the Philippines, Malaysia and Myanmar. Since 2002, production of *Penaes monodon* (scientific name of brackish water shrimp) has been unofficially reported to have declined, particularly in Thailand and Indonesia, because of substitution by *Litopenaeus vannamei* in many farms (FAO, 2005). In 2012, India and Vietnam ranked seventh and ninth position respectively in production of marine capture fisheries and Bangladesh was in top 18 countries in the production of marine capture fisheries (FAO, 2014).

All the three countries studied in this paper, expanded the export oriented shrimp sector in the mid 1990s as way of economic liberalization. Favourable national policies including easy access to credit, training and extension services, subsidies, infrastructural

facilities, insurance and savings schemes were helpful in this regard (Chopra et al., 2010; Thong et al., 2010). This process was further intensified by international donor agencies and transnational companies by the name of meeting food demand of the developed countries. In practice, funds allotted for aquaculture have been largely diverted into the production of farmed shrimp which is a luxury export commodity, even though original plans often called for fin-fish production for domestic consumption (Luna, 1984). Out of an investment of USD1.7 billion in 1992 for Indian agriculture and fisheries, the World Bank allocated US\$ 425 million for aquaculture development (Mukherjee, 1994). In 1985, the World Bank planned to invest USD 200 in the countries Indonesia, Thailand, the Philippines, Sri Lanka, Bangladesh, Malaysia and China for aquaculture projects (Bailey, 1988). As a result a dramatic change has become visible in land use pattern, which incorporates conversion of agricultural land into shrimp pond at an unprecedented rate. In Vietnam, 272,000 hectares of land has been brought about for shrimp aquaculture from 2000 to 2004 in Ca Mau province; in India 42,006 acre in the Sundarbans at present (Chopra et al. 2010; Thong et al., 2010), and it was 410,000 hectares in 1996-97 up from 20,000 hectares in 1979-80 for Bangladesh (Barakat, 2004). In Vietnam, land under rice production reduced to 257000 hectares in 2008 (Lan, 2013). This extensive conversion was at the cost of rice fields for all the cases. It is to be noted that traditional agriculture, in all of the countries, were featured by common property resources. For example, it incorporated seasonal multi crop aquaculture with agriculture for local consumption, which provided a source of survival for the small and marginal farmers. In addition to this, under the traditional setting, marshy lands or open water bodies were left fallow at least one season in a year, in which poor people got access to different means of livelihood (Barraclough and Finger-Stich, 1996). Highly lucrative shrimp production is now being captured for shrimp production, which ends up the regime of common property resources.

Apart from this, the shrimp sector has often been blamed for biodiversity loss, environmental degradation, limiting livelihood opportunities for the poor and social conflicts (Battacharya *et al.*, 1999). Frequent changes in price and increased safety requirements of the importers coupled with the domestic production shocks turn this sector more vulnerable to the poor. Therefore shrimp sector has a profound impact on the livelihood of the poor community across these countries.

### **Materials and Methods**

This paper reviews studies on shrimp sector from three selected countries: Vietnam, India and Bangladesh. In Vietnam, most of the shrimp farms are concentrated in Mekong River Delta, which is responsible for 82 percent of total production (Dan, 2007). Two studies from Ca Mau province and one study from Bentre province of Mekong River Delta region have been reviewed for this paper.

Two studies from West Bengal of India have also been reviewed. The studies cover the Sundarbans region, which includes major portions of the districts of North 24 Parganas and South 24 Parganas (N24P and S24P). This is a rapidly growing region for shrimp cultivation, of which exports rise at a rate of about 4 percent annually from 1991 to 2003 (Chopra *et al.*, 2010).

Three studies on South-west and South-east region of Bangladesh have been reviewed for Bangladesh. These studies cover the districts of Khulna and Bagerhat from

South-west part and Chittagong district from South-east part. In Bangladesh, 80 percent of total shrimp production comes from the South-west part and the rest comes from South-east part of the country (Nupur, 2010). In the economy of the South-west region, shrimp cultivation is dominant. It is mentionable that all of the selected studies have been done during the time period 1999-2010. Table 01 shows the list of the reviewed literatures with respective time periods.

Table 01: Country specific studies for drafting the paper

Country Name	Citation of Country Specific Studies
Bangladesh	Alauddin and Hamid, 1999; Khatun, 2004; Ahmed, 2007
India	Saha and Pal, 2008; Chopra <i>et al.</i> , 2010
Vietnam	Clough <i>et al.</i> , 2002; Khang, 2008; Thong <i>et al.</i> , 2010

While selecting literature for this study, the authors came across few limitations. For example, the reviewed literature do not confront to almost the same time period. In addition to this, few comparable elements could not have discussed due to lack of available literature, for example, discussion of wage structure of Vietnam in line with other two countries. In spite of these limitations, selected areas for the case studies of respective countries enjoyed favourable agro climatic conditions, extensive saline soil and water resource, human resource, productive estuarine ecosystem and favourable government policies as a precondition to flourish this sector.

## Result

### Fish trade liberalization and vulnerability

***Economic dimension*** : Bangladesh had experienced a rapid expansion of shrimp farming since 1990s, which changed the rural employment, wage and occupational structure. Although shrimp farming reduces the on-farm employment opportunity, it requires a substantial number of labours in off-farm ancillary activities namely shrimp fry and feed collection, transporting, processing and packaging for exports (Alauddin and Hamid, 1999). It is mentionable that each and every node of the shrimp supply chain generates a lot of employment opportunity either directly or indirectly in the local economy.

Apart from this, shrimp sector have paramount importance in terms of foreign exchange earnings for all the three countries. Export earnings from shrimp sector increased from USD 0.986 million to USD 3.32 billion in Vietnam, which corresponded to 3.36 percent of GDP in 2006 (Dan, 2007). Although the amount decreased to 2 billion in 2010, which comes from exporting 228,813 tonnes in the foreign markets (SEAT, 2013). Again this amount increased to USD 3.1 billion from exporting 600,000 metric tonnes in the year 2013 (Portley, 2016). In Ca Mau province, export earnings grew threefold, from USD 150 million to USD 450 million between 1999 and 2004 (Thong *et al.*, 2010). In Bangladesh, export earnings from frozen food<sup>2</sup> increased from USD 515 million in 2006-07 to USD 534

<sup>2</sup> In case of Bangladesh, frozen food items are frozen fish, shrimp and others; shrimp constitutes major portions of frozen food items.

million in 2007-08 (BFFEA, 2009). Export earnings from shrimp increases from USD 348.28 million in 2009-2010 to USD 454.93 million in 2012-2013 (DCCI, 2016). India's marine export<sup>3</sup> earnings recorded a growth of 33.95 percent in fiscal year 2010-11 and crossed USD 2.85 billion (Goindocal, 2012).

In addition to these economic benefits, it is evident that opening up trade in the shrimp sector have created new employment opportunities and higher profitability for a group of people. In this section, the authors have tried to assess the impact of structural shift of the local economy at the household level from the context of economic vulnerability.

***Changes in employment structure:*** In Vietnam, employment structure in Ca Mau province has changed overnight due to development of aquaculture. Jobs in the aquaculture sector have increased from 85,000 in 1997 to 312,000 in 2003, but at the expense of decline of job in forestry and agriculture. Likewise in Bentre province people rapidly involved themselves in the aquaculture sector at the rate of 24.7 percent per year, which engendered the larger part of the labour force surplus (Khang, 2008). The new entrants in the aquaculture sector are primarily low skilled labours. They comprise more than half of the households in Ca Mau province, who either directly or indirectly involved in the shrimp sector by 2003. In Ca Mau province, there are now 25 seafood processing enterprises employing 20,000 full time and seasonal workers, of whom 60 percent are women (Thong *et al.*, 2010).

In India, many poor people in the Sundarbans are now being involved in shrimp export market, in response to the rapidly growing international market. In the predominantly rural fishing and farming based economy, an estimated 150,000 people have adopted prawn seed collection as their primary activity. This includes a large number of children, who come from landless families. An estimated 8,100 households are engaged in shrimp farming with 72,000 shrimp-farm workers in the Sundarbans. In addition to the jobs discussed above, processing plants employ 17,000 workers, of whom most of them are women. Other job opportunities are created in the phase of packaging, transport, exporting, whole selling and retailing (Chopra *et al.* 2010).

In Bangladesh, shrimp cultivation is mainly located in South-west region and accounts for 74 percent of total land area of this region under shrimp cultivation and 77 percent of total output (Alauddin and Tisdell, 1998). Bangladesh Shrimp and Fish Foundation estimates that there are over 600,000 people employed directly in shrimp aquaculture who support approximately 3.5 million dependents. Preliminary estimates indicate that there may be as many as 1.2 million individuals engaged directly in production and exchange throughout the shrimp value chain and a further 4.8 million household members whose livelihood is linked to the sector (USAID, 2006). Almost 150,000 people earn their livelihood as fry collectors in Bangladesh, of whom a large portion is women and children (Ahmed, 2007). Besides this, access to land and other resources are not equally distributed among the stakeholders. Available evidence shows that fry collectors, hatchery workers, depot workers and processing workers are the poorest in the supply chain, with

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<sup>3</sup> In case of India, frozen shrimp continued to be the major export value item accounting 64.12% of the total US \$ earnings (MPEDA, 2013-2014).

significance presence of women and children. These people have limited or nearly no access to land, financial resource, health care and other types of assets. Only the rich who have greater access to physical, financial and natural resources are reaping the higher benefits from the advantages of trade liberalization (Khatun, 2004).

Employment structure in the shrimp sector for the three countries shows two common scenarios:

- (i) As for all of the cases, aquaculture sector has been expanded at the reduction of agricultural land; it has a significant impact on level of employment. Because empirical evidence shows that rice farming requires ten times as many workers as shrimp farming. In poverty ridden rural set up, off farm employment opportunity is less, which forced these unskilled labours to live with reduced income, having a negative impact on family's well being. This trend is evident in Vietnam and Bangladesh.
- (ii) Another characteristic is gendered nature of employment in the labour market. Employers find it profitable to employ increasing number of women in the shrimp processing plants and for ancillary activities in the shrimp ponds as a source of cheaper and flexible labour than men. It has an impact on allocation of time and resources within the family, especially in terms of reproductive responsibilities of women. A significant presence of children at the lower end of shrimp supply chain in Bangladesh and India signifies higher level of poverty and lower entry barriers in the labour market.

**Changes in wage:** Wage discrimination between men and women within the sector as well as inter sectoral discrimination has been evident in the study of Bangladesh. Export oriented sector is supposed to pay higher wages than the traditional sector, but available literature suggest that workers in the shrimp farm are paid even less than the agricultural and other sector, depending on the region. According to a study conducted by Coastal Development Partnership (CDP) in 2005, a labour earns USD<sup>4</sup> 1.02 per day from working in a shrimp farm in Bagerhat Upazila of Bangladesh, whereas he/she gets USD 0.95 per day from working in other places. In Mongla Upazila, this rate is USD 0.87 per day for the shrimp labour, while USD 1.60 per day for other works. But in all of the cases, women workers are paid less than men. Women are also paid less in shrimp processing plants, where they are deprived of minimum wage and other labour rights because of excess supply of labours and underutilization of plants. Only 30 percent labours work on monthly salary basis as permanent worker and the rest 70 percent work as casual labours controlled by contractors at peak season, of which most are women. They have to work 12-14 hours per day at discriminatory wage rate without any overtime. They do not get any leave and professional health safety. They work hard and always being afraid of losing the job also (Ahmed, 2007).

In India, landless poor women get employed in the shrimp farm on a piecemeal basis as a casual labour and earn USD<sup>5</sup> 0.92 to USD 1.16 per day. In the shrimp processing

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<sup>4</sup> 1 USD is equivalent to 68.59 BDT in the year 2007 exchange rate

<sup>5</sup> 1 USD is equivalent to 43.23 BDT in the year 2008 exchange rate

firms, they work as the contractual basis and earn USD 0.78 to USD 1.16 per day. Due to stricter export norms, recent shift of the local processing firms to urban based export firms changes labour condition and higher wages for the women. Under the new setting, they get USD 46.26 per month, out of which USD 4.63 have to be paid to the agents as commission. But this wage gain is attained at the periodic absence from the family and sometimes at the cost of their children's health, education and other standards (Saha and Pal, 2008).

***Distribution of income:*** In Vietnam, 'shrimp farming has increased average incomes in Ca Mau and shrimp farming has lifted many families out of poverty. Between 2001 and 2004, poverty rate fell from 15.5 percent to 7.8 percent in Ca Mau province (Thong *et al.*, 2010). But another study says that poor farmers find it difficult to use shrimp farming to get rid of hunger and poverty at the time of industrialization and intensification (Khang, 2008). Poor households generate only 44 percent of their income from the shrimp sector, while it is 68 percent for rich households (Thong *et al.*, 2010). The reasons behind the smaller share of the poor households are full exploitation of shrimp farming land and high land price, lack of training and experience regarding intensive and semi-intensive farming, risk associated with high capital investment. Poor farmers also suffer from higher risk even at the time of bumper crops due to restraint of skills, resources and other limitations. This situation force the poor to borrow from the bank again and sometimes compel them to sell their land and other properties to recover the current loss, which at the same time make their current debt riskier (Khang, 2008; Thong *et al.*, 2010).

In Bangladesh, higher profitability attracts many people to engage in shrimp farming as their primary occupation. Stakeholders at the various nodes of the supply chain shows that owners of hatchery, shrimp depot, ice factory, processing plants, middlemen, boat owners and exporters posit themselves in highest wealth rank. Only shrimp farmers belong to different economic conditions and posit themselves in the upper two ranks. Fry collectors, depot and processing plant workers are the poorest group, who occupy lower status in the wealth rank (Khatun, 2004).

In India, shrimp sector generated domestic income of USD<sup>6</sup> 140.73 million in the year 2003-2004. Every USD of export results in income increase of USD 0.028, of which 61 percent goes to shrimp farmers, 14 percent shrimp farm workers, 8 percent prawn seed collectors, 14 percent transporters and retailers, and 4 percent for processing units. The dataset shows that largest portion of the income is being diverted to shrimp farmers, who generally are local elites, enjoyed special favours from the *panchayats*<sup>7</sup> in case of allotting government assistances and subsidies (Chopra *et al.*, 2010).

On the basis of the available literatures regarding income distribution and inequality, it can only be said that expansion of shrimp sector does not bring about the growth that mostly favours the poor. In case of Vietnam and India, only large farmers are reaping higher benefits. For Bangladesh, it can only be said that distribution of income mostly favours the particular groups who posit themselves in the higher wealth rank.

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<sup>6</sup> 1 USD is equivalent to 46.58 Indian rupee in 2003-04 exchange rate

<sup>7</sup> 'Panchayat' is a local political and administrative body in India

## **Fish trade liberalization and vulnerability**

***Social dimension:*** In this part, authors have tried to assess whether or not the structural shift in the local economy brought about by trade liberalization in this sector increases vulnerability of the poor in terms of greater access to five types of assets, namely human capital, physical assets, natural assets, financial assets and social capital, which give them greater ability and freedom to every sphere of their life.

### **Case for Vietnam**

Study from Vietnam reveals that most of the farmers in Ca Mau province entirely rely on the shrimp aquaculture for their income, which put them in a more vulnerable position than before. Because profitable shrimp production in Vietnam requires high level of technical know how, experience as well as greater access to capital. Backward technology often results wasteful use of resources and farmers are forced to purchase capital inputs on credit from informal sources at exorbitant high rate of interest due to lack of capital. With fluctuating production, repeated crop failure, lack of access to other income sources, uncertain land tenure, limited access to marketing channels, and low community bonds end up with a clear vicious circle of poverty, indebtedness, production failure and more indebtedness (Clough, *et al.*, 2002).

Another study captures shrimp farming in Bentre province of Vietnam, which appears there as a large business, benefitting all of the people of that area either directly or indirectly. Attracted by the lucrative return, large corporations and rich land owners invest in operation and development of shrimp farming from outside of the local community. As a result major portion of the gain is shared by the outsiders and small is left for the local community with related negative spill over effects. If this process leads to the concentration of land into the hand of few outsiders, social conflict and disorder might very likely to happen (Khang, 2008).

Structural shift of employment due to shrimp farming creates job opportunities for women in the processing plants, but not many women are taking this opportunity. As rice cultivation reduces workload of the women, the structural change leaves many of the women underemployed (Thong *et al.*, 2010).

Rapidly growing demand for shrimp farming motivates 71.3 percent of people to expand their farm. In many cases, this expansion takes place through illegal appropriation of the common places by the rich farmers. This type of encroachment deprives the local poor from their basic rights and limits their livelihood opportunities that they enjoyed earlier (Khang, 2008). Increasing land value sometimes provokes farmers to sell their land to rich outsider farmers, leaving the poor poorer and speeding up the process of land concentration at the expense of short term income gain for the poor. Shrimp production in Vietnam also has negative impacts on agriculture due to increased salinity in the soil, create threat to rice production. Sometimes conflict arises from this issue due to discharge of salinity into the irrigation canals or competition over water for irrigation and shrimp production (Khang, 2008). Fluctuation of farm gate price, changes in demand for Vietnamese shrimp in the major importing country like USA and emergence of large competitors such as Thailand and

China are the potential threats that might come up as a trade shock at any time. White leg shrimp which is gaining popularity in USA and other international market is banned to culture in the Mekong Delta. Therefore, reduction of demand for black tiger shrimp coupled with the banning of culture of white leg shrimp put a strain on the livelihood of shrimp dependent people in Mekong Delta. No evidence on the effect of this trade shock has been captured under the study by Khang (2008).

### **Case for India**

Very positive economic change as captured by the study of Chopra *et al.*, (2010) is not without cost for India. Although shrimp farmers in Minakhan and Canning experienced higher per capita income than the agriculturalists, security of income of the shrimp farmers reduced than the later group due to frequency of lost of harvests. Shrimp farmers have relatively more propensity to be conflicting to each other over land rights issue than the agriculturist due to somewhat lower level of social cohesion. This tendency is higher among the farmers fully dependent on shrimp farming for their income. *Panchayat* play a major role ranging from allocation of land to local farmers to the sale of the product (Chopra *et al.*, 2010). But they are often biased to local political elites and their relatives in allocating government assistances and subsidies, which intensify the deprivation of the poor farmers from their rights. Mixed income households face lower level of conflict and being able to increase income security through diversification although they have lower level of income than those who are entirely dependent on shrimp farming (Chopra *et al.*, 2010).

In Gosaba, prawn-seed collectors experienced higher and secured income than fishermen, but suffer from chronic health problems and involved with conflicts over the price of their catch. They are bonded to *aratdar* (middleman) to sell their catch as they are the only source of credit for them (Chopra *et al.*, 2010).

In West Bengal, women experienced wage gain and higher labour standard than before due to shift of local plants to export processing firms into the city, but at the social cost. They are forced to migrate temporarily to the city to do the work for eight months in a year leaving their family. It has a serious implication on their children and family as most of them are married and in the age group of 15-45 (Saha and Pal, 2008).

### **Case for Bangladesh**

In Bangladesh, commercial shrimp culture has been dominated by urban based outsiders due to its profit potentials, although their presence has been declining over time. These very powerful outsiders have political backup and they are indifferent to local and environmental problems. Their presence creates conflict between local and outsider shrimp producers, between local self employed and outsiders and between local and outsider labourers. This conflict has an implication in terms of increasing land value, which benefits local land owners. Other implication is that due to their urban origin, economic strength and linkage with administration, the outsiders seem to dominate the local power structure by replacing the local elites. Sometimes the presence and dominance of outsiders create a tension over use of land and payment of rent for using the land (Alauddin and Hamid, 1999).

Another study by Khatun (2004) captured that unplanned and uncontrolled expansion of shrimp sector constraint livelihood opportunities for the rural poor in terms of job loosing and restricts their access to common property resources due to conversion of rice land into shrimp pond. This process intensifies the gap between rich and the poor. Widespread poverty force the children to participate in labour market mainly as fry catchers, which make them undernourished, unruly and rowdy. Women working in shrimp farms, depots and processing plants face sexual harassment by employers and also by their men co-workers. In addition to this, banning of import and frequent natural disasters put a strain in different manner on different kind of stakeholders. In July 1997, the European Union (EU) imposed a ban on imports of shrimp products from Bangladesh into the EU on the ground that exports of this commodity did not meet the stringent provision of EU's Hazard Analysis Critical Control Point (HACCP) regulations. It is evident by the study of Khatun (2004) that the farmers and the processing workers were the worst sufferers of this trade shock. Decline in international prices reduced the farm gate prices for the farmers, which lowered down their profit margin and in extreme cases they were deprived of actual price of their product. This situation put them into the risk of being defaulter. As a defaulter they could not manage the loan again from the financial institutions. Thus many of the small farmers became bankrupt. In addition to this, many workers in shrimp processing factories lost their jobs due to closure of the factories, which were unable to comply with HACCP measures. Before banning, women used to employ in the processing depots situated in the village nearby. But after banning, those rural shrimp depots were shifted to urban factories. As a result, women workers had obliged to migrate temporarily from their rural habitat to urban working place. This new trend of women migration changed the intra household relationship by the following way:

- i. Interruptions of family life: Women sacrificed their family life, leaving their husband, children and other dependent members.
- ii. Change in the household economy: Besides working in shrimp processing depots, they used to rear cattle, poultry and home plantations as a source of extra earnings. Under the new setting, they had to give up this sort of extra earnings opportunity.
- iii. Increased living expenses: Women faced increased living expenses in terms of maintaining an extra family of them in the city and also for extra travel expenses.

## **Discussion**

Empirical evidence shows that impact of shrimp trade liberalization passes through the channels of wages, employment and income distribution at the household level both in positive and negative ways. It increases household's vulnerability through replacement of subsistence farming by commercial aquaculture and reduced cash income. Increasing income gap between the rich and the poor reduces the ability of the poor to fight against different types of risk and consumption volatility. Nevertheless, from the broader economic perspective, shrimp cultivation is revolutionary for these developing countries in terms of foreign exchange earnings. It is also important in terms of creating service oriented jobs as well as agro based industrialization as backward and forward linkage activities. A closer look at the household level provides evidence of creating gainful employment opportunities

especially for women, which otherwise they would have not. Women in India's shrimp processing factories are now gaining more wages than before due to change in trade event, provides an optimistic example. Participation of children in the labour market also has a positive implication for the extreme poor, although it is not expected. But negative impact is captured in Vietnam in terms of creating male unemployment due to less demand for labour in the aquaculture sector than previously needed in agriculture. Similar outcome might be apprehended in case of Bangladesh and India too, although no evidence is declared under the studies considered here. Evidence of wage discrimination between men and women has also found in case of Bangladesh.

Again the studies of the three countries explain some comparable end results that can be explained to assess the vulnerabilities of trade liberalization from social dimension. For all the three countries, it is evident that large land owners who come from outside of the local area, rural elites and other privileged groups having greater access to financial, economic and natural resources and have a head start to enjoying the benefits from the shrimp trade expansion. The assessed vulnerability of trade liberalization from social perspective is as follows:

- i. Increasing income gap between the poor and non poor as well as between the shrimp and non-shrimp farmers;
- ii. Trade shock in terms of import ban and decreased demand in international market put a strain on livelihood of small farmers in Vietnam and Bangladesh and on women workers in India and Bangladesh;
- iii. Shrimp production is supposed to liable for surplus labour in Vietnam;
- iiii. Concentration of land ownership towards local elites;
- v. Increasing land value appears an immediate lucrative opportunity to income gain for Bangladesh and Vietnam, India study provide no evidence in this case;
- vi. Bangladesh and India have been experiencing a feminization of labour market at the farthest end of the shrimp value chain with presence of child labour in Bangladesh. Little evidence is shown in Vietnam study in this case;
- vii. Women's participation in the labour market has a profound impact on family well-being in Bangladesh and India;
- viii. Limiting access to common property resources and dominance of outsiders is evident in Bangladesh and Vietnam;
- ix. Increasing health problems among the fry collectors in India and depot and processing plant workers in Bangladesh is evident;
- x. For all of the cases, shrimp farming creates social tensions among different actors.

On the basis of the empirical evidence discussed above and the comparable elements derived from the discussion, it can be said that shrimp farming restricts people's access to important assets in different ways, which are discussed in Table 02.

Table 02: Impact on households' vulnerability status (social dimension)

<i>Indicators</i>	<i>Household characteristics</i>	<i>Impact on Households' vulnerability status</i>
Change in land use pattern (illegal encroachment and commercial use)	Landless and land poor households	<b>Restricts access to natural assets</b> by ending up the regime of common property resources, reduces the means of traditional livelihood opportunities (Khatun, 2004; Khang, 2008); for example: fishing from public water bodies, grazing of livestock in the fallow land etc.
Production failure	Small farmers	Selling of land at high price or borrowing money in addition to existing loan to recover production loss decreases future ability to fight against shock and volatility (Clough, et al., 2002; Khang, 2008); <b>limiting capacity to acquire physical assets</b>
Conflict over property rights issue	Shrimp farmers, shrimp labours, local elites, powerful outsiders	Profound impact on <b>social capital</b> ; dominance of powerful and rich outsiders creates a sense of distrust and skepticism among the local communities and pose a threat to local power structure, frequent conflict between the local community and outsiders reduces social cohesion (Alauddin and Hamid, 1999; Khang, 2008; Chopra et al. 2010).
Nature of work and type of workers	Women, children	Replacement of homestead function of women by outward orientated activities in the shrimp sector endanger the household reproductive responsibilities earlier performed by women; participation of children in the labour market is a significant <b>barrier to human capital formation</b> for the respective household in the future; increased suffering from health related problems both for women and children limits household's scope to switch to more profitable activities (Khatun, 2004; Saha and Pal, 2008); all these have a <b>negative impact on human capital formation of the households</b>
Local power structure	Small farmers	Rich land owners are favored by local power structure, which deprives small farmers from their fair share, reduces their means to survive (Alauddin and Hamid, 1999; Chopra et al., 2010)

<i>Indicators</i>	<i>Household characteristics</i>	<i>Impact on Households' vulnerability status</i>
Trade liberalization shock (import ban, decrease in demand)	Small farmers, shrimp processing workers (men and women)	Reduction of farm gate prices, job losses increase <b>economic vulnerability</b> of the actors; women workers' migration have a strain on child care responsibility, distortion in family life, homestead economy and living expenses (Khatun, 2004; Khang, 2008; Saha and Pal, 2008); engenders <b>social and economic vulnerability</b>
Intra household dynamics	Men and Women	Increased income opportunity for women have a <b>positive implication in households vulnerability status</b> if not accompanied with job losses of the men counterpart; migration of the women worker have a negative impact on allocation of time within the household (Khatun, 2004; Saha and Pal, 2008), that <b>might increase vulnerability profile</b>

Table 02 shows that the landless/land poor households, small farmers as well as women and children are the groups whose access to different types of assets have been affected disproportionately by opening up trade in the shrimp sector of respective countries. Illegal encroachment and commercial use of land changes the land use pattern of these countries, which restricts the poor peoples' access to natural assets. Before shrimp cultivation, people enjoyed access to a kind of common property resources (fallow/marshy land/open water bodies) which provided them a source of livelihood. Commercial expansion of shrimp cultivation reduces the means of traditional livelihood opportunities based on those common property resources (Khatun, 2004; Khang, 2008).

In case of production failure, small farmers sometimes confronted with the problem of forced selling of their land at higher prices. In other cases, they take a new loan in addition to existing loan, which puts themselves into a strain of vicious cycle of loan and thus limiting their capacity to acquire further/new physical assets (Clough, *et al.*, 2002; Khang, 2008).

Frequent conflict over land/water use among shrimp farmers, shrimp labours, local elites and political outsiders pose a threat to existing social capital portfolio. Nature of work by the women in shrimp farms and processing plants alter allocation of time of women within the households. In many cases, this situation exerts a negative impact on human capital formation of the households. Although increased income opportunity of women have a positive implication on households' income (Alauddin and Hamid, 1999; Khatun, 2004; Saha and Pal, 2008; Khang, 2008; Chopra, 2010).

Any type of trade liberalization shock, for example, import ban, decrease in demand reduce farm gate price and create job losses. This situation generates economic vulnerability of small farmers and processing plant workers (Khatun, 2004; Saha and Pal, 2008; Khang, 2008).

Therefore, it is empirically evidenced that poor, small farmers and workers in the shrimp sector have been experiencing gradual deterioration of their access to important assets necessary for fighting against shocks and vulnerabilities. Hence, it can be said that introduction of shrimp farming in the respective areas of three different countries affect the determinants of poverty, which can be explained for defining the extent of vulnerability for the households. Country specific evidences that the study capture from the available literatures have been summarized in Table 03.

Table 03: Summary of the findings

<i>Comparable Elements</i>	<i>Vietnam</i>	<i>India</i>	<i>Bangladesh</i>
Employment and wages	Less employment opportunity than rice ----- ----- -----	Expansion of aquaculture at the reduction of agricultural land  Not discussed  New opportunity for women Presence of child labor Wage discrimination between male and female; shrimp and non-shrimp sector	Less employment opportunity for male
Income distribution	Distribution of income is skewed to the rich within the shrimp sector; Shrimp farmers are benefitted more than non-shrimp farmers		
Labor market	Feminization of jobs only at the processing plants	-----	
Labor market	Creating surplus labor (both male and female)	-----	Creating surplus labor (mainly male)
Access to natural resources	Replacement of common property resources by privatization and commercial use reduces the livelihood opportunities for the poor		
Degree of social cohesion	Conflict over land rights issue, dominance of outsiders reduces social cohesion; posing a threat to local power structure		
Human capital formation	Existence of child labor obstruct the process of human capital formation; health related problems of women workers creates a pressure to existing stock of human capital		
Property rights issue	Conflict over property rights on land, use of water; concentration of land into the hands of dominant outsiders		
Liberalization shock	Vulnerable farmers due to fluctuation in farm gate price	-----	Vulnerable farmers due to fluctuation in farm gate price
Intra household dynamics	No impact	Migration of women changes the allocation of time, income and resources within the household	

Country specific impacts in terms of different comparable elements have been discussed in Table 03. In terms of employment and wages, the countries under discussion have been benefitted in different ways. Shrimp sector has been expanded at the reduction of agricultural land for all of the three countries. But it generates more employment opportunity for females than their male counterparts although in discriminatory wages in case of Bangladesh. All of the countries face skewed distribution of income towards rich shrimp farmers. Labour market structure has been changed, which is characterized by feminization of jobs and creation of surplus labour. Commercial expansion of shrimp sector has squeezed the traditional livelihood opportunities for the poor and decreases the degree of social cohesion. Again, the process of human capital formation has been disrupted due to participation of women in the shrimp sector, although women are benefitted by increased income and employment opportunities.

### **Conclusion**

This study tries to show the impact of trade liberalization at household level. Considering shrimp sector of Bangladesh, Vietnam and India as the cases, this study finds that income gain of different actors of shrimp value chain is accompanied by increasing income inequality of the respective countries. Wage discrimination within and between shrimp sector is also apparent there. It generates more employment opportunities at the local economy, but at the cost of reduced agricultural production. The poor and small farmers are falling into the risk of reducing their means to maintain livelihood through reduced access to common property resources and reduction of on farm job opportunities. Shrimp farming increases the risk of breaking down traditional power structure in the local area.

Analysing the impact of trade liberalization at the household level, the study reaches to the conclusion that trade liberalization in the shrimp sector restricts households' access to natural and physical assets, reduces the level of social capital, and places a barrier to human capital formation. These assets might have implications to determining the level of poverty and assessing the status of vulnerability of the households.

It is evidenced from the analysis that poor, women and children are economically vulnerable groups affected by the trade event, for example, import ban and decrease in demand. Small scale shrimp farmers are also in a volatile position because of having less opportunity to spread the risk to the immediate next group. Hence, the position of the actors of the value chain and nature of the workers of the chain should be analysed profoundly in order to capture the impacts of trade liberalization on household's capacity to fight against vulnerability. Future research initiative should be undertaken within this context, especially in case of Bangladesh. Notwithstanding the fact, findings of this study would be helpful in case of providing a comparable base line, which may be an important insight to the policy makers for assessing the impact of trade liberalization of shrimp sector of the respective countries at the household level.

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