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## Industrialization, economic and employment structure changes in Vietnam during economic transition

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#### **Abstract**

This paper presents the effects of industrialization on economic and employment structure during the economic transition in Vietnam. Although Vietnam has made a significant progress in changing economic structure in which the share of agricultural contribution in GDP has dramatically decreased over the last two decades, the employment structure changed slowly. Consequently, majority of labour force is still in the agricultural sector. The economic reform has failed to shift redundant workers away from agricultural sector since most of the country's investment has been allocated to capital-intensive industries. Therefore, policy adjustments are needed to absorb more redundant workers from agricultural sector and improve living standards for rural households.

JEL classification: P00, P36, O11, O14

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### 1. Introduction

Impacts of industrialization on rural workers have been well established. Marx described the tragedy of the English farmers who were driven into cul-de-sac in the 15<sup>th</sup> century when their cultivated land was dispossessed for establishing sheep farming and building factories for the woolen textile industry (Marx, 1988). The story "Man-eating sheep" by Sir Thomas More in his Utopia described enormous amounts of farmland being converted to sheep pasture in England (cited in Voigtländer & Voth, 2010; Waddell, 2008). England began its industrialization by extending industries, and rural redundant workers served as a cheap input for capitalism production at that time. During the capital accumulation stage, more and more capital had been accumulated by entrepreneurs. This process resulted in the decreasing demand for labour since the large-scaled mechanical industries replaced unskilled workers, thus the number of rural unemployed workers increased. The high unemployment rate, in turn, led to lowering wages; workers became either employed with "dead-end" salary or unemployed, and they eventually became impoverished (Marx, 1988).

Lewis (1954) proposed a dual economic model that consists of traditional and modern sectors, and showed that the persisistent capital accumulation in the modern sector (industry) would gradually absorb redundant workers from the traditional (agricultural) sector. Unlike Marx who had a pessimistic outlook that the capital accumulation resulted in rural unemployment, Lewis states that the capital accumulation and production expansion in the industrial sector would create more job opportunities for rural redundant workers. He proposed that the industrialization brought about plenty of non-farm employment opportunities with higher incomes compared to that in the agricultural sector. The redundant workers in the agricultural sector, therefore, would be completely absorbed by the industrial sector during the industrialization.

Harris and Todaro (1970) develope a model called "expected income and rural-urban migration" to explain the rural-urban movement of redundant workers. They claim that the drive of rural-urban migrants is a dispensable economic law to all economies during the industrialization and urbanization process, especially economies which are in their early stage of development. Contrary to Lewis (1954), these scholars believe that unemployment rates in the urban areas are relatively high in developing countries during their early industrialization stage. Consequently, the rural-urban migrants find it hard to have jobs in urban areas, so the migrants should consider job opportunities and the expected incomes earned if they want to migrate. The migrants would compare the expected wage rate of working in the urban areas with the average wage rate they would earn if they remain and work in the rural areas. Harris and Todaro, therefore, believe that

non-argricultural employment opportunities should be created by sufficient financing to develope labour-intensive industries other than capital-intensive ones.

Movement of workers between economic sectors will eventually change employment structure. Soubbotian (2004) indicates that the industrialization first causes the changes in economic structures, that is, changes in the GDP contributions by three economic sectors (agriculture, industry and services). The changes in contributions by these sectors would then lead to the labour shift from agriculture to industry and service sectors. Consequently, the structure of employment will change, and by the end of post-industrialization stage, the industrial and service sector will become dominant in GDP and absorb most labour force of the economy.

Austin and Sugihara (2010) review the industrialization process in many countries. They realize that a pattern of labour-intensive industrialization took place in many countries in the early stage of industrialization. However, in the next stage of industrialization, labour quality need to be improved to meet requirements of the development of modern technological industries. This stage experienced a higher capital-labour ratio, and then greater capital-output ratio. Such an industrialization pattern was observed in many successfully industrialized economies in Asia such as Japan, South Korea and Taiwan. These countries have become leading exporting countries and have resoundingly succeeded in changing their economic and employment structure. The success has been also observed in other ASEAN countries since the 1960s.

However, evidence from many African countries indicates that over the last few decades, urbanization and the industrial sector growth have failed to effectively absorb rural redundant workers (Bryceson, 1996). The increasing population density in rural areas has led to a rapid shrink of farmland size per household and severe challenges on rural livelihoods in the countries. Other evidence from many developing countries shows that during the industrialization, many countries failed to create sufficient employment and improve income distribution because the majority of capital resources were allocated to large-scaled capital-intensive industries and luxurious recreation facilities, such as golf courts, resorts and hotels in developing countries (Gillis, Perkins, Roemer, & Snodgrass, 1992). This implies that a country needs to aim its strategy of development to labour-intensive industries to create adequate employment opportunities for its rural workers in the early stage of industrialization.

Vietnam has experienced more than two decades of economic reform and industrialization, and had great changes in economic structure. To see how the industrialization affects economic and employment structure changes, this paper examines the effects of the industrialization on economic and employment structure during the economic transition. This paper is organized as follows. The next section is a description of the industrialization, and economic and employment

structure changes in Vietnam during the reform. In section 3, we discuss possible reasons for the slow employment structure change in Vietnam. Adverse effects of industrialization on rural workers are presented in section 4. The final section presents concluding remarks.

### 2. Economic and employment structure changes in Vietnam during the economic reform

Since the introduction of economic reform in 1986, Vietnam has achieved great progresses in economic growth and poverty alleviation. Apart from that, industrialization has profoundly changed Vietnamese economic structure over the past two decades (see Figure 1). The share of the agricultural sector contribution in GDP has sharply declined from approximately 32% in 1990 to 17% by 2009. The share of the service sector remained almost unchanged at about 42%, while the share of the industrial sector sharply rose, from around 25% to about 42%.

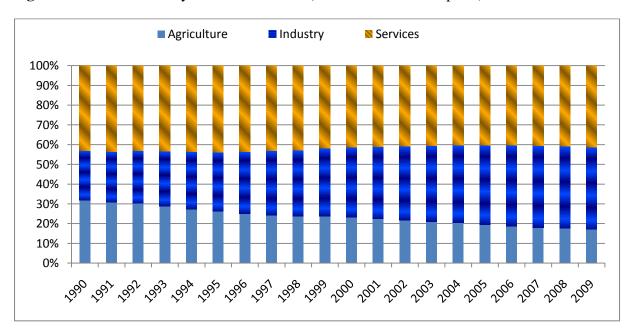


Figure 1: Share of GDP by sector 1990-2009 (at the 1994 constant price)

Sources: http://www.gso.gov.vn/default\_en.aspx?tabid=468&idmid=3&ItemID=9909

However, the employment contribution of the agricultural sector in the total employment was still very high (54%), and severely disproportionate to its contribution in GDP (17%) in 2009 (Figure 2) (GSO, 2010). This indicates that the changes in the agricultural employment structure have been much slow in comparison to the changes in the economic structure over the last two decades.

On the other hand, the service sector has significantly contributed to employment growth during the reform. The share of employment in the service sector in Vietnam was only about 16% in 1990, but almost doubled, approximately 26% by 2009. The share of the industrial sector moderately increased, from around 11% to about 20% (Figure 2). In the period 1990-2000, almost

all of newly-created jobs were from the service sector, accounting for nearly three fourths of the total newly-created jobs (Jenkins, 2004).

Agriculture Industry Services

100%
90%
80%
70%
60%
50%
40%
20%
10%
0%

Agriculture Industry Services

Figure 2: Share of employment by sector 1990-2009

Sources: Data for 1991-2001 are from Huong, Tuan and Minh (2003, p. 22); data for for 2009 are from GSO (2010), and data for other years are from

http://www.gso.gov.vn/default\_en.aspx?tabid=467&idmid=3&ItemID=9874

**Table 1:** Annual employment growth rate by sector (percent)

	1 /			<u> </u>	/		
Sector	1987-1989	1990	1991-2000	2001	2002-2009	1987-2009	1990-2009
Agriculture	1.51	2.78	1.55	-5.58	0.04	0.76	0.65
Industry	2.03	-18.09	3.01	22.19	7.74	4.44	4.80
Services	3.47	15.47	4.53	19.21	4.78	5.59	5.91
Economy	1.84	1.63	2.24	2.66	2.52	2.28	2.34

Source: Authors' calculation based on data from GSO and MOLISA, and http://www.gso.gov.vn/default\_en.aspx?tabid=467&idmid=3&ItemID=9875

During the period 1990-2009, data on employment growth by sector from over the last two decades show that overall employment growth rate on average maintained at around 2.34% of which the rate is 4.8% per year for the industrial sector and 5.9% for the service sector (Table 1). In comparison with the agricultural employment growth rate, industrial employment growth is much higher, but still lower than that of the service sector.

There are two abnormal periods worthnoting during the last two decades. Between 1990 and 1991, the employment growth of the industrial sector dropped sharply due to the SOE restructure that made a loss of 800,000 jobs, equivalent to one third of the labour force in the SOE enterprises (Klump, 2007). In contrast, employment growth of the service sector soared during the same period. The second abnormal period is from 2000 to 2002 during which employment of the industrial and service sectors suddenly rose by about 20% by each sector in year 2001 due to the

introduction of the first Enterprise Law in late 1999. The number of enterprises, especially non-state owned enterprises, remarkably increased from 36,529 in 2000 to 57,545 enterprises in 2002, an increase of 58%,<sup>2</sup> and thanks to this law, about one million jobs generated were attributed to the introduction of the law (UNDP, 2003). Overall, the increase in employment of service sector has been always high resulting from the massive growth of private sector in the last two decades, especially employment growth of informal economic sector (Dung et al., 2004; Jenkins, 2004).

**Table 2:** Employment elasticity by sectors, 1986-2008

Sector	1986-1991	1992-1997	1998-2001	2002-2008*
Agriculture sector	0.533	0.394	-0.177	-0.041
Industry	-0.59	0.229	0.944	0.426
Services sector	0.820	0.500	1.910	0.294
Overall	0.369	0.260	0.366	0.128

Source: Huong, Tuan and Minh (2003) and \* is the authors' calculation from the data of GSO<sup>3</sup>

The employment elasticity helps to well explain the disparity in paces of employment structure changes. It indicates that how many percents of employment increased resulting from one percent of economic growth in the corresponding sector. Table 2 compares employment elasticity across sectors over recent two decades. The employment elasticity of the agricultural sector sharply declined between 1986 and 2001, while that of the industrial and services sectors significantly increased. In the following period, the employment elasticity dramatically decreased in both industrial and services sectors which caused a substantial decline in the general employment elasticity of the economy. The employment elasticity by period and by sector accords with employment growth in Table 1.

**Table 3:** Employment elasticity in manufacturing sector in some selected South East Asian countries

Country/	Vietnam	Philippines	Indonesia	Malaysia	China	East Asia
region						( excl China)
Period	1990-2001	1992-1997	1981-1992	1981-1992	1980-	1980s
					1985	
Elasticity	0.371	0.63	0.93	0.40	0.47	0.59

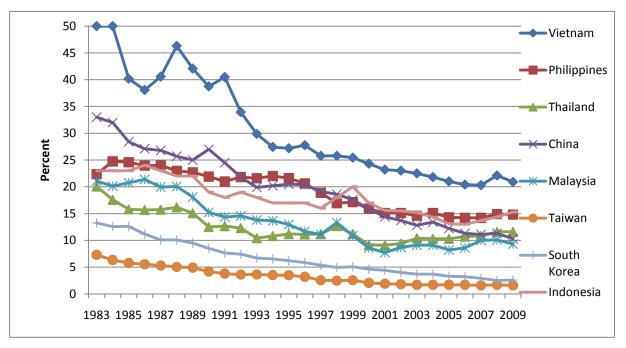
Source: Data on countries from SAARC(2005), data on East Asia fom Islam (2004)

However, Table 3 reveals that the employment elasticity in Vietnam's manufacturing sector was significant lower than that of East Asia and some comparable ASEAN countries such as the Philippines in the 1990s, Indonesia in the 1980s and Malaysia in 1980s, and China. This means that the growth of the manufacturing sector in Vietnam did not impact the employment growth as strongly as in the neighboring countries.

<sup>2</sup> http://www.gso.gov.vn/default\_en.aspx?tabid=479&idmid=4&itemID=8722

<sup>&</sup>lt;sup>3</sup>The calculation is based on econometric methods using the same log-log equation as of Huong, Tuan and Minh (2003)

**Figure 3:** GDP contribution by agricultural sector (1983-2009) of Vietnam and some neighboring countries



Sources: Key Indicators of Developing Asian and Pacific countries (various years), available at <a href="http://www.adb.org/Documents/Books/Key\_Indicators/2010/default.asp">http://www.adb.org/Documents/Books/Key\_Indicators/2010/default.asp</a>, and <a href="http://www.adb.org/Documents/Books/Key\_Indicators/2000/default.asp">http://www.adb.org/Documents/Books/Key\_Indicators/2000/default.asp</a>; p=statpub

In addition, comparing the Vietnam economic structure to that of these countries, we see that the shifting of Vietnam's employment structures is more severely disproportionate. The contribution of the agricultural sector to Vietnam GDP dropped more quickly than that of other countries in East Asia during the period 1983-2008 (Figure 3). In 1983, the agricultural sector contributed 50% of Vietnam GDP, but the contribution reduced to 17% by 2009 (ADB, 2007; GSO, 2008). However, the employment in agriculture has remained high at about 70% during the period 1981-1999 (Figure 4). During the same period, the employment in agriculture of Thailand dropped dramatically from 70% to 44%, China from 70% to 50%, Malaysia from 35% to 20% and the Philippines from 50% to 40%. Although from 2000 to 2009 the agricultural employment share in Vietnam began to considerably decline to 54% by 2009 (GSO, 2010), it remains high compared to that of the neighboring countries, and disproportionate to agricultural contribution in GDP. It implies that the industrialization has not effectively absorbed redundant workers in agricultural sector over the last two decades.

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<sup>&</sup>lt;sup>4</sup> Data for 2009 are from <a href="http://www.gso.gov.vn/default-en.aspx?tabid=468&idmid=3&ItemID=9909">http://www.gso.gov.vn/default-en.aspx?tabid=468&idmid=3&ItemID=9909</a>

No vietnam

Philippines

Thailand

China

Malaysia

To Malaysia

 South Korea

Figure 4: Employment share by agricultural sector (1983-2009) of Vietnam and some East Asia countries

Sources: Key Indicators of Developing Asian and Pacific countries (various years), available at <a href="http://www.adb.org/Documents/Books/Key\_Indicators/2010/default.asp">http://www.adb.org/Documents/Books/Key\_Indicators/2010/default.asp</a>, and <a href="http://www.adb.org/Documents/Books/Key\_Indicators/2000/default.asp">http://www.adb.org/Documents/Books/Key\_Indicators/2000/default.asp</a>?p=statpub

#### 3. Possible reasons for slowly decrease change in employment structure in Vietnam

The roles of State Owned Enterprises (SOEs)

Over the past twenty years, the industrial sector has always grown at a high growth rate, about 13% to 14% per year in the period 1992-1997, while the agricultural sector has slowly grown at about 4% to 5% per year. From 1998 to 2006, the industrial sector growth slowed down but still maintained at higher rate, about 10%, than other sectors. The agricultural sector has always had lower growth rate, about 4% per annum (Minh Duc, 2008). Consequently, the industrial sector has always been considered an economic growth engine for Vietnam economy during the economic transition. Nevertheless, the industrial sector has a low capacity of labour absorption because most industrial SOEs, which are the key players in Vietnam industrial sector, are capital-intensive firms (Belser, 2000; Jenkins, 2004, 2006; Klump, 2007; Ronnås, 1992). The contribution of the industrial sector to GDP increased from 25% in 1990 to 42% in 2009, while its proportion in the total employment rose slowly, from about 11% in 1990 to 20% in 2009 (Figure 2).

The employment elasticity of different types of enterprises in Vietnam is shown in Table 4. In the period 2000-2008 the employment elasticity of the state sector was very low, only 0.12%, that is, employment in this sector increased by 0.12% when their GDP increased by 1%. This indicates that the capacity of job generation of SOEs is very marginal. In contrast, private

<sup>&</sup>lt;sup>5</sup> http://www.gso.gov.vn/default\_en.aspx?tabid=468&idmid=3&ItemID=9909

enterprises (excluding household enterprises) and FDI enterprises have played important roles in generating employment for workers since they have higher employment elasticity than the SOEs do. However, the employment generation capacity of these private and FDI enterprises has substantially decreased over time.

**Table 4:** Employment elasticity of growth by types of enterprises

			<del>, , , ,</del>						
Enterprise Types	2001	2002	2003	2004	2005	2006	2007	2008	2001-2008*
Private enterprises <sup>6</sup>	0.34	0.36	0.46	0.11	-0.11	-0.17	0.01	0.09	0.15
Non-state enterprises (NEs)	2.06	2.19	1.97	1.68	1.45	0.88	1.06	n/a	1.52
FDI Enterprises	1.55	2.80	1.54	1.03	0.80	0.76	0.71	0.21	0.98
SOEs	0.34	0.36	0.46	0.11	-0.11	-0.17	0.07	0.09	0.12
Total	0.28	0.21	0.19	0.15	0.13	0.12	0.11	0.056	0.15

Notes: Annual employment elasticities are calculated as dividing yearly employment growth by yearly GDP growth; n/a is unavailable data; \* calculated using the log-log equations of employment and GDP

The contribution in GDP by SOEs has increased, but its employment share in total employment has remained the same at around 11% during the last two decades. Consequently, employment elasticity in this sector substantially declined. This implies that the labour productivity of this sector should have increased. But SOEs performed poorly relative to other enterprises during the period 2000-2007 (Table 5). The ICOR of SOEs is always considerably higher than other enterprises. The SOEs or the state economic sector were least efficient (FETP, 2008; Kawabata, 2001; Viet, 2008, 2009), although plenty of favourable conditions or policies such as easy accessing to bank loans, priviliges in highly profitable industries, and protection by the government have been given to SOEs (Lestrange & Richet, 1998; FETP, 2008, McMillan & Woodruff, 2002; Leung, 2010; Riedel & Comer, 1997). For example, SOEs accounted for 80% of commercial bank loans and 70% of foreign borrowing. SOEs' debt has reached USD 28 billion, equivalent to 40% of 2007 Vietnam GDP (FETP, 2008, p. 11). Moreover, the SOEs' share of industrial production has reduced by half between 1995 and 2008 due to the SOE reform (equitization, privatization and closures), but their investment accounted for more than 50% of Vietnam investment (Leung, 2010).

**Table 5:** Incremental capital-output ratio (ICOR) by types of enterprises for 2000-2007

ICOR by economic sectors	2000-2007*	2000-2007**
Whole economy	5.2	3.5
SOEs	7.8	4.9
FDI enterprises	5.2	2.2
Non-state enterprises	3.2	4.3

Source: Trinh and Hung (2009)

Note: \* for implemented investment capital, and \*\* for capital formation

<sup>6</sup> Including private household enterprises and non-state enterprises

http://www.gso.gov.vn/default\_en.aspx?tabid=467&idmid=3&ItemID=9874

#### The roles of Foreign Direct Investment (FDI)

During the 1990s, Vietnam's large-scaled industries received big investments under the joint-venture projects between SOEs and foreign owned enterprises. More than 90% of foreign investment projects have been under joint ventures with SOEs by the year 2001 (Tho, 2001). From the introduction of FDI law in 1987 until 2001, 65% of FDI came to protected industries, which were capital-intensive projects (Tho, 2001; Trung, 2002). As a result, little employment was created by these industries. Job generation capacity of these projects was quite modest (Jenkins, 2006).

By the end of 2009, the total accumulated amount of FDI in the industrial sector had reached about USD 110 billion (57%), and that of the service and agriculture sectors is USD 80.3 billion (41%) and USD 4.4 billion (2%), respectively. FDI projects usually leaned to capital-intensive industries, and FDI usually flowed to provinces and cities called the key economic zones that have favourable conditions for economic development in the Southern and Northern economic regions of Vietnam. These economic zones accounted for two thirds of total accumulated FDI from the introduction of FDI law in 1988 to 2009. Consequently, little employment has been generated by the FDI enterprises for the rural workers. By 2009, FDI enterprises had accounted for 25.5% of the total investment capital in Vietnam, but they had only contributed 3.5% of the total employment, so the employment generation of the FDI enterprises was very low.

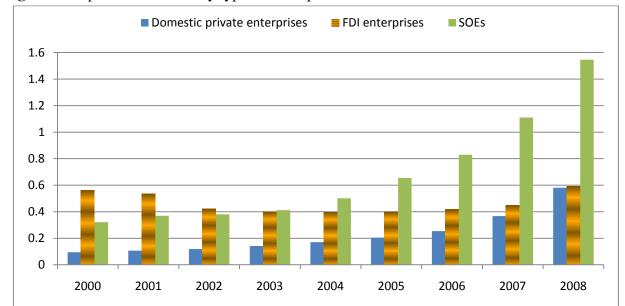
### The roles of the private economic sector

The domestic private enterprises have a great ability of employment generation (Heberer, Kohl, Lai, & Vinh, 1999; Ronnås, 1992). However, distorted industrialization strategy in Vietnam, which ignored domestic private enterprises, has failed to generate jobs. The capital-labour ratio can be used to measure an enterprise's ability of job generation, which can be calculated by dividing its total amount of capital by its total number of workers. Figure 5 indicates that domestic private enterprises always had the lowest capital-labor ratio, thus they offered a great possibility of job generation, while that was not the case of the SOEs and FDI enterprises. The private economic sector (including domestic private enterprises, household enterprises and co-operatives) created the majority of jobs, accounting for 89.4% of the total number of jobs, while 9% and 1.6% of the jobs were generated by SOEs and foreign sector (Ngoc Dao, 2008, p. 22).

<sup>8</sup> http://www.gso.gov.vn/default\_en.aspx?tabid=471&idmid=3&ItemID=9939

<sup>9</sup> http://www.gso.gov.vn/default\_en.aspx?tabid=471&idmid=3&ItemID=9937

10 http://www.gso.gov.vn/default\_en.aspx?tabid=467&idmid=3&ItemID=9874 and http://www.gso.gov.vn/default\_en.aspx?tabid=471&idmid=3&ItemID=9947



**Figure 5:** Capital-labour ratio by types of enterprises

Source: Authors' calculation based on data from GSO at

http://www.gso.gov.vn/default\_en.aspx?tabid=515&idmid=5&ItemID=9775

#### 4. Adverse effects of industrialization on rural workers

The industrialization in Vietnam not only has failed to generate as many employment opportunities as the in selected East Asian countries, but also has caused a number of adverse effects on rural employment as follows.

First, it caused a loss of traditional livelihoods due to the arable land shrink and lack of non-farm employment opportunities in the rural areas. The industrialization in many countries indicates that industrialization is strongly associated with rapid urbanization and economic growth, and these processes are always coincided with the transfer of farming land to industrial, infrastructure construction and residential uses (Midmore & Jansen, 2003; Ramankutty, Foley, & Olejniczak, 2002). Vietnam has experienced a rapid urbanization where urban population share increased from 19% in 1990 to about 30% in 2009 (GSO, 2010). The fast industrialization has resulted in substantial farmland losses, and about 750,000 arable hectares in 49 provinces and cities have been ceded to 2,900 investment projects from 2004 to 2007 (Phong, 2007). Therefore, massive agrarian revocation has caused an unprecedented transformation of rural household livelihoods in Vietnam. According to Anh (2009), 10 rural workers, on average, will lose their jobs when one hectare of arable land is converted into non-agricultural uses. Consequently, land revocation between 2001 and 2005 affected 2.5 million people including 628,000 households and 950,000 rural workers in Vietnam. Overall, in terms of effects of land revocation, about 53% of landloss households had lower incomes, while only 13% of the households had higher incomes. Another study (ADB, 2007) reports that about 60% of the landloss households received opportunities for non-farm employment, better infrastructure, and large amounts of compensation for their farmland loss. But the revocation caused the interruption of economic activities, decline or loss of income, and tension for the remaining fraction (40%) of the landloss households.

Second, because more than half of Vietnam labour force have still remained in the agricultural sector, and workers have been redundant in rural areas due to the famrland shrink and dense population, agricultural productivity is very low in Vietnam; only 17% of GDP was contributed by more than 50% of the labour force in 2009 (GSO, 2010). More specifically, in the period of 2001-2003, the average agricultural labour productivity of Vietnam was USD290 per person, while that in low-income countries was USD363. The agricultural labour productivity of Vietnam was even lower than a very poor agriculrual country of Bangladesh and much lower than the neighbouring countries such as China, Thailand, the Philippines and Malaysia, and the average level of other low-income countries (WB, 2008).

*Third*, increasing inequality between rural and urban areas has emerged. Low producivity in rural areas means large disparity between rural and urban poverty incidences. In 2008, poverty rates in rural and urban areas are 18.7% and 3.3%, and rural areas contributed 93.4% of the total number of the poor of which about 90% are of the agricultural population (VHLSS, 2008). Moreover, 85% of the richest group (20% quantile) are from urban population, meanwhile a half of the poorest group (20% quantile) are from rural population (VHLSS, 2008).

### 5. Concluding remarks

This paper claims that the industrialization strategy which has led to the rapid economic structure change in Vietnam during the last two decades failed to shift the agricultural labour force to non-agricultural employment. Labour force in agriculture is still very high in comparison to many neighbouring countries which experienced as fast industrialization as Vietnam did. There has been a distortion in the industrial development strategy policies to economic sectors over the last two decades. The encouragement for investments in capital-intensive industries that have a low capacity of labour absorption has been massive in Vietnam's industrialization strategy. On ther other hand, the domestic private enterprise sector which has advantages of job generation has not received sufficient promotions and attention.

The strategy of industrialization in Vietnam has clearly failed to provide sufficient jobs to redundant rural workers. The current economic strategies and policies are strongly inconsistent with the Communist Party's socialization target. To achieve a goal of social stability, reduce poverty and mitigate income inequality, the industrialization strategy must aim to create job

<sup>&</sup>lt;sup>11</sup> See at <a href="http://www.gso.gov.vn/default-en.aspx?tabid=468&idmid=3&ItemID=9909">http://www.gso.gov.vn/default-en.aspx?tabid=468&idmid=3&ItemID=9909</a>

opportunities and improve earnings for the redundant workers and the poor, especially rural workers. It is neccessary to adjust the industrial strategy aiming at generating employment for the rural workers, for example, by promoting labour-intensive industries or developing processing industries in rural areas. Such a strategy will not only generate jobs for redundant rural workers and increase values for agricultural products, but also mitigate the population pressure in urban areas. Furthermore, the landloss households find it hard to participate in newly economic activities (i.e. off-farm economic activities), hence their incomes have considerably declined (Phong, 2007; Son, 2001) because they are unable to meet enterprises's requirements about skills and qualifications. Therefore, occupational training programs are really needed to help them improve their skills and update knowledge in order to meet the requirements of off-farm jobs.

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