DISSERTATION

THREE ESSAYS ON FINANCIAL INTEGRATION AND TRADE LIBERALIZATION

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ABSTRACT

THREE ESSAYS ON FINANCIAL INTEGRATION AND TRADE LIBERALIZATION

This dissertation is composed of three essays which examine the impact of financial integration and trade liberalization. Chapter I investigates the effect of financial openness on labor share of income by using four measures of the labor share of income: one unadjusted and three adjusted measures of income share which account for earnings from the self-employed workers. The author also uses both measures of capital account openness: de jure and de facto indicators. The empirical work is applied for a panel dataset of 30 countries during the period of 1970 – 2013. Despite using different measurement methods of the labor share of income and financial openness, the results from all specifications support the hypothesis that financial integration leads to a decline in the labor share of income for the all countries sample.

Chapter II examines the macro-economic performance of Vietnam through the six phases of Doi Moi reform, and analyzes the impact of external liberalization on economic growth, aggregate demand, employment and income distribution. The decomposition of aggregate demand suggests that private investment was the most important determinant of Vietnamese economic growth during the period of 1994 – 2011, while government expenditure has become more significant since 2005, and the external sector together with government expenditure are the important driving factors of Vietnamese economic growth since 2012. The decomposition of overall labor productivity highlighted the fact that sectoral productivity growth of the service sector plays an important role in the improvement of overall labor productivity in Vietnam.

Chapter III aims to investigate the impacts of external liberalization on Vietnamese economic growth and industrial performance at both regional and provincial levels. To this end, the author

reviews regional and provincial economic and industrial performance in Vietnam during the period of vigorous reforms of the Doi Moi and external liberalization (1995-2015). The paper employs the fixed effect regression to test the relation of economic growth, industrial performance and trade liberalization at both regional and provincial levels. The estimation results suggest that FDI has positive and strongly significant impact on economic growth of five economic regions: The Red River Delta, Northern midlands and mountain areas, North Central area and Central Coastal area, South East and Mekong River Delta. The study suggests that FDI inflows and trade openness play very important role in accelerating economic growth and industrial performance at both the regional and provincial levels in Vietnam. Regions and provinces with better infrastructure seem to get more benefit from FDI and trade openness, which suggests that provincial authorities should invest in building new and more modern infrastructure and also formulating rules and regulations governing FDI inflows.

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CHAPTER I

THE IMPACT OF FINANCIAL INTEGRATION ON THE LABOR SHARE OF INCOME: AN EMPIRICAL EVIDENT FROM A PANEL DATASET

I. Introduction

Financial integration, the phenomenon of rising cross-border financial flows, has been accelerating in the past three decades (Kose et al. 2007). Historically, financial integration activities grew in the late nineteenth century, until the outbreak of World War I. International capital movement had resumed after the World War II and we have seen a huge volume of capital flows between industrial countries and between developed and developing countries since 1960s. The international capital market has been growing rapidly since 1990s and plays a very important role in promoting the world economy (Obstfeld, 1998).

Financial openness has been one of the most enduring concerns of international economists since the studies of Mc Kinnon (1973) and Shaw (1973) on financial repression. Financial openness is seen to increase investment and promote economic growth and thereby reduce poverty level. They argued that developing country's policies of financial repression, that restricted and controlled their financial markets, were the main reasons of the low economic growth rates during the 1950s and 1960s and suggested countries would benefit from adopting more open financial markets' policies. In particular, financial integration or capital account openness and trade liberalization are considered to improve a country's economic situation and increase living-standards. In theory, financial integration improves economic growth, financial development and institutional quality, and also helps reduce income inequality, poverty and unemployment rate. In addition, opening up to international financial markets, improves market efficiency and thereby lead to a better

allocation of investment (Fama, 1970). Financial integration is also supposed to boost the productivity of capital stock by supporting borrowing for entrepreneurs, creating new investment opportunities and promoting growth (Orgiazzi 2007). However, in empirical studies, there has been a long, contentious debate among economists on the real direct and indirect benefits of financial integration (Gourinchas & Jeanne, 2006). Since the 1970s, international economists have been developing theories and studies to measure the degree of financial integration as well as to elaborate the gains and costs of this phenomenon in different regions such as European countries, the United States, Asian countries. For example, Kose et al. (2003; 2007; 2009) provided evidence of a positive relation between financial capital openness and volatility. Recent studies have found evidence that financial liberalization has led to financial crises in emerging countries (Diwan, 1999).

However, we have not seen much literature on financial integration, which considers its impact on distribution, especially on the labor share of income. The conclusions about real impact of financial integration on the share of income going to workers, especially earnings of the self-employed workers, however, remain ambiguous[1]. In addition, studies on the labor share of income mostly focus on the income share of paid employees while ignoring the earnings of the self-employed. Therefore, the linkage of capital account openness and the labor share of income, which does account for the earnings of self-employment is still an open question.

In this essay, I will review the literature on the impact of financial integration, while investigating its effects on labor share of income. The purpose of this essay is, first to survey studies on the impact of financial liberalization and compare the results in terms of variables, methodologies,

[1] The OECD classifies the employment into three categories: paid employment, unpaid employment and self-employment.

data and samples while focusing on the labor share of income. Second, I construct an adjusted labor share of income for earnings from self-employed workers, and elaborate the relationship between the labor share of income and capital account openness by using all four measurements: the unadjusted and three adjusted measures of labor share of income. Different measures yield different trends and results. For completeness, I will also use both measurements of capital account openness: de jure and de facto measures. For de jure method, I employ Kaopen index which was constructed by Chinn and Ito (2007). For outcome-based method, I compute two indices which were constructed by Lane and Milesi-Ferretti (2006). The empirical work is applied for a panel dataset of 30 countries during 1970 – 2013[2], for which data is available.

The theoretical and empirical framework draws on the study of Jayadev (2007) which supports the hypothesis that financial liberalization reduces the labor share of income through the labor bargaining power. However, income from self-employment accounts for a significant share of the income of the working population, in particular for developing countries. To get a better sense of the impact of financial liberalization on the share of income of labor (more broadly defined) would need to include the share of self-employed labor. In this essay, the author computes an adjusted index of the labor share of income (labor share2), which accounts for the income going to the self-employed workers. To test the hypothesis, that financial liberalization has a negative impact on this adjusted labor share, I employ a fixed effect model for all four indices of the labor share of income and both de jure and de facto indicators of capital account openness. The baseline model also controls for other important determinants of labor share of income such as trade openness, technological progress, unemployment rate. Despite using different measurement methods of the labor share of income and financial openness, the results from all specifications support the

[2] There are 15 developing and 15 developed countries in the sample

hypothesis that financial integration leads to a decline in the adjusted labor share of income for the all countries sample. There are also robust, negative and significant correlations between the labor share of income and capital account mobility for OLS estimations models. The positive and strongly significant effect of opening up financial markets on income share of self-employment and its negative effect on unemployment rate are robust to alternative specifications. Financial liberalization has positive impact on the labor share of income going to the self-employed. Despite this, the impact on the adjusted share of labor remains negative. Interestingly, the results still hold in both fixed effect and OLS regressions for developed countries but do not hold for developing countries when employing de facto measure of financial integration. The negative relation between financial openness and labor share of income is not evident when we focus solely on developing countries.

The rest of my essay is organized as follows. Section II focuses on comparing and contrasting previous theoretical and empirical studies on the relation between financial integration and labor share of income. Section III presents the hypotheses and explains the data and empirical model while the results of the empirical framework are introduced and analyzed in section IV. Section V is dwells on presentation and analysis of the robustness checks and Section VI brings together some concluding remarks which contains the summary of theoretical framework and empirical results as well as some policy recommendations.

II. Literature Review

1. The Labor Share of Income and the Self-Employed

Functional distribution of income as well as the labor share of income has been an enduring concern for the classical economists. The wage share governed by a historically and conventionally

determined subsistence wage in both Ricardo and Marx. Marx, in his later work, suggests that wage share is also driven by the relative bargaining power between capitalists and workers, that is itself determined by the pace of accumulation. In contrast to this approach, technology and preferences are the key determinants of the functional income distribution in the neoclassical theory, with the market determined equilibrium wage rate being set at the value of the marginal product of labor. Monopoly power and the pricing behavior of firms in monopolistic markets is the central key driving distribution between owners of capital and workers in Kaleckian theory of income distribution allowing from a bridge between the approach of the Classical economists and the Keynesian focus on effective demand[3].

The labor share of income is a measure of national income going to labor. *"The labor share is the nominal wage bill over nominal output or nominal GDP"* (Schneider, 2011). In other words, the labor share of income is the ratio of the total compensation paid to labor and the gross value added (Lee & Jayadev, 2003; Jayadev, 2007; Schneider, 2011). We term this definition as the unadjusted labor share index. However, this widely used definition is questioned by scholars since the compensation to employees is not clearly defined without including other worker's benefits such as tips and commissions (Krueger, 1999). More important, the unadjusted labor share of income does not account for the income of the self-employed either, which is prevalent in areas such as agriculture, construction, restaurants, hotels, retail and certain business services (Freeman, 2011). These earnings of self-employed, that constitutes a significant share of general labor's income has been ignored in empirical studies of the impact of liberalization on the labor share of income.

[3] The author synthesized from four studies of Kaldor (1955); Stockhammer (2009); Schneider (2011); Dunhaupt (2013).

The OECD classifies employment into three categories: paid employment, unpaid employment and self-employment. Self-employed workers are individuals who perform some work in order to earn family income, in cash or in kind (Le, 1999). Self-employment is defined as the employment of employers, workers who work for themselves, members of producers' co-operatives, and unpaid family workers measured as the percentage of employment[4]. Diez and Ozdagli (2011) measure self-employment as the share of employers or own account workers in the total labor workforce. The European System of Accounts (ESA) defines the "self-employed as persons who own sole or joint businesses of the unincorporated enterprises in which they work, with the exception of those unincorporated enterprises classified as quasi-corporations". Similarly, Parker (2004) defines self-employed as individuals who earn no wage or salary but generate their income by implementing their profession or entrepreneurship on their own account. ILO on the International Classification of Status in Employment ICSE-1993 classifies employment into six main types: employees; employers; own-account workers; members of producers' cooperatives; contributing family workers and workers not classifiable by status. The four last types in the category are aggregated to be self-employed workers[5]. Studies also link to entrepreneurship and informal sector activities while analyzing the idea of self-emloyment. For instance, Acs et al. (2008); Glaeser & Kerr (2009); Goetz & Shrestha (2009), Goetz & Runpasingha (2013) and OECD[6] considers self-employment as a proxy for the level of entrepreneurial activities or as the simplest kind of entrepreneurship

[4] Self-employment's definition by OECD

[5] Source: Table 2.D – ILO Yearbooks of Labor Statistics on Total Employment by Status in Employment. The paper employs ILO definition to construct an indicator of the labor share of income which adjusted for earnings from self-employed.

[6] The definition is available on OECD's website.

(Blanchflower, 2000). Heid (2015) defines informality as self-employed workers, or employees who do not sign a written labor contract.

Self-employment can also be viewed as a way out of poverty, unemployment and disadvantageous situations (Moore, 1983; Popli, 2016). Social economic programs do not focus on self-employment, which is not covered by the minimum wage regulation and the social security system such as family health care, work accidents and illnesses (Sammaniego, 1998).

The self-employed account for one-third of the labor force in developing countries such as in Mexico (Popli, 2016), and about 10 percent in developed countries like the United Kingdom and the United States (Blanchflower, 2000). The share of self-employed in total employment tends to be between 10 and 14 percentage points of the total workforce in advanced countries and this percentage might be much higher in developing countries (Hurt, Li and Pugsley, 2010). Therefore, their earnings do really matter to the national income share of total labor force.

Adjustments for self-employed income are important for the analysis of the national income share of labor. Based on sector, sex, age and education, Young (1995) imputed wages to the self-employed in Singapore, South Korea and Hong Kong and the corresponding results are 0.404, 0.680 and 0.628 respectively. Krueger (1999) estimates the raw labor share of national income using Current Population Surveys (CPS) data to construct an adjusted labor share of income and shows that the ratio of incorporated to unincorporated self-employed workers and business owners increased from 28 percent in 1979 to 41 percent in 1997. After imputing the labor income of the self-employed in the United States, Freeman (2011) observed a 2.5 percentage point rise in labor share of income at the total economy level. The labor share's adjustments of Gollin (2002) hover between 60 percent and 85 percent of GDP, leading him to suggest that estimates of factor share

that do not account for self-employed income will be seriously flawed, especially in developing countries.

In view of these trends and developments of the labor share of income and the self-employed, it is clear that the income of self-employed plays a crucial role in the share of total national income going to labor. Hence it is very important for scholars to construct an index of the labor share which is adjusted for the income from self-employed labor, especially for the sectors with a higher rate of self-employment such as agriculture in developing countries. This index then becomes the basis of the investigation of the impact of financial integration on labor share of income.

This paper contributes to the literature on the impact of financial liberalization by including the earnings of self-employed while investigating the core determinants and mechanisms driving the income share going to labor during financial integration. The question of the precise impact of liberalization on the share of the self-employed has received less attention in the literature.

2. The Declining Trend of Labor Share of Income

The different approaches to the labor share of income have been reviewed in the previous section. There have been empirical studies of both neoclassical and heterodox economists to analyze the correlation between the income going to labor in the economy and other macro and micro economics factors such as growth or inequality (Krueger, 1999). Empirical studies show that the shares of labor and capital in national income vary both over time and across countries. Kaldor's stylized fact about constant labor share over time seems to have less validity in the recent decades.

There has been a declining trend of the labor share of income in the past three decades. Blanchard (1998), Krueger (1999), Diwan (1999), Lee &Jayadev (2004), Guscina (2006), Jaumotte & Tytell (2007), Jayadev (2007), Rodriguez & Jayadev (2010), Guerriero & Sen (2012), Maarek (2012),

Dunhaupt (2013), and ILO, IMF, OECD & WB (2015) show a reduction on the national income share of labor. Krueger (1999) found an increasing trend of the labor share from the end of World War II until the early 1970s, but after reaching a highest level in the mid-1970s, the labor share declined by almost 3 percent. Diwan (1999) found that the labor share of income in the research dropped from an average of 54.5 percent of GDP in 1975 to 49.3 percent in 1995. Using two different databases, the UN National Account Data and the United Nations Industrial Development Organization (UNIDO) of industrial survey in the manufacturing sector, Rodriguez & Jayadev (2010) also show a decline of the national income share going to labor starting from 1980. In addition, Guscina (2006) examined the labor share in national income in 18 OECD countries during the period 1960-2000 and concluded that before mid-1980s technological progress was labor-augmenting, and therefore productivity growth increased labor share. However, after 1985 productivity gains have boosted profits because technological progress is capital-augmenting. The declining trend of the labor share of income also happens in most advanced countries (Jaumotte & Tytell, 2007). Thus Hung & Hammette (2014) found a decline in the labor share of US national income as well. What lies behind the declining trend of the labor share of income all over the world? Does the rising trend of self-employment matter? Globalization which includes both trade liberalization, financial integration and technological progress have been ascribed important role in the decline.

2.1.Trade Openness

Heckscher-Ohlin's general equilibrium model of trade between two countries with two factors of production and two goods suggests that countries should focus on area of comparative advantage. In particular, countries will export goods whose production is intensive in the factor they are abundantly endowed. The model indicates that an increase in the exports will lead to an upward

trend in the real returns to the factor used in the production of the exported goods and a decline in the returns to the other factor. Hence, factor-abundant countries would gain from international trade, while factor-scarce countries would lose (Stolper and Samuelson, 1941). The Northern developed countries concentrate on capital intensive production and developing countries in the south focus on labor intensive production. Consequently, it is agreed that trade openness should benefit labor income, increasing employment and the labor share going to workers in developing countries, while the wage share of countries in the north decrease (Guerriero & Sen, 2012, Dunhaupt, 2012). Nevertheless, the Heckscher-Ohlin' prediction only holds with assumptions such as full employment of resources; no barriers to trade; similar elastic demand as well as relative price; homogeneous trading goods and perfect substitutibility with identical technologies of production and constant return to scale (Bhagwati, 1994).

Recent studies show results that diverge from the Heckscher-Ohlin model. For example, Ortega and Rodriguez (1999), Harrison (2002), and Guscina (2006), Reddy and Dube (2016) suggest a negative correlation between trade integration and the labor share of income for all countries sample in both developing and developed countries. Similarly, Stockhammer (2103) found that globalization had the same effect on the wage share in developing and developed economies. Ghose (2003) also shows that the growth of international trade has a small benefit for workers. Both IMF (2007) and the European Commission (2007) confirm the similar results but they argued that the impact is negative for medium skilled workers and it had no significant effect for low and high-skilled workers' incomes. Rodrik (1997) and Slaughter (1999) provided an explanation for the decline in the labor share of income, in term of declining bargaining power since trade liberalization makes the demand for workers more elastic and labor becomes easier to substitute. Moreover, it is easier for capital to travel across economies to place with the cheapest labor.

Workers are forced to accept lower wages in the face of the threat of capital and their declining bargaining power. In particular, trade liberalization enlarges the "reserve army of unemployed" low paid workers in developing countries which leads to a lower bargaining power of unskilled labors as well. As argued by Pollin (2000), at any time, employers can threaten workers by moving to low-wage countries. Consequently, there will be a decline in the labor share of income.

In contrast, Rana (2001), Guerriero & Sen (2012) and Dunhaupt (2013) support a positive correlation of trade liberalization and the national income share of labors. Rana (2001) claimed that trade liberalization has a weak impact on employment and wage in her study of 48 developing countries and the effect is greater in countries with relatively flexible labor markets. Dunhaupt (2013) explained that due to trade liberalization, price competition increase and it can have a negative impact on the mark-up and he predicts a positive correlation between trade openness and the labor share of income. He also suggests that prices of raw materials and semi-finished goods can affect the labor share of income. If the prices of semi-finished products are cheaper, the labor share of income increases. Similarly, there is a positive and significant correlation of trade liberalization and the labor share of income in the study of Guerriero and Sen (2012).

Almost all studies support a positive relationship between trade openness and self-employment as well as their income share[7]. Trade liberalization generates a higher level of competition for domestic firms and leads to an increase in the informal sector since workers in the formal sector are laid off to lower the labor costs and improve efficiency. Moreover, self-employed workers do not benefit from trade liberalization while the formal sector's workers may gain (Carr & Chen, 2004). Particularly, Samaniego (1998) suggests that trade openness generated more than two thirds

[7] They are the studies of Samaniego, 1998; Goldberg & Pavcnik, 2003; Carr & Chen, 2004; Marjit & Maiti, 2005; Bosch et al., 2012; Arias et al., 2013; Popli, 2016; Liang & Goetz, 2016.

of the urban self-employed workers in Mexico. Bosh et al. (2010) find that one percentage point increase in trade liberalization results in roughly one percentage point of the increase in informality in Brazilian metropolitan labor markets in the period 1982-2002. Goldberg and Pavcnik (2003) find that reducing tariff leads to an increase in informal employment in the industries with the largest tariff cuts before the labor market reforms, yet they find no relationship between trade openness and informality for Brazil. Liang and Goetz (2016) study the moderating effects of entrepreneurship, measured using self-employment rates, on the impact of trade penetration for Chinese economy. Their empirical results indicate that opening up to trade internationally, leads to an increase in the self-employment rate and the marginal impacts of Chinese import penetration on unemployment are weakened in areas with higher self-employment rates. Popli (2016) show that trade liberalization process resulted in an increase in inequality and poverty among self-employed workers in Mexico over the last two decades, since trade openness raised relative demand for and returns to skilled labor who are mostly working in the formal sector and led to an increased gap between the rates and the income of self-employment and formal workers. In sum, scholars who suggest the positive correlation between trade liberalization, and self-employment, document that trade openness generates a higher level of competition in domestic markets. Formal workers are laid off to reduce costs will choose to be self-employed workers to remain their household incomes. In addition, to compete with foreign producers, domestic producers will seek to utilize informal labor inputs, which are much cheaper. Consequently, the higher demand for informal inputs and the reduction of formal workers lead to an increase in self-employment and in the income share of the self-employed.

There is also evidence that trade liberalization is negatively correlated to self-employment[8]. Diez and Ozadagli (2011) employ the dataset of self-employment in the manufacturing sector and tariff levels for 32 countries and the European Union for 2016 and find that trade liberalization is associated with a decrease in self-employment rate; the more openness to international trade leads to the lower rates of self-employment; higher trade costs in both home and foreign countries leads to a decline in self-employment rate. They further suggest that the increased rate of exporting firms will result in a lower self-employment rate. Arguing that trade openness is associated with an increase in the productivity of the tradable sector, Fugazza and Fiess (2010) concluded that informal employment would decrease with deeper trade liberalization while informal output increase with trade liberalization. Interestingly, Aleman-Castilla (2006) links trade liberalization to lower trade costs and argues that the formal sector will gain more benefits than the informal sector and suggests that with trade liberalization, there is a reallocation from informal to formal sectors to take advantage of lower trade costs. Heid (2015)'s study of the relationship of regional trade agreement and informal self-employment indicates that these regional trade agreements result in 20.3 percentage points decrease in informal employment and decreased unemployment rate by 1.2 percentage points. Overall, trade liberalization seems to drive self-employment negatively as well.

Hence, trade liberalization has a significant impact on the labor income share as well as on the self-employed and their earnings. However, the results of empirical studies indicate ambiguous effects. In this paper, we include trade openness as one of the control variables. The variable is measured normally by the ratio between the sum of import and export values and GDP.

[8] The negative effect of trade liberalization on self-employment can be found from studies of Aleman-Castilla, 2006; Fugazza & Fiess, 2011; Diez & Ozdagli, 2011; Heid, 2015.

2.2.Technological Progress

Theoretically, international trade and capital flows combined with technological change generate more opportunities for multinational companies to invest in foreign locations with lower cost of production. Therefore, domestic workers are easily substituted by foreign workers with a negative effect on domestic labor.

Extensive studies have been trying to investigate the roles of technological change and trade on the overall labor share of income. Among them, Harrigan (1998) finds that skilled-biased technological change plays a more important role in wage inequality than trade while the labor share of income has been equally driven by technological change and trade liberalization in the studies of Feenstra (2004, 2007) and Guscina (2006). Similar to the results of Harrigan (1998), Jaumotte and Tytell (2007) show that technological change in the information and communication sectors has had a bigger impact on the labor share in unskilled sectors compared to globalization because of the fact that computers and other information communication technologies are a substitute for unskilled labor and supplement skilled labor and therefore lead to a decrease in the labor share of unskilled workers. Technological progress also leads to the increasing use of technology favoring skilled workers. Consequently, the share of low-skilled workers decreases, while the share of high-skilled workers increases (Arpaia et al., 2009). Lawless and Whelan (2011) suggest the same correlation between technological change and the recent decline of the labor share of income because of the substitution between new technologies and unskilled workers. Changes in employment levels are necessary to adapt to the new technology. Moreover, technological progress leads to a displacement of workers so that capitalists are in a much stronger bargaining position relative to labor leading to a decline in their income share.

The recent capital-augmenting trend is regarded as the main reason for the decline in the labor share of income. Danhaupt (2013) shows that the labor share of income increased during the 1960s and 1970s since technological change in these times was labor-augmenting and boosted the effectiveness of labor inputs and the share of labor. Guerriero and Sen (2012) believe that since the mid-1980s, technological progress has become capital-augmenting. This type of technological progress lead to an increase in the stock of computing capital and leading to the decline in the labor share of income (Bentolila & Saint-Paul, 2003; Gucina, 2006; Ellis & Smith, 2007; Jayadev, 2007; Lawless & Whelan, 2011; Guerriero and Sen, 2012).

In a different direction, Guerriero and Sen (2012) argued that innovation as another form of technological progress improves productivity and boosts competition in the product markets. Thus, innovation might lead to positive effects on employment and the labor market and an increase in the overall economy's income and in the income share going to labor. In sum, their study suggests that technological innovation is a positive and significant driver of the labor share of income. Similarly, Stockhammer (2013) provides evidence that the effect of technological progress is asymmetric with positive effects on the labor share in developing countries but negative impacts in advanced countries.

In the context of self-employment, technological change is formal-sector-augmenting since investment and skilled labor are more available in the formal sector than the informal sector. Technological change increases the demand for workers in the formal sector and therefore leads to a wider wage gap between formal and informal workers (Munro, 2011). This rising demand for formal sector skilled labor could result in a decline in income share and employment level in the informal and self-employed sectors.

All in all, we have seen both positive and negative effects of technological change on the labor share of income as well as self-employment and their earnings.

2.3.The Impacts of Capital Account Openness on the Labor Share of Income

Recently, the role of financial markets has been highlighted as a potential cause of rising inequality and declining labor share (ILO, IMF, OECD & WB, 2015). While numerous studies have analyzed the determinants of the share of labor in relation to the share of capitalists as well as the recent declining trend of the labor share of income, only few have linked it to financial liberalization which is arguably one of the most significant changes in the international economy over the last three decades (Jayadev, 2007). In addition, the analysis has mainly concentrated on personal income distribution and wage inequality while very limited numbers of studies have explored the effect of capital account openness on the labor share of income. Moreover, these studies on the correlation between capital account liberalization and the labor share of income, point to ambiguous findings with some yielding a positive impact and others a negative impact. One issue that needs to be clarified is what drives these different results? Do the use of different databases matter? To what extent, and how is the long-term decline in the labor shares of income related to capital account openness?

Mezetti & Dinopolous (1991), Bughin & Vannini (1995), Crotty & Epstein (1996), Zhao (1998), Choi (2001), Harison (2002), Lee & Jayadev (2003), Jayadev (2007), Orgiazzi (2007), Dunhaupt (2013) have investigated the impacts of capital account openness on the labor share of income. Few studies suggest that in the period of higher capital mobility and relative immobile labor, the employees' power on the bargaining game of income distribution is loosened by the development of capital. For example, Mezetti & Dinopoulos (1991) and Jayadev (2007) seek to explain a negative correlation between financial account mobility and the national income share going to

labor by exploring a model in which, due to capital mobility, a decrease in bargaining powers of labor leads to a decline in the income share going to worker. Similarly, Rodrik (1997) argued that globalization has had two effects on labor markets: the demand for low-skilled labor in advanced industrial countries declines and employers will look for cheaper labor abroad by relocating their production abroad. He argued that the strategic bargaining game between capital and labor ameliorates the fallback option of capital. Specifically, the relocation of capital production abroad leads to a reduction of labor bargaining power and a decline in their share of income. Harrison (2002) utilized a model of a bargaining game, between labor and capital over excess rents in production, to show that in the context of imperfect competition, the share of excess rents going to labor falls along with the fixed costs of reallocation abroad for firms. The change in factor shares are related to changes in capital/labor ratios. She further found that exchange rate crises lead to a decline in the wage share. Additionally, Lee & Jayadev (2003) predicted that financial liberalization might worsen the income distribution and the income share of workers. Examining an unbalanced panel dataset regression across countries, they show negative effects of financial liberalization on the labor share of income in both developed and developing countries, in the period 1973-1995. However, this effect is independent from the negative impact of financial crises. Developing this idea, Jayadev (2007), by using panel regression model to estimate the correlation of an unadjusted labor share of income and the level of financial openness, finds a robust negative impact for the group of developed and middle-income countries, however this negative effect does not hold for the poorest countries. Jayadev argues that financial openness has increased the bargaining power of capital, and therefore increased capital flows, and rents accruing to capital. Hence, financial integration may reduce the income share of labor at the firm and consequently at macroeconomic level. Most recently, Dunhaupt (2013) using a time series cross-section database

of 13 countries over the period from 1986 until 2007 estimated the correlation of the adjusted labor share of income and increasing dividend and interest payment of non-financial corporations, which suggests that the decline of the labor income share is driven by increasing dividend and interest payments of non-financial corporations.

In contrast, Orgiazzi (2007) investigates cyclical instability in a small open economy and find that financial liberalization increases the capital stock and the labor share of income and therefore reduces profits. More critically, capital account mobility leads to an appreciation of the real exchange rate and an increase in the income share going to workers, which reduces profitability and triggers the financial crisis. In aftermath of the financial crisis a reduction in the labor share of income is seen. This argument is quite consistent with the evidence provided by Diwan (1999) who believed that a country' financial structure and the openness of its trade and capital account are driving the declining labor share of income during the crisis. Using data for the last decade of the 20th century, the study found that the labor share increased before a financial crisis and declined sharply by an average of 6.13 percentage points during the crisis, but only recovers partially in the following years in most countries of the sample. Interestingly, in his study on the medium-term behavior of the labor share, Diwan (2000) argued that labor in poorer countries get more benefits with a higher degree of international trade and a more open capital account while the reverse holds for richer countries.

Similar to other measurements of capital account openness, Foreign Direct Investment (FDI) has a possibly contradictory effect on the labor share of income. It has a positive impact due to spillover effects and a negative impact due to the weakening bargaining power of labor and depreciating exchange rates (Giovannoni, 2014). Since the bargaining power of workers can also be affected by FDI, it might influence income share going to labor. Using a Nash bargaining model of labor-

management negotiations at the industry level, Zhao (1998) shows that FDI reduces employment in the organized sector and the competitive wage in the unorganised sector if there is more concern about employment than wages or even equal concern about both in the union. Kristal (2010) and Harrison (2002) showed a statistically negative correlation between FDI inflows and the labor share of income. Alderson and Nielsen (2002) argue that multinational companies in developed countries move their production to low-cost countries leading to a job reduction in those developed countries and an increase in capital's bargaining power. Therefore, the compensation to workers declines for all country samples. Guerriero and Sen (2012) also stated that FDI inflows seem to be a negative driver of the labor share of output.

In sum, the relationship between international capital flows and the national income share of labor has been largely inconclusive (see Table I.1). Scholars who support a positive correlation between capital openness and labor share of income argue that capital account liberalization leads to a rise in the capital-labor ratio, resulting in an increase in labor share if there is imperfect substitutability or complementarity between capital and labor. However, the employees' bargaining power is reduced by labor substituting technology and leads to a decline in the labor share of income. There are also studies that find an ambiguous relation between financial openness and labor share of income but argue that capital account openness may lead to instability and crisis. However, the effect of these downturns on labor share of income depends on the bargaining power of labor in this period. In the context of crisis, the labor share increased before a financial crisis and decline sharply during the crisis, but it only recovers partially in the following period. Thus, the effects of capital account openness on labor share of income might be ambiguous.

So what factors lie behind the different conclusions about the correlation between the share of labor income and financial openness in recent studies? The most plausible answer is the different

measures of capital account openness as well as the country samples and databases (Lee & Jayadev, 2003). In this paper, I use both de-jure and de-facto measures of KA openness to assess how the measure capital account openness affects the results.

Financial openness would also tend to drive self-employment positively. Capital account openness leads to an inflow of foreign capital and a weakening of labor regulations to attract foreign capital. Migration from rural areas, and the expansion of the informal labor force further weakens the bargaining power of workers. The consequent rise in unemployment as formal employment opportunities are squeezed, results in an increase in self-employment as a survival strategy in the absence of employment. Thus, financial liberalization could lead to rise in self-employment. But this increase in self-employment is a direct response to the squeeze of formal employment opportunities.

In this paper, I construct an adjusted labor share of income which accounts for the income going to self-employed workers. I also utilize two other adjusted indices of the labor share of income that were constructed in previous studies. Along with three indicators of adjusted labor share of income, the widely used unadjusted labor share of income is also considered to test for the linkage between the labor share of income and financial openness. The measurement of financial openness does matter for the different results in the literature. Hence, I also employ two different measurements of capital account openness, both de jure and de facto indicators.

Table I. 1. The Correlation between Financial Openness and the Labor Share of Income: Empirical Frameworks

Signs	Explanations	Authors	Variables	Data and Samples	Conclusions
Positive	Capital account liberalization lead to a rise in the capital-labor ratio then results in an increase in labor share if complemetnarity between capital and labor is assumed	Orgiazzi (2007)	Capital accumulation and the labor share	A calibration model	Financial liberalization leads to an increase in the capital stock and the labor share of income and therefore reduce profits Capital account mobility leads to appreciation of the real exchange rate and an increase in the income share going to workers, which reduces profitability and triggers the financial crisis
Negative	The labors' power in a bargaining game of income distribution is weakened by the development of capital reducing the labor share of income	Lee & Jayadev (2003)	Compensation of Employees/GDP and Lee-Jayadev capital account openness index	Pool OLS regression on un balanced panel of countries The measure of the labor share is derived from the United Nations' system of national accounts, Table 103	Liberalization is associated with a decreased share of income going to labor, even when controlling for its effects on factor shares
		Jayadev (2007)	Compensation of Employees/GDP and Lee-Jayadev capital account openness index	A panel data from the United Nations National Accounts Statistics Database for 80 countries during 1970-2001	A robust negative correlation between capitl account openness and the labor share, this effect is not present for low income countries

		Dunhaupt (2013)	Ajusted wage share and Net dividend payments, Net interest payments and Net dividend + Net Interest Payments	A time series cross-section database of 13 countries over the period from 1986 until 2007 Data source: AMECO and OECD Main Aggregates and Detailed Tables.	The decline of the labor income share is driven by increasing dividend and interest payments of non-financial corporation Rising import prices had a negative impact on labor share An increase in overhead obligations in the form of rising interest and dividend payments was passed on to wages, resulting in a rising mark-up and causing the share of labor income to decline
Ambiguous	Capital account liberalization may lead to instability and crisis. However, the downturns' effects on labor share of income depend on the defensive power of labor in this period. For example, the labor share increased before a financial crisis and decline sharply during the crisis, but it only recovers partially in the following period. Then the effects of capital account openness on labor share of income might be ambiguous switching between positive or negative	Diwan (1999)	Compensations of employees/GDP and a dummy for the financial crises; a dummy for the downward sloping interval of the labor share during the distributional crisis; a dummy for the upward sloping interval of the labor share during the distributional crisis and the GDP per capita	An international panel-data for labor share of 135 countries between 1975 and 1995	The labor share increased before a financial crisis and decline sharply by an average of 6.13 percent during the crisis, but it only recovers partially in most countries of the sample

Source: Author's compilation

III. Hypotheses, Data and Empirical Model

1. The Measurements of Financial Openness

Capital account mobility or financial openness has been increasing across countries since 1970. The direct and indirect costs and benefits of this phenomenon have been subject to debate. The most important reason for these problems is the measurement method of financial account mobility. There are a few different measures of financial openness. They are de facto, de jure or hybrid methods (Quinn et al., 2011). Other scholars term them as rule based and outcome based methods. Most of recognized methods are based on the IMF's Annual Report on Exchange Arrangements and Exchange Restriction (AREAER). I synthesize some available measurements of financial openness that have been constructed by economists as follows:

1.1.Rule Based Indexes

The most popular de jure or rule based index - KAOPEN - was constructed by Chinn and Ito (2002, 2007, 2008). They created an index to measure the extent and intensity of capital controls based on the binary dummy variables that codify the tabulations of restrictions on cross-border financial transaction reported in AREAER (Chinn and Ito, 2007). The index is available for 181 countries over the period of 1970-2013. The advantages of KAOPEN index are that it is constructed in a relatively transparent way and is updated annually. It is also available for a wide range of countries, which is not common for other capital account openness indices. However, as being a rule-based index, Kaopen does not reflect the real capital account openness situation for each country as well as a de facto measurement.

Alesina et al (1994), Rodrik (1998), Kelin and Olivei (1999), Edwards (2001), O' Donnell (2001), Chanda (2001) also construct their financial openness indices based on a dummy variable from the

annual report of IMF (AREAER). However, the drawbacks of their indices are that they are too general and cannot capture the intensity and changes of controls well (Lee, 2004).

Also based on the IMF' annual report (AREARE), Quinn (1992, 1997) and Quinn and Toyoda (2007, 2008) created two indicators, which called "capital" (measures capital account openness) and "fin_current" (measures financial current account). The index is a composite measure of financial regulation that ranges from 0 to 14, with the number 14 representing for the least regulated and most open system. The data covers for 122 countries for the period of 1949 to 2007 in 6 categories: Payment for imports, receipts from imports, payment for invisibles, receipts from invisibles, capital flows by residents and capital flows by nonresidents. Quinn' index has been used and redeveloped by numerous scholars such as Jayadev (2007).

Bekaert et al (2005) created a binary index for 95 countries from 1980 to 2006 based on Bekaert and Harvey's paper in 2005 named "A Chronology of Important Financial Economic and Political Events in Emerging Markets". They set the index a value of "1" for the year after financial liberalization and "0" for those before liberalization. However, as argued by Quinn et al. (2011), this measure cannot express fully for the level of capital account openness and it considers every country in the same two levels.

1.2.Outcome Based Indexes[9]

The most common quantity-based or outcome-based indices are two indicators that were constructed by Lane and Milesi-Ferretti (2006, 2007). By investigating trends in net and gross external positions, and the composition of international portfolio, they constructed two indices

[9] Other de facto (or outcome based) measures: the uncovered or real interest rate parity by Cheung, et al (2003); international arbitrage pricing model or capital asset pricing model by De Gregorio (1998); the size of gross capital flows as the degree of capital account openness by IMF (2001).

which express the level of capital account openness. FO1 (financial openness) index is a result of the sum of country's aggregate stocks of external assets and liabilities which divided by gross domestic product. The second index is based on equity instruments. FO2 index is a result of the sum of foreign portfolio equity assets, foreign portfolio equity liabilities, FDI assets and FDI liabilities. Their method is simply using the real flows as a percentage of GDP as a proxy for financial account openness.

$$FO1 = \frac{\text{Total assets} + \text{Total liabilities}}{\text{GDP (US\$)}}$$

$$FO2 = \frac{\text{Portfolio equity assets (stock)} + \text{Portfolio equity liabilities (stock)} + \text{FDI assets (stock)} + \text{FDI liabilities (stock)}}{\text{GDP (US\$)}}$$

The data for portfolio equity assets and liabilities, FDI assets and liabilities, total assets and total liabilities are collected from the External Wealth of Nations Mark II database by Lane and Milesi-Ferretti (2007). The study covers data for the period 1970-2011 and for 188 countries and the European countries. It also reports the split between "portfolio investment: debt securities" and "other investment" for both the category "external debt assets" and the category "external debt liabilities". The measures are based on the volumes of capital flows and regarded as a "volume-based measure of international financial integration".

Table I. 2. Summary Statistics of Capital Account Openness

Variables	Obs	Mean	Std. Dev.	Min	Max
Kaopen_index	1300	.7213327	1.585167	-1.888895	2.389668
FO1	1239	2.147645	3.675047	.0974888	33.06178
FO2	1223	.7095132	1.461576	.0048034	15.51488

Source: Author's calculations

In this paper, to test for the hypotheses that the higher level of financial openness would be associated with a lower labor share of income. I use both de jure and de facto measurements of capital account openness. For the rule based index, I compute Kaopen index which was constructed by Chin and Ito and updated to 2013. The data is available on their page at http://web.pdx.edu/~ito/Chinn-Ito_website.htm. For the de facto index, I employ both indicators (FO1 and FO2) which were constructed by Lane and Milesi-Ferretti (2006, 2007) updated until 2013. FO1 and FO2 dataset is also available on their page at http://www.philiplane.org/EWN.html. Table I.2 is the summary statistics of the three measurements of capital account openness. The trend of capital account openness since 1970 to 2013 is depicted in Figure I.1. It seems that capital account openness degrees have been increasing in the past three decades and decreasing temporarily after the 2008 crisis, but resuming the upward trend from 2009.

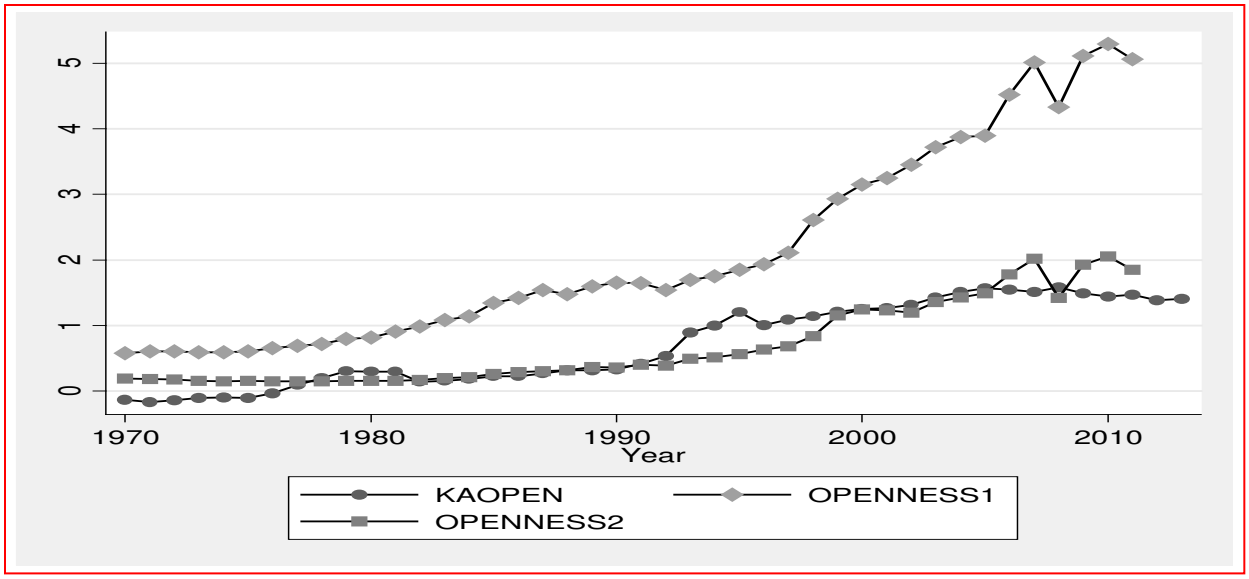


Figure I. 1. The Trend of Capital Account Openness over Time
Source: Author's calculations

2. The Measurements of The Labor Share of Income

Studies on the effects of financial account mobility on labor share of income suggest different results. The most important reasons for those mixed results are the different methods of measuring the labor share of income. The labor share of income is traditionally computed by dividing total compensation of employees by national income. Compensation of employees is also commonly used as a measure of labor income. One enduring concern among economists is that compensation of employees omits the earnings of people who are self-employed workers. Thus, a more careful measure of the labor share of income is a very important task. In this section, I introduce four measurements of labor share of income, one unadjusted and three adjusted indicators.

2.1.Laborhare1

We have seen a declining trend of the labor share of income since 1970 in Figure I.2 in which the labor share of income is the ratio of compensation paid to employees and national gross value added or GDP. This method has been used by numerous economists on the studies of labor share of income (Jayadev, 2004, 2007). Since this measure does not account for the income of the self-employed, scholars termed this method as "the unadjusted labor share of income".

$$Labor share1 = \frac{Compen\_employees}{Gross\_value\_added}$$

The "unadjusted index" underestimates the labor share of income, since the earning of the self-employed workers is not included and are often treated incorrectly as capital incomes. However, the self-employed workers account for huge portion of the workforce in some countries, especially in developing countries where self-employment and the people working in family enterprises are predominant in rural areas. Gollin (2002) argued that agriculture is dominated by the self-employed and small family business, thus it has very low-income share of labor[10]. Some of their incomes are reported, other private farmers' incomes are not. In some cases, owners of private companies are also employees. Self-employed are not only agricultural workers and small entrepreneurs, but also marginal employment and disguised unemployment (Gollin, 2002 and Guerriero, 2012). Hence, the categorization of the income going to capital and the one really going to labor is a very crucial issue.

[10] For example, in Vietnam, labors in agriculture account for almost 44 percent of total workforces as reported by Vietnamese Labor Ministry Report in 2015.

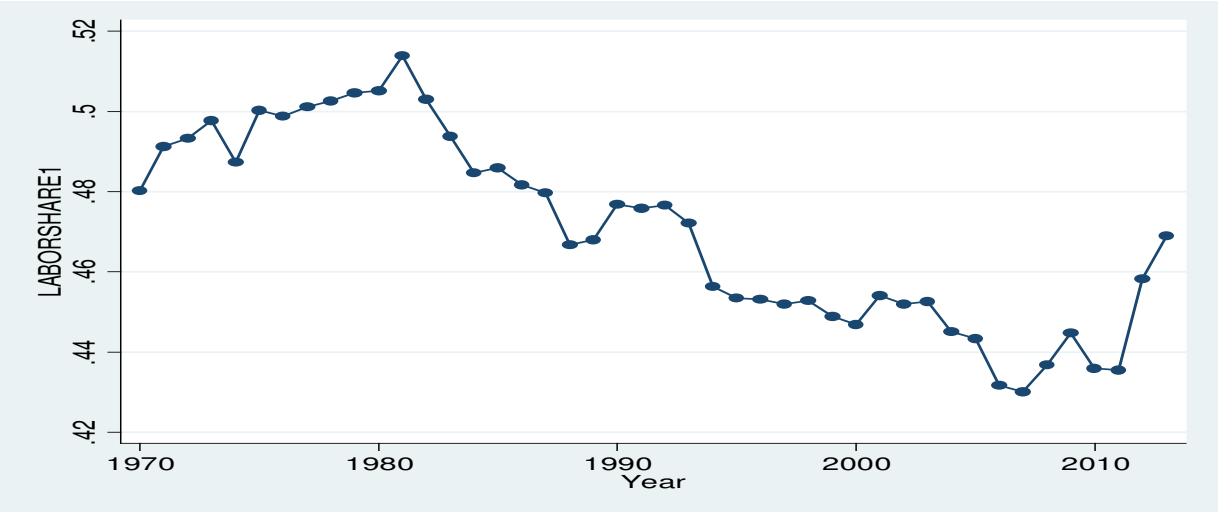


Figure I. 2. The Labor Share of Income over Time: Unadjusted Laborshare1
Source: Author's calculations

2.2.Laborshare2

In this paper, I construct an adjusted labor share of income (laborshare2. This index is based on the previous adjusted index which was constructed by the OECD (Freeman, 2011, page 10) as follows:

$$Laborshare = \frac{\frac{Compen\_employees(\sum Employees + \sum Self\_employed)}{\sum Employees}}{Gross\_value\_added}$$

The equation is mostly used for imputing the labor share of the self-employed by assuming that the self-employed workers earn the same average income as employees, either at the total economy or industry level. Hence, we can adjust for the self-employed by multiplying compensation of employees by the ratio of total employment to total employees. The adjustment can be applied if we have information of total employment as well as total self-employed. Let's expand the above adjustment equation as follows:

$$Laborshare = \frac{\frac{Compen\_employees * \sum Employees + Compen\_employees * \sum Self\_employed}{\sum Employees}}{Gross\_value\_added}$$

$$\Rightarrow Laborshare = \frac{\frac{Compen\_employees * \sum Employees}{\sum Employees} + \frac{Compen\_employees * \sum Self\_employed}{\sum Employees}}{Gross\_value\_added}$$

$$\Rightarrow Laborshare = \frac{Compen\_employees + \frac{Compen\_employees * \sum Self\_employed}{\sum Employees}}{Gross\_value\_added}$$

We can get the labor share of income if we have the data of compensation to employees, the number of the self-employed and gross value added. However, information on self-employed workers is not always available. Moreover, the preferred quantitative measure for total employment and total employees is hours worked. However, hours worked data are also not always available. We therefore use the headcount measure instead.

As the classification of ILO on the International Classification of Status in Employment ICSE-1993 (Table 2.D – ILO Yearbooks of Labor Statistics on Total Employment by Status in Employment), there are six main types of employment, which included employees, employers and four other types of self-employed which are own-account workers, members of producers' cooperatives, contributing family workers and workers not classifiable by status. Hence, to get the information of the self-employed, I collected the data for total workforce, number of employees and number of employers for 30 countries of my sample from 1970-2013. The number of the self-employed workers is obtained by subtracting the number of total workforces by the number of employees and employers as follows:

$$\sum Self\_employed = \sum Total\_workforces - \sum Employees - \sum Employers$$

Once we get the number of the self-employed, my adjusted index of labor share of income is the following:

$$Labor share2 = \frac{Compen\_employees + \frac{Compen\_employees * (\sum Total\_workforces - \sum Employees - \sum Employers)}{\sum Employees}}{Gross\_value\_added}$$

This measure considers the compensation to employees is an average income that the self-employed workers earn. The adjustment is also convenient because it relies upon readily available information on the composition of the labor force from ILO website and the compensation of employees (Freeman, 2011). Moreover, it takes into account the composition of the workforce in the different countries and in the different period of time. However, the assumption that the self-employed earn the same average compensation as employees ignores differences between the pattern of employment across sector especially characteristics of self-employment and employees (Bagnoli, 2009).

2.3.Labor share3

Another method is used by Gollins (2002) and Dunhupt (2013). They measure labor share of income as follows:

$$Labor share3 = \frac{\frac{Compen\_employees}{\sum Employees} * \sum Total\_workforces}{Gross\_value\_added}$$

$$Labor share3 = \frac{\frac{Compen\_employees}{\sum Employees}}{\frac{Gross\_value\_added}{\sum Total\_workforces}}$$

The total labor income is constructed by dividing the total compensation of employees by the number of employees, and then scaling this up for the total workforce by multiplying compensation of employees by the number of people in the workforce. Therefore, all types of workers who are not employees are assumed to receive the same average wages as the employees themselves (Gollins, 2002).

The labor share of income (laborshare3) is compensation per employee as a share of GDP at factor costs per person employed. This indicator includes both the incomes going to employees and dependents or the self-employed workers. The advantage of this method is that it takes into account the composition of the workforce in the different countries and in the different time- periods. However, the drawback of this adjustment is that it requires detailed data on labor workforce. Further, this adjustment will create a bias if there are systematic differences between the earnings of employees and self-employed workers.

2.4.Laborshare4

The System of National Accounts, (SNA) has conventionally been a key source of data on the self-employed worker' earning. In every SNA (1993, 2010), compensation of employees has two components: wages and salaries payable in cash or in kind and the contribution of employers to social security programs. Mixed income or operating surplus of private unincorporated enterprise (OSPUE) contains the overall earnings by self-employed workers (Freeman, 2011). Some studies consider the income going to the self-employed workers from mixed income or reported operating

surplus of UN dataset. The most popular approach, which was first applied by Johnson (1954) then Krueger (1999) Guscina (2006) and Guerriero (2012), has been to impute two-thirds of the mixed income (the income of proprietors of unincorporated household enterprises) to labor and the residual to capital income.

$$Labor share4 = \frac{Compen\_employees + \frac{2}{3} Mixed\_income}{Gross\_value\_added}$$

This measure seems to be a straightforward adjustment. The measurement is quite simple and transparent. It also makes sense that the operating surplus of private unincorporated enterprise (OSPUE) or mixed incomes include some labor income (2/3) as well as some capital income (1/3). However, this measure might overstate labor share of income. It may not be reasonable to apply this measure to countries with different economic level, size and structure.

Table I. 3. Summary Statistics of the Labor Share of Income: All Countries

Variables	Obs	Mean	Std. Dev.	Min	Max
laborshare1	1043	.4663996	.0981549	.0965667	.6676182
laborshare2	371	.5690633	.1036594	.3635663	.8882398
laborshare3	450	.6114677	.0977591	.3844442	.9285442
laborshare4	483	.5616569	.0752906	.3462425	.8654006

Table I. 4. Summary Statistics of the Labor Share of Income: Developing Countries

Variables	Obs	Mean	Std. Dev.	Min	Max
laborshare1	399	.3871602	.1021183	.0965667	.6676182
laborshare2	173	.594237	.134347	.3635663	.8882398
laborshare3	187	.6316367	.1366125	.3844442	.9285442
laborshare4	113	.4840317	.1009661	.3462425	.8654006

Table I. 5. Summary Statistics of the Labor Share of Income: Developed Countries

Variables	Obs	Mean	Std. Dev.	Min	Max
laborshare1	644	.5154935	.0533653	.348155	.6511235
laborshare2	198	.547068	.0581386	.4258327	.6840641
laborshare3	263	.597127	.0513017	.4481097	.7077723
laborshare4	370	.5853641	.0436077	.4783311	.7240793

Source: Author's calculation[11]

Table I.3 is the summary statistics for the labor share of income for the whole sample while Table I.4 and Table I.5 are the summary statistics for the labor share of income in developing and developed countries respectively which show that after adjustment for earnings of the self-employed workers, the national labor share of income in developing countries is higher which suggests that adjustments of the earnings of the self-employed play a very important role in these countries.

To test the hypotheses that postulated in the previous section, I use all four indicators of labor income share which are the unadjusted labor share (laborhsare1), the index constructed by me

[11] The data of compensation to employees and gross value added are from The Tables of United Nations National Account Statistics. The data of number of total workforces, employers and employees are from ILO.

(laborshare2), the one constructed by Gollin (2002) (laborhsare3) and the last one is laborshare4. For the robustness check, I use all four indicators as well.

3. Control variables

Capital account openness, trade liberalization and technological progress seem to be the most important mechanisms driving the declining trend of labor share of income in the past three decades. Economic development, government share of GDP, unemployment rate, the labor market regulations as well as the size of labor workforce, are equally regarded as other important determinants through which capital account openness affects the labor share of income which does account for earnings of the self-employed workers.

3.1.Development

The share of income going to labor may be driven by economic development, proxied by the growth rate of GDP or per capita GDP. On one hand, the labor share of income is believed to increase due to economic development since the demand for labor rises with the accumulation of capital (Jayadev, 2004, 2007; Ortega & Rodriguez, 2006). In particular, Kuznets (1955) and Kravis (1959) regarded the process of development and structural change as the main driving factors of the income share going to labor. Hasan (2001) argued that overall economic activities are positively correlated with labor demand in manufacturing sectors, leading to an increase in employment and wages. Recently, Maarek (2012) found evidence of a substantial and larger labor share of income in industrialized countries than in developing countries which indicates that the levels of economic development do really matter to the total income share of paid-employed. In contrast, a higher level of income per capita is negatively correlated with the rates of self-

employment and earnings from self-employment since the share of paid employment is relatively high due to increases in labor demand (Goetz and Rupashingha, 2013).

On the other hand, Harrison (2002) asserted that a higher relative GDP per capita would decrease labor's bargaining power and lead to a decline in the labor share of income. Stockhammer (2013) found a statistically significant negative effect of real GDP growth on the adjusted wage share of the total economy, measured as the sum of the private and the government wage shares. Moreover, GDP per capita has a negative impact on the labor share at early stages of development but has a positive impact at later stage. The impact becomes less negative for lower-middle income countries and strongly positive for the upper-middle-income countries (Maark, 2012).

In sum, we have seen both positive and negative effects of economic development on the labor share of income. The most wide-used proxy of economic development is GDP per capita.

3.2.Government Share of GDP

Government expenditure relative to GDP or government share of GDP has been used to proxy for government activities and intervention. Harrison (2002) argued that government spending relative to GDP means a higher and better government intervention in the economy. Therefore, an increase in the government expenditure leads to a better economic management of the government. However, government expenditure in the economy is constrained by financial integration hence we might expect to see a positive relationship between the government share of GDP and labor share of income in the context of financial liberalization. Jayadev (2007) found that larger government intervention measured by the government share of GDP and the budget deficit leads to positive and significant effects on the labor share of income. However, these effects are small,

a one percentage point increase in the government share of GDP as well as the budget deficit, result in a 0.01 percentage point increase in the labor share of income.

3.3.Unemployment Rate

The labor share of income is determined by the bargaining power of workers while unemployment rate is one of the most important driving factors of labor's bargaining power as well as their income share. Hence studies on labor share of income should link to unemployment. There is an argument that if unemployment rate is relatively high, the bargaining power of labor and their wage shares are reduced. Moreover, the linkage of unemployment and self-employment becomes a key determinant in analyzing the trend of income share going to labor. On one hand, unemployment rate affects the propensity to be self-employed and on the other hand, self-employment is a strategy to reduce unemployment and poverty.

Self-employment is regarded as a government policy to reduce unemployment rate. For instance, The New Enterprise Incentive Scheme which has provided training and income support to the unemployed who choose to be a self-employed worker in the future was introduced in Australia. The unemployed, in the United Kingdom and France, receive transfer payments from their government if they start their small businesses (Le, 1999; Blanchflower, 2000). In the context of trade liberalization, one can argue that due to higher levels of competition during globalization, to reduce costs and improve efficiencies, domestic firms seek to narrow their employment rates, leading to an increase in unemployment for the whole economy. The formal workers who are laid off, take resort to self-employment to maintain their household income (Carrasco, 1999; Le, 1999; Blanchflower, 2000). Scholars have found that the recent rise in self-employment rates are driven

by high levels of unemployment combined with some labor market programs (Millan et al., 2010; Goetz & Rupasingha, 2013).

Overall, we expect a negative correlation between the labor share of income and unemployment rate. This paper uses the rate of unemployment as a control variable.

3.4.Population

Population is the other determinant of labor income share since the growth of population, especially the working-age population, is related to the size of labor workforce. There are two alternative explanations for the relationship between population and the labor share of income. One expected a positive effect might argue that an increase in the number of people in a country leads to an increase in the total workforces and therefore a higher rate of income share. On the other hand, an increase in population generates a higher rate of unemployment and results in a decrease in the labor share of income. This paper utilizes log population as a proxy for the size of labor workforce.

3.5.Labor Market Regulations

Labor market regulations are also considered to be a key determinant of the income share going to labor since it affects the bargaining power of workers. Union density and the index on rigidity of labor market have been used as proxies for labor market regulations. For example, Jaunmotte and Tytell (2007) found that countries that improved their market flexibility experienced a smaller decline in the labor share of income. Similarly, Hornstein et al, (2007) explored a model to explain why in a relatively rigid labor market such as Europe the labor share had fallen more sharply than in the United States, the United Kingdom, Canada, and Australia with a relatively flexible labor market. Fichtenbaum (2009) found a positive relationship between unionization and the labor share

of income in his study on the US manufacturing sector during 1949-2006. Similarly, Stockhammer (2009) documented positive and significant effects of union density (percentage of workers who belong to labor unions) on the labor share of income by the research covering 15 OECD countries from 1982 to 2003. Nevertheless, Guscina (2006) and Jaumotte and Tytell (2007) found an insignificant effect of union density and the labor share of income.

Recent empirical studies also employ employment protection as a proxy for labor market regulation. In particular, the analysis of Ellis and Smith (2007) show that a higher degree in employment protection leads to a decline in the labor share going to workers while the relationship was positive in the study of Guscina (2006). Jaumotte and Tytel (2007) concluded that employment protections have had no significant effect on the labor share of income since the 1980s.

Various proxies have been used in empirical analysis to measure labor market regulations. This paper uses lamrig index constructed by Campos and Nugent (2011) as a proxy for labor market regulations. This index is a de jure measure of the rigidity of employment laws, which based on comparisons of labor regulations and laws across countries and overtime. Lamrig index ranges from 0 to 3.5 and its higher value obtains more rigid employment protection regulations.

Table I. 6. Definitions of Control Variables

Variables	Definitions	Sources
Development	GDP per capita	Penn World Table 8.1
Trade Openness	Exports+imports/GDP	WDI
Government Share of GDP	The government share of expenditures, as a percentage of GDP	WDI
Unemployment Rate	Unemployed persons/Labor force	WDI
Population	The working-age population (defined in this study as ages 16-60, in thousands)	Penn World Table 8.1
Technological Progress	Total of patent applications	WDI
Labor Market Regulations	Lamrig: A purely de jure index on the rigidity of employment regulations,	Campos and Nugent (2011)

Table I.6 presents the data sources of trade openness, technological progress and the other explanatory variables. Log per capita GDP is a proxy for economic development from Penn World Table 8.1. Trade openness is measured as the ratio of the sum of imports and exports and GDP. The data of trade openness index, government share of GDP and unemployment rate are from WDI.

Patent_A (Total patent application per year), following (Guerriero and Sen, 2012), is used as a proxy for the technological progress. The total patent applications per year are calculated by the sum of total patent applications of countries' residents and countries' non – residents. Log

population is a proxy for the size of labor workforce. The data of total patent application and population are collected from Penn World Table 8.1 as well. For labor market regulations, I use lamrig index on the rigidity of employment regulations which was constructed by Campos and Nugent (2011). Lamrig is only available for each five-year period. Hence, to make them fit with my panel dataset, linear interpolation method is used to get annual dataset for every country in the sample. Table I.7 is the summary statistics for those above control variables.

Table I. 7. Summary Statistics of Control Variables

Variables	Obs	Mean	Std. Dev.	Min	Max
LogGDPpcpt	1320	8.785112	1.462294	4.716616	26.00782
SqrtlogGDPpcpt	1320	79.31487	28.76194	22.24647	676.4066
Logpop16_60	1320	3.239044	1.446383	.5990447	7.217087
Trade_Openness	1278	73.68582	72.46885	10.33744	458.3322
Govshare	1283	15.70083	5.335895	2.975538	28.98661
Unemrate	902	7.240133	4.206879	.7	25
Patent_A	1104	35330.6	84423.47	0	652777
Linear_lamrig	1319	1.493857	.5744067	0	3.5

Source: Author's calculation

4. Hypotheses

As described in the theoretical framework section, there are three hypothesized relationships between capital account openness and the labor share of income in which a negative effect is the most accepted one. I expect to see a negative relationship between the adjusted labor share of income and capital account openness. This paper tests the hypothesis that the higher degree of capital account openness would be associated with a decrease of the labor share of income. Moreover, I also

expect to see negative relationships between the labor share of income and other control variables such as trade openness, unemployment rate, the number of patent applications as well as the size of total labor workforce. Positive linkages between financial integration and economic development proxied by GDP per capita, education levels and the labor market regulations are postulated as well. Table I.8 describes the hypothesized relationship between the labor share of income and capital account openness and other control variables.

Table I. 8. Hypothesized Effects on the Labor Share of Income

Variables	Hypothesized Relationship	Comments
Capital Account Openness	+/-	It would be a positive effect in developing countries and opposite effect in developed countries but a negative effect for the whole countries sample.
Economic Development	+/-	Labor share increases due to the accumulation of capital leading to a positive effect A higher relative GDP per capita would decrease labor' bargaining power and thereby leads to a negative effect.
Trade Openness	+/-	International trade generates more opportunities to relocate the production to lower cost countries. Labor is substituted and its bargaining power falls, so that labor share decreases.
Government Share of GDP	+	An increase in government spending relative to GDP means a better government intervention in the economy and leads to a higher level of labor income share.

Unemployment Rate	-	A higher unemployment rate leads to a weaker bargaining power of labor and a decline in the labor share of income.
Technological Progress (Proxied by Patent_A)	+/-	Due to capital-augmenting technological change, improved monitoring and weaker labor's bargaining power, the labor share of income falls.
Population	+/-	Increased higher population leads to an increase in labor workforce and higher income share but it also leads to a higher rate of unemployment and a decline in the labor share of income.
Labor Market Regulations	+/-	A higher value of union density leads to a stronger bargaining power of labor and thereby an increase in labor's earnings. However, a higher degree in employment protections leads to a decline in the labor share going to workers.

5. Econometric Model

We run few diagnostic tests to ensure the goodness of the estimated model, the Breusch-Pagn Lagrange multiplier (LM) for random effects and the Durbin-Wu-Hausman test for endogeneity. Both the null hypotheses were not rejected, suggesting that there is no evidence of significant differences across countries, therefore ordinary least square (OLS) estimates might be relevant. The Pasaran CD test was used to test whether the residuals are correlated across countries and the null hypothesis that residuals are not correlated was not rejected. The Pagan-Hall test was used to test for the presence of significant heteroskedasticity and the null hypothesis of homoscedasticity were rejected, suggesting that Driscoll and Kraay standard errors might be consistent for

estimations[12]. Next the author employed Hausman test to choose between fixed and random effects. The null hypothesis is that the preferred model is a random effects model was also rejected. Therefore, the fixed effects model was found to be more reliable.

To test for the causality between labor share of income and capital openness, we lag both laborshare and FO by 3 years and 5 years then run regression of laborshare and lagged FO. We also run reverse regression of FO and lagged laborshare. The sign is significant only in the first regression then we know the causality runs in that direction, but not the other way. Then we can conclude that the causality is one directional in my model.

The correlation matrix for all controls and dependent variables has not shown any coefficients which are greater than 50%. This result suggests that the control variables are not endogenous with my dependent variable (the labor share of income).

In this paper, I use the model of fixed-effects (FE) regression in order to control for both cross-country and temporal effects. The advantage of the fixed-effects model is that it can control for all time-invariant different countries. Moreover, the fixed-effect can reduce omitted variable bias due to time invariant characteristics (Torres-Reyna, 2007). In addition, panel data are more informative and efficient than pure time-series or pure cross-sectional datasets, and their econometric analysis better captures the complexity of economic behavior (Torres-Reyna, 2007). One drawback of the fixed-effects model is that it can only explain variations within a country and we may lose information from cross-country variations (Dunhaupt, 2013).

[12] Daniel, H: "Robust Standard Errors for Panel Regressions with Cross-Sectional Dependence", page 4.

In order to test the hypotheses postulated before, the unadjusted labor share of income and three adjusted indicators are estimated in levels in the following form:

$$Laborshare_{it} = \beta_1 + \beta_2 FO_{it} + ...\beta_k X_{k,it} + \gamma_2 E_2 + ...\gamma_n E_n + \delta_2 T_2 + ...\delta_n T_t + \varepsilon_{it}$$

Where *i* and *t* designate country and time period respectively. The dependent variable is the labor share of incomes. FO is financial openness measured by both de jure and de facto method and they are the key explanatory variables. For the rule based index, I use Kaopen index as a measurement of capital account openness. For outcome based index, I use both FO1 and FO2 as the indicators for financial openness. $X_{k,it}$ represent the set of control variables. β_k are the coefficients for these independent variables. ε_{it} is the error term. E_n is the entity n. γ_n is the coefficient for the binary country regressors, while δ_n is the coefficient for the binary time regressors. T_t is time as binary variables.

This paper employs all four dependent variables which are laborhshare1, laborshare2, and laborshare3 and laborshare4 respectively. The baseline specification for the sample with all countries as follows:

$$Laborshare1 = \beta_1 + \beta_2 Kaopen\_index + \beta_3 \log GDP + \beta_4 sqrt \log GDP + \beta_4 Trade\_Openness + \beta_5 Govshare + \beta_6 Unemrate + \beta_7 FDI\_in + \beta_8 Patent\_A + \beta_9 \log Pop + \beta_{10} Linear\_lamrig + \gamma_2 E_2 + ...\gamma_n E_n + \delta_2 T_2 + ...\delta_t T_t + \varepsilon_{it}$$

Where: laborshare1 is the unadjusted labor share of income, Kaopen_index is the de jure or rule-based index of capital account openness, log GDP is a proxy for economic development and its squared value which has been used to consider the possibility of decreasing return (Guerriero and Sen, 2012).

Trade_Openness reflects degrees of trade liberalization, Govshare is government expenditure relative to GDP and proxied for government intervention of their economies, Unemrate is unemployment rate, Patent_A is the total number of patent application per year by both countries' residents and countries' non-residents. Logpop is a proxy for the size of total labor workforce and linear_lamrig is the linear values of labor market regulations.

IV. Results

1. Estimation Results for De Jure Measure

The estimation results for the de jure index of capital account openness (Kaopen_index) are reported in Table I.9, Table I.10, Table I.11 and Table I.12 for four measures of labor income share: laborshare1, laborsahre2, laborshare3 and laborshare4 respectively. Each table includes nine columns. Column (1) considers the linkage of the dependent variables and financial openness level. Column (2) evaluates the partial impact of capital account openness on the labor share of income controlling for log GDP per capital and adding its squared value in Column (3) in order to consider the possibility of decreasing returns. I introduce trade openness, government share of GDP, unemployment rate, and the total number of patent applications in Column (4), (5), (6) and (7) respectively. Logpop as a proxy for the size of total labor workforce is added in Column (8). In Column (9), I introduce the full specification with the index of the rigidity of employment regulations (Linear_lamrig).

The results are generally consistent with the hypothesized relationships introduced in Table I.8, in almost all specification. As hypothesized, Kaopen_index has a negative and strongly significant impact on the labor share of income for both unadjusted and adjusted indicators. The results are consistent with the postulated hypothesis that a higher degree of financial openness leads to a

decrease in the national income share of labor. For instance, Table I-9 displays a negative effect of capital account openness measured by Kaopen_index on the unadjusted labor share of income in all specifications, and statistically significant negative effect in Column (1)-(6). These results are consistent with Jayadev (2007) utilized a different de jure measure of capital account openness constructed by Quinn (2007). A one percent increase in the capital account openness degree is associated with a decrease of one percent in the unadjusted labor share of income (Table I-9, Column 2-5).

A number of consistent results can also be seen in Table I.10, Table I.11 and Table I.12. The coefficient on Kaopen index is negative and significant across all specification of adjusted labor shares. A one percent increase in the degree of capital account openness leads to a decline of around one or two percent in the adjusted labor share of income, depending on the specification (Table I.10).

The coefficient on GDP per capita proxied for economic development seems to be positive and strongly significant across almost all the specifications of Table I.9. The results are also consistent with the postulated hypothesis and the previous studies (Jayadev, 2007, Guerriero and Sen, 2012). The consistent results can be explained by the similar use of the de jure financial openness and the unadjusted labor income share's measures. The full specification model (Column 9) in Table I.9 generates the highest coefficient which suggests that a one percent increase in GDP per capita leads to an increase of 8.85 percent in the labor share of income. Nevertheless, there is a negative and strongly significant correlation between GDP per capita and the all three adjusted labor share of income in every specification from Table I.10 to Table I.11 (except Column 2, Table I.10). Different measures of labor share of income results in different correlations between the income share going to labor and GDP per capita.

Table I.9, Table I.10, Table I.11 and Table I.12 display a strongly significant and negative effect of trade openness measured as the ratio of the sum of exports and imports volumes and GDP in all four measurements of labor share of income in all specifications, though the effect is small. In general, a one percent increase in trade openness results in a 0.05 percent decrease in the labor share of income (Table I.10 and Table I.11). The results are consistent with many previous studies (Harrison, 2002; Jayadev, 2007; Jaumotte & Tytell, 2007; Stockhammer, 2013), however their coefficients are higher[13] due to the different measures of trade liberalization. The negative effect is opposite to the positive result of Guerriero & Sen (2012).

As hypothesized, the government share of expenditures, as a percentage of GDP has a positive and highly significant effect on the unadjusted and adjusted labor share in almost all specifications. The results suggest that one percent increase in government activities, proxied by government expenditures, is associated to an expansion of around 0.05 percent in the unadjusted labor share (laborshare1, Column 6-9, Table I.9). Hence, whenever the government increases their expenditure the income share going to workers will increase. My results are consistent in both sign and magnitute with Jayadev (2007) and Harrison (2002).

As expected, the unemployment rate has negative and strongly significant effects on the labor share of income for all specifications (Table I.9 and Table I.12) in which the unadjusted labor share (laborshare1) and laborshare4 are the dependent variables. However, the effect is not big in size, a one percent increase in unemployment rate results in a 0.03 percent decline in the labor share of income. The results are associated with most of previous theoretical literature and empirical studies which indicated that the higher unemployment rate would be accompanied by a decrease in the

[13]For example, in the study of Javadev (2007), the estimation result show that one percentage point increase in trade openness is associated to a decrease of 2 percentage points in the labor share of income.

labor share of income. One reasonable explanation for this result is that higher unemployment rate weakens the labor's bargaining power relative to employers and thereby it would be more difficult for workers to bargain a higher wage rate while still remaining their employment status.

The increase of the numbers of total patent applications lead to a decrease in the labor share of income for both unadjusted and adjusted indicators. To put it differently, technological progress proxied by the number of total patent applications depress the labor income share. Since 1980s, the capital augmenting technological progress has caused a decline in the income share going to workers (Guerrieor & Sen, 2012, Dunhaupt, 2013). In my model, the numbers of total patent application have a negative and significant coefficient on the labor share of income which is in line with argument of Guerriero & Sen (2012) and Dunhaupt (2013) that the higher number of total patent applications leads to a substitution between labor and capital especially for unskilled labors. Consequently, the bargaining position of labor is weakened and leads to a decline in the labor share of income.

The coefficient of the size of economy proxied by log population is negative in Table I.11 and I.12 but is only significant in Table I.12 when we use laborshare4 as a measure of labor income share. However, I have seen positive but not significant coefficients on population when laborshare2 is the dependent variable.

Finally, as expected, the labor market regulation proxied by the lamrig index has a positive effect on the adjusted labor share of income: laborshare2, laborshare3 and laborshare4. However, the coefficient is only significant for laborshare4. The results suggest that greater regulation of labor market might influence the labor share of income positively, due to an increase in labor' bargaining power. The results are consistent with the study of Goetz and Rupashingha (2013) who show that

the greater regulation of labor markets is positively correlated to the rates of self-employment that might result in an increase in the labor share of income which does account for the earnings of the self-employed. However, the result is opposite but insignificant when the unadjusted labor share of income, which does not account for the earnings of the self-employed is the dependent variable. The ambiguous result reflects the debate on the effect of labor market regulation on the labor share of income.

Table I. 9. Results of Fixed Effect Regressions: Laborshare1, Kaopen Index

VARIABLES	(1) laborshare1	(2) laborshare1	(3) laborshare1	(4) laborshare1	(5) laborshare1	(6) laborshare1	(7) laborshare1	(8) laborshare1	(9) laborshare1
Kaopen_index	**-0.00847*** **	**-0.0116*** **	**-0.0126*** **	**-0.0128*** **	**-0.0131*** **	**-0.00602*** **	**-0.00291***	**-0.00288***	**-0.00302***
	(0.00119)	(0.00139)	(0.00145)	(0.00145)	(0.00145)	(0.00152)	(0.00162)	(0.00162)	(0.00163)
logGDPpcpt		**0.00583*** **	**0.0160*** **	**0.0205*** **	**0.0167*** **	**-0.0206*** **	**0.0879*** **	**0.0894*** **	**0.0885*** **
		(0.00141)	(0.00426)	(0.00472)	(0.00483)	(0.00629)	(0.0202)	(0.0204)	(0.0205)
sqrtlogGDPpcpt			**-0.000417*** *	**-0.000548*** **	**-0.000440*** *	**0.000708*** **	**-0.00522*** **	**-0.00523*** **	**-0.00519*** **
			(0.000164)	(0.000175)	(0.000177)	(0.000207)	(0.00108)	(0.00108)	(0.00109)
Trade_Openness				**-0.000124*** *	**-0.000114***	**-0.000121*** *	**-0.000102***	**-0.0000972***	-9.47e-05
				(5.97e-05)	(5.94e-05)	(5.54e-05)	(5.67e-05)	(5.76e-05)	(5.78e-05)
Govshare					**0.00236*** **	**0.00536*** **	**0.00557*** **	**0.00554*** **	**0.00555*** **
					(0.000698)	(0.000807)	(0.000825)	(0.000827)	(0.000827)
Unemrate						**-0.00259*** **	**-0.00292*** **	**-0.00290*** **	**-0.00290*** **
						(0.000518)	(0.000522)	(0.000524)	(0.000524)
Patent_A							**-0.00000006*** *	**-0.00000006*** *	**-0.00000006*** *
							(2.91e-08)	(2.91e-08)	(2.92e-08)
Logpop16_60								-0.00995	-0.00892
								(0.0194)	(0.0195)
Linear_lamrig									-0.00257
									(0.00388)
Constant	0.475***	0.425***	0.368***	0.349***	0.334***	0.540***	0.0480	0.0678	0.0727
	(0.00172)	(0.0123)	(0.0255)	(0.0270)	(0.0272)	(0.0387)	(0.0964)	(0.104)	(0.104)
Observations	1,037	1,037	1,037	1,031	1,031	795	709	709	709
R-squared	0.048	0.064	0.070	0.074	0.085	0.114	0.128	0.128	0.129
Number of Country_name1	30	30	30	30	30	30	29	29	29
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 10. Results of Fixed Effect Regressions: Laborshare2, Kaopen Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	**laborshare2**	**laborshare2**	**laborshare2**	**laborshare2**	**laborshare2**	**laborshare2**	**laborshare2**	**laborshare2**	**laborshare2**
Kaopen_index	**-0.0212*** **	**-0.0232*** **	**-0.0156*** **	**-0.0144*** **	**-0.0144*** **	**-0.0144*** **	**-0.0111*** **	**-0.0112*** **	**-0.0105*** **
	(0.00326)	(0.00344)	(0.00342)	(0.00337)	(0.00335)	(0.00339)	(0.00310)	(0.00311)	(0.00313)
logGDPpcpt		**0.00461***	**-0.113*** **	**-0.0851*** **	**-0.0867*** **	**-0.107*** **	**-0.382*** **	**-0.387*** **	**-0.393*** **
		(0.00258)	(0.0174)	(0.0185)	(0.0185)	(0.0212)	(0.0631)	(0.0635)	(0.0635)
sqrtlogGDPpcpt			**0.00360*** **	**0.00276*** **	**0.00280*** **	**0.00340*** **	**0.0173*** **	**0.0174*** **	**0.0178*** **
			(0.000529)	(0.000563)	(0.000560)	(0.000639)	(0.00329)	(0.00329)	(0.00329)
Trade_Openness				**-0.000514*** **	**-0.000510*** **	**-0.000483*** **	**-0.000449*** **	**-0.000483*** **	**-0.000472*** **
				(0.000128)	(0.000128)	(0.000128)	(0.000106)	(0.000118)	(0.000117)
Govshare					**0.00406** **	**0.00469** **	0.000682	0.000524	0.000618
					(0.00190)	(0.00206)	(0.00187)	(0.00189)	(0.00188)
Unemrate						-0.00161	0.000238	0.000263	0.000250
						(0.00110)	(0.000950)	(0.000952)	(0.000949)
Patent_A							**-0.00000035***	**-0.00000035***	**-0.0000004** **
							(2.00e-07)	(2.00e-07)	(2.02e-07)
Logpop16_60								0.0401	0.0299
								(0.0596)	(0.0598)
Linear_lamrig									0.0123
									(0.00772)
Constant	0.598***	0.557***	1.332***	1.192***	1.139***	1.274***	2.681***	2.603***	2.634***
	(0.00509)	(0.0235)	(0.116)	(0.120)	(0.122)	(0.138)	(0.304)	(0.325)	(0.325)
Observations	371	371	371	370	370	366	309	309	309
R-squared	0.109	0.118	0.222	0.257	0.267	0.280	0.436	0.437	0.442
Number of Country_name1	25	25	25	25	25	25	23	23	23
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 11. Results of Fixed Effect Regressions: Laborshare3, Kaopen Index

VARIABLES	(1) laborshare3	(2) laborshare3	(3) laborshare3	(4) laborshare3	(5) laborshare3	(6) laborshare3	(7) laborshare3	(8) laborshare3	(9) laborshare3
Kaopen_index	**-0.0204*** **	**-0.0218*** **	**-0.0145*** **	**-0.0130*** **	**-0.0130*** **	**-0.0134*** **	**-0.0114*** **	**-0.0113*** **	**-0.0109*** **
	(0.00311)	(0.00329)	(0.00321)	(0.00314)	(0.00313)	(0.00315)	(0.00294)	(0.00295)	(0.00297)
logGDPpcpt		0.00336	**-0.111*** **	**-0.0834*** **	**-0.0881*** **	**-0.0997*** **	**-0.270*** **	**-0.270*** **	**-0.272*** **
		(0.00246)	(0.0147)	(0.0154)	(0.0155)	(0.0177)	(0.0571)	(0.0572)	(0.0572)
sqrtlogGDPpcpt			**0.00355*** **	**0.00271*** **	**0.00285*** **	**0.00320*** **	**0.0117*** **	**0.0118*** **	**0.0119*** **
			(0.000451)	(0.000472)	(0.000474)	(0.000537)	(0.00298)	(0.00299)	(0.00299)
Trade_Openness				**-0.000593*** **	**-0.000581*** **	**-0.000564*** **	**-0.000569*** **	**-0.000550*** **	**-0.000543*** **
				(0.000119)	(0.000119)	(0.000119)	(9.99e-05)	(0.000111)	(0.000111)
Govshare					**0.00324** **	**0.00356** **	0.000806	0.000772	0.000826
					(0.00150)	(0.00164)	(0.00144)	(0.00144)	(0.00144)
Unemrate						-0.000943	0.000408	0.000408	0.000378
						(0.00100)	(0.000884)	(0.000885)	(0.000886)
Patent_A							-4.10e-09	1.97e-09	-2.33e-09
							(6.48e-08)	(6.67e-08)	(6.68e-08)
Logpop16_60								-0.0212	-0.0283
								(0.0539)	(0.0544)
Linear_lamrig									0.00717
									(0.00707)
Constant	0.641***	0.611***	1.366***	1.228***	1.207***	1.288***	2.169***	2.223***	2.241***
	(0.00501)	(0.0226)	(0.0981)	(0.0999)	(0.0999)	(0.113)	(0.272)	(0.306)	(0.307)
Observations	450	450	450	449	449	445	388	388	388
R-squared	0.092	0.096	0.213	0.257	0.266	0.277	0.404	0.405	0.406
Number of Country_name1	28	28	28	28	28	28	26	26	26
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 12. Results of Fixed Effect Regressions: Laborshare4, Kaopen Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	**laborshare4**	**laborshare4**	**laborshare4**	**laborshare4**	**laborshare4**	**laborshare4**	**laborshare4**	**laborshare4**	**laborshare4**
Kaopen_index	**-0.0258*****	**-0.0181*****	**-0.0175*****	**-0.0162*****	**-0.0163*****	**-0.0133*****	**-0.0111*****	**-0.0100*****	**-0.00957*****
	(0.00202)	(0.00219)	(0.00223)	(0.00218)	(0.00219)	(0.00257)	(0.00269)	(0.00268)	(0.00268)
logGDPpcpt		**-0.0238*****	**-0.0831***	**-0.178*****	**-0.177*****	**-0.395*****	**-0.456*****	**-0.439*****	**-0.451*****
		(0.00328)	(0.0492)	(0.0545)	(0.0545)	(0.0702)	(0.0696)	(0.0691)	(0.0691)
sqrtlogGDPpcpt			0.00305	**0.00847*****	**0.00839*****	**0.0189*****	**0.0221*****	**0.0216*****	**0.0222*****
			(0.00253)	(0.00282)	(0.00283)	(0.00358)	(0.00357)	(0.00353)	(0.00353)
Trade_Openness				**-0.00116*****	**-0.00116*****	**-0.00146*****	**-0.00143*****	**-0.00126*****	**-0.00130*****
				(0.000197)	(0.000198)	(0.000215)	(0.000205)	(0.000211)	(0.000211)
Govshare					0.000578	-0.000184	-7.15e-05	-0.000426	-0.000500
					(0.00102)	(0.00131)	(0.00130)	(0.00129)	(0.00129)
Unemrate						**-0.00278*****	**-0.00255*****	**-0.00252*****	**-0.00259*****
						(0.000931)	(0.000934)	(0.000924)	(0.000921)
Patent_A							-1.12e-08	3.67e-08	2.32e-08
							(4.06e-08)	(4.33e-08)	(4.37e-08)
Logpop16_60								**-0.123*****	**-0.126*****
								(0.0419)	(0.0417)
Linear_lamrig									**0.0118***
									(0.00613)
Constant	0.598***	0.816***	1.100***	1.568***	1.555***	2.722***	3.015***	3.330***	3.389***
	(0.00326)	(0.0303)	(0.237)	(0.264)	(0.265)	(0.349)	(0.346)	(0.359)	(0.359)
Observations	482	482	482	476	476	412	369	369	369
R-squared	0.261	0.336	0.338	0.380	0.380	0.397	0.414	0.428	0.434
Number of Country_name1	19	19	19	19	19	19	17	17	17
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

2. Estimation Results for De Facto Measures

De facto measures of capital account openness are now preferred to de jure measures because they reflect actual volume of capital movement (Quinn et al, 2011). In this section, I introduce the estimation results of de facto measures of financial openness in Table I.13 – Table I.16 for FO1 and Table I.17 – Table I.20 for FO2. The benchmark specification for each column is chosen by the results of pre-testing and extensive experimentation. I report here the most consistent and significant results.

Interestingly, capital account openness, measured by both the sum of country's aggregate external assets and liabilities as a ratio to gross domestic product (FO1) and the percentage of the sum of foreign portfolio equity assets, foreign portfolio equity liabilities, FDI assets and FDI liabilities relative to GDP (FO2), have a negative and statistically significant but not strong economic influence on the labor share of income. A one percent increase in the degree of FO1 is associated with a decline of 0.01 percent in the unadjusted labor share of income (Column 1-9, Table I.13), while a one percent increase in the degree of FO2 results in a decrease of 0.04 percent in the unadjusted labor share of income (Column 1-4, Table I.17)

Similarly, when using de facto measures, GDP per capita has a positive but insignificant effect on the unadjusted labor share of income (laborshare1) but has a negative influence on the adjusted labor share of income. The alternative use of laborshare2, laborshare3 and laborshare4 as the dependent variables generates their positive and strongly significant on economic development proxied by GDP per capita for both de facto measures of financial openness: FO1 and FO2. The full specification' results in Table I.14, Column (6) indicates that a one percentage point increases

in GDP per capita is associated to a decrease of 0.444 percentage point in the adjusted labor share of income (laborshare2).

The correlations of trade openness and the labor share of income are negative and strongly significant in almost all specifications from Table I.13 to Table I.20. While the coefficient on unemployment rate is negative in all specification it is only significant when laborshare1 and laborshare4 are used as the dependent variables. The number of total patent applications are also negatively correlated to the labor share of income. However, the effect of government expenditure relative to GDP proxy for government activities is ambiguous depending on which measure is used. The effect is positive and significant for laborshare1 and laborshare4 but is negative and not significant when the dependent variables are laborshare2 and laborshare3 respectively. The effect of the size of total labor workforce and the flexibility of labor market is insignificant when FO1 and FO2 are employed as the measure of capital account openness.

Table I. 13. Results of Fixed Effect regressions: Laborhshare1, FO1

VARIABLES	(1) laborshare1	(2) laborshare1	(3) laborshare1	(4) laborshare1	(5) laborshare1	(6) laborshare1	(7) laborshare1	(8) laborshare1
FO1	**-0.00180*** **	**-0.00201*** **	**-0.00211*** **	**-0.00202*** **	**-0.00191*** **	-0.000824	**-0.00126** **	**-0.00127** **
	(0.000489)	(0.000541)	(0.000562)	(0.000642)	(0.000643)	(0.000584)	(0.000612)	(0.000612)
logGDP		0.00123	0.00411	0.00491	0.00187	-0.00197	**-0.00883** **	**-0.00907** **
		(0.00141)	(0.00445)	(0.00471)	(0.00489)	(0.00150)	(0.00393)	(0.00395)
sqrtlogGDP			-0.000118	-0.000143	-5.79e-05			
			(0.000173)	(0.000179)	(0.000183)			
Trade_Openness				-2.75e-05	-2.21e-05	**-0.000200*** **	-7.89e-05	-7.61e-05
				(7.69e-05)	(7.68e-05)	(6.54e-05)	(6.72e-05)	(6.75e-05)
Govshare					**0.00167** **	**0.00477*** **	**0.00509*** **	**0.00509*** **
					(0.000752)	(0.000843)	(0.000862)	(0.000862)
Unemrate						**-0.00253*** **	**-0.00307*** **	**-0.00308*** **
						(0.000538)	(0.000550)	(0.000551)
Patent_A							-4.46e-08	-4.29e-08
							(3.03e-08)	(3.04e-08)
Logpop16_60							0.00162	0.00261
							(0.0207)	(0.0208)
Linear_lamrig								-0.00225
								(0.00400)
Constant	0.471***	0.460***	0.444***	0.442***	0.434***	0.495***	0.492***	0.494***
	(0.00169)	(0.0125)	(0.0267)	(0.0271)	(0.0273)	(0.0268)	(0.0519)	(0.0520)
Observations	995	995	995	991	991	686	686	686
R-squared	0.014	0.015	0.015	0.015	0.021	0.103	0.103	0.103
Number of Country_name1	30	30	30	30	30	29	29	29
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 14. Results of Fixed Effect regressions: Laborhshare2, FO1

VARIABLES	(1) laborshare2	(2) laborshare2	(3) laborshare2	(4) laborshare2	(5) laborshare2	(6) laborshare2
FO1	**-0.00287*** **	**-0.00289*** **	0.000536	-0.000625	-0.000780	-0.000862
	(0.00100)	(0.00102)	(0.00103)	(0.00114)	(0.00117)	(0.00116)
logGDPpcpt		0.000197	**-0.146*** **	**-0.427*** **	**-0.435*** **	**-0.444*** **
		(0.00260)	(0.0185)	(0.0711)	(0.0725)	(0.0722)
sqrtlogGDPpcpt			**0.00451*** **	**0.0192*** **	**0.0194*** **	**0.0200*** **
			(0.000567)	(0.00378)	(0.00381)	(0.00380)
Trade_Openness				**-0.000453*** **	**-0.000479*** **	**-0.000459*** **
				(0.000122)	(0.000129)	(0.000128)
Govshare				0.00116	0.00102	0.00110
				(0.00191)	(0.00192)	(0.00191)
Unemrate				-0.000214	-0.000214	-0.000209
				(0.000977)	(0.000978)	(0.000972)
Patent_A				-2.98e-07	-3.00e-07	-3.77e-07*
				(2.04e-07)	(2.05e-07)	(2.07e-07)
Logpop16_60					0.0387	0.0271
					(0.0623)	(0.0622)
Linear_lamrig						0.0162**
						(0.00779)
Constant	0.578***	0.577***	1.542***	2.914***	2.859***	2.892***
	(0.00409)	(0.0246)	(0.123)	(0.335)	(0.347)	(0.345)
Observations	371	371	371	309	309	309
R-squared	0.023	0.023	0.146	0.411	0.411	0.420
Number of Country_name1	25	25	25	23	23	23
Fe	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 15. Results of Fixed Effect regressions: Laborhshare3, FO1

VARIABLES	(1) laborshare3	(2) laborshare3	(3) laborshare3	(4) laborshare3	(5) laborshare3	(6) laborshare3
FO1	**-0.00340*** **	**-0.00337*** **	-8.87e-05	0.000108	0.000199	0.000159
	(0.000928)	(0.000945)	(0.000954)	(0.00108)	(0.00110)	(0.00110)
logGDPpcpt		-0.000349	**-0.133*** **	**-0.296*** **	**-0.292*** **	**-0.295*** **
		(0.00245)	(0.0157)	(0.0644)	(0.0649)	(0.0648)
sqrtlogGDPpcpt			**0.00412*** **	**0.0126*** **	**0.0125*** **	**0.0127*** **
			(0.000483)	(0.00343)	(0.00344)	(0.00344)
Trade_Openness				**-0.000613*** **	**-0.000591*** **	**-0.000577*** **
				(0.000115)	(0.000122)	(0.000122)
Govshare				0.00103	0.000973	0.00104
				(0.00147)	(0.00147)	(0.00147)
Unemrate				0.000199	0.000213	0.000175
				(0.000912)	(0.000914)	(0.000912)
Patent_A				2.64e-08	3.57e-08	2.72e-08
				(6.64e-08)	(6.87e-08)	(6.88e-08)
Logpop16_60					-0.0297	-0.0395
					(0.0557)	(0.0560)
Linear_lamrig						0.0105
						(0.00715)
Constant	0.622***	0.625***	1.499***	2.314***	2.380***	2.401***
	(0.00360)	(0.0233)	(0.105)	(0.301)	(0.326)	(0.325)
Observations	450	450	450	388	388	388
R-squared	0.031	0.031	0.174	0.379	0.380	0.384
Number of Country_name1	28	28	28	26	26	26
Fe	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 16. Results of Fixed Effect regressions: Laborhshare4, FO1

VARIABLES	(1) laborshare4	(2) laborshare4	(3) laborshare4	(4) laborshare4	(5) laborshare4	(6) laborshare4
FO1	**-0.00886*** **	-0.000910	**-0.00290***	**0.00311***	**0.00330***	**0.00348***
	(0.00122)	(0.00145)	(0.00171)	(0.00185)	(0.00182)	(0.00181)
logGDPpcpt		**-0.0363*** **	**-0.173*** **	**-0.449*** **	**-0.420*** **	**-0.427*** **
		(0.00418)	(0.0627)	(0.0785)	(0.0777)	(0.0775)
sqrtlogGDPpcpt			**0.00731** **	**0.0210*** **	**0.0200*** **	**0.0204*** **
			(0.00334)	(0.00411)	(0.00405)	(0.00404)
Trade_Openness				**-0.00183*** **	**-0.00161*** **	**-0.00164*** **
				(0.000250)	(0.000254)	(0.000254)
Govshare				-0.000575	-0.00119	-0.00131
				(0.00144)	(0.00143)	(0.00142)
Unemrate				**-0.00371*** **	**-0.00343*** **	**-0.00343*** **
				(0.000915)	(0.000904)	(0.000900)
Patent_A				3.02e-08	**8.85e-08***	7.27e-08
				(4.40e-08)	(4.66e-08)	(4.71e-08)
Logpop16_60					**-0.150*** **	**-0.154*** **
					(0.0439)	(0.0438)
Linear_lamrig						**0.0126** **
						(0.00636)
Constant	0.581***	0.913***	1.552***	3.064***	3.409***	3.450***
	(0.00317)	(0.0383)	(0.294)	(0.381)	(0.389)	(0.388)
Observations	457	457	457	356	356	356
R-squared	0.108	0.239	0.248	0.388	0.409	0.416
Number of Country_name1	19	19	19	17	17	17
Fe	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 17. Results of Fixed Effect regressions: Laborhshare1, FO2

VARIABLES	(1) laborshare1	(2) laborshare1	(3) laborshare1	(4) laborshare1	(5) laborshare1	(6) laborshare1
FO2	**-0.00402*** **	**-0.00434*** **	**-0.00452*** **	**-0.00520*** **	0.00253	0.00252
	(0.00112)	(0.00122)	(0.00125)	(0.00175)	(0.00177)	(0.00177)
logGDPpcpt		0.000948	0.00329	0.00280	**0.0932*** **	**0.0928*** **
		(0.00139)	(0.00440)	(0.00464)	(0.0237)	(0.0238)
sqrtlogGDPpcpt			-9.62e-05	-7.94e-05	**-0.00528*** **	**-0.00526*** **
			(0.000172)	(0.000179)	(0.00127)	(0.00127)
Trade_Openness				5.00e-05	**-0.000231*** **	**-0.000230*** **
				(9.37e-05)	(8.77e-05)	(8.80e-05)
Unemrate					**-0.00145*** **	**-0.00145*** **
					(0.000489)	(0.000489)
Patent_A					**-6.51e-08** **	**-6.46e-08** **
					(3.09e-08)	(3.11e-08)
Logpop16_60					-0.0193	-0.0190
					(0.0211)	(0.0211)
Linear_lamrig						-0.000627
						(0.00407)
Constant	0.470***	0.462***	0.448***	0.449***	0.155	0.157
	(0.00151)	(0.0124)	(0.0264)	(0.0267)	(0.112)	(0.112)
Observations	995	995	995	991	686	686
R-squared	0.013	0.014	0.014	0.014	0.075	0.075
Number of Country_name1	30	30	30	30	29	29
Fe	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 18. Results of Fixed Effect regressions: Laborhshare2, FO2

VARIABLES	(1) laborshare2	(2) laborshare2	(3) laborshare2	(4) laborshare2	(5) laborshare2	(6) laborshare2
FO2	**-0.00780*** **	**-0.00784*** **	-0.000699	**0.00967*** **	0.00355	0.00304
	(0.00239)	(0.00242)	(0.00242)	(0.00302)	(0.00272)	(0.00274)
logGDPpcpt		0.000254	**-0.140*** **	**-0.140*** **	**-0.376*** **	**-0.389*** **
		(0.00259)	(0.0182)	(0.0204)	(0.0689)	(0.0695)
sqrtlogGDPpcpt			**0.00433*** **	**0.00432*** **	**0.0164*** **	**0.0171*** **
			(0.000557)	(0.000622)	(0.00363)	(0.00364)
Trade_Openness				**-0.000872*** **	**-0.000610*** **	**-0.000596*** **
				(0.000168)	(0.000144)	(0.000151)
Govshare				**0.00537** **	0.00122	0.00119
				(0.00208)	(0.00190)	(0.00191)
Unemrate				**-0.00184***	-5.77e-05	-4.21e-05
				(0.00111)	(0.000965)	(0.000962)
Patent_A					-2.78e-07	**-3.50e-07***
					(2.03e-07)	(2.06e-07)
Logpop16_60						0.0109
						(0.0610)
Linear_lamrig						**0.0154** **
						(0.00780)
Constant	0.578***	0.576***	1.502***	1.506***	2.696***	2.699***
	(0.00375)	(0.0245)	(0.121)	(0.134)	(0.326)	(0.341)
Observations	371	371	371	366	309	309
R-squared	0.030	0.030	0.175	0.264	0.413	0.422
Number of Country_name1	25	25	25	25	23	23
Fe	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 19. Results of Fixed Effect regressions: Laborhshare3, FO2

VARIABLES	(1) laborshare3	(2) laborshare3	(3) laborshare3	(4) laborshare3	(5) laborshare3	(6) laborshare3
FO2	**-0.00979*** **	**-0.00976*** **	-0.00283	**0.00832*** **	0.00388	0.00376
	(0.00224)	(0.00227)	(0.00227)	(0.00286)	(0.00262)	(0.00264)
logGDPpcpt		-0.000187	**-0.126*** **	**-0.125*** **	**-0.266*** **	**-0.267*** **
		(0.00243)	(0.0154)	(0.0173)	(0.0618)	(0.0620)
sqrtlogGDPpcpt			**0.00392*** **	**0.00387*** **	**0.0109*** **	**0.0112*** **
			(0.000475)	(0.000529)	(0.00327)	(0.00327)
Trade_Openness				**-0.000905*** **	**-0.000742*** **	**-0.000696*** **
				(0.000156)	(0.000136)	(0.000143)
Govshare				**0.00408** **	0.00113	0.00113
				(0.00166)	(0.00146)	(0.00146)
Unemrate				-0.00100	0.000275	0.000243
				(0.00102)	(0.000900)	(0.000900)
Patent_A					3.40e-08	3.61e-08
					(6.57e-08)	(6.79e-08)
Logpop16_60						-0.0439
						(0.0553)
Linear_lamrig						0.00986
						(0.00714)
Constant	0.622***	0.624***	1.455***	1.460***	2.185***	2.294***
	(0.00329)	(0.0231)	(0.103)	(0.111)	(0.290)	(0.320)
Observations	450	450	450	445	388	388
R-squared	0.044	0.044	0.177	0.260	0.383	0.387
Number of Country_name1	28	28	28	28	26	26
Fe	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 20. Results of Fixed Effect regressions: Laborhshare4, FO2

VARIABLES	(1) laborshare4	(2) laborshare4	(3) laborshare4	(4) laborshare4	(5) laborshare4	(6) laborshare4
FO2	**-0.0315*** **	**-0.0123*** **	**-0.0200*** **	0.00134	-0.00322	-0.00124
	(0.00342)	**(0.00417)**	**(0.00470)**	(0.00586)	(0.00547)	(0.00540)
logGDPpcpt		**-0.0303*** **	**-0.233*** **	**-0.451*** **	**-0.502*** **	**-0.480*** **
		(0.00414)	(0.0597)	(0.0757)	(0.0756)	(0.0749)
sqrtlogGDPpcpt			**0.0108*** **	**0.0212*** **	**0.0240*** **	**0.0234*** **
			(0.00317)	(0.00393)	(0.00394)	(0.00389)
Trade_Openness				**-0.00176*** **	**-0.00155*** **	**-0.00139*** **
				(0.000286)	(0.000272)	(0.000274)
Govshare				-4.65e-05	-8.01e-05	-0.000729
				(0.00142)	(0.00141)	(0.00140)
Unemrate				**-0.00460*** **	**-0.00402*** **	**-0.00374*** **
				(0.000908)	(0.000910)	(0.000897)
Patent_A					1.54e-08	5.77e-08
					(4.38e-08)	(4.70e-08)
Logpop16_60						**-0.150*** **
						(0.0441)
Linear_lamrig						**0.0119***
						(0.00641)
Constant	0.584***	0.862***	1.809***	3.057***	3.273***	3.651***
	(0.00299)	(0.0380)	(0.281)	(0.371)	(0.371)	(0.379)
Observations	457	457	457	399	356	356
R-squared	0.162	0.254	0.273	0.355	0.384	0.409
Number of Country_name1	19	19	19	19	17	17
Fe	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

3. The Results for Developing and Developed Countries

The results of a fixed effect model for two panels: developing and developed countries are reported in Table I.21, Table I.22 and Table I.23. Table I.21 displays the results for the de jure measure of financial openness and Table I.22, Table I.23 display the results for de facto measures. The country classifications are based on the World Economic Situation and Prospects 2014[14].

The coefficient on Kaopen index is still negative and strongly significant in most measures of the adjusted labor share of income for both developing and developed countries however the effect is stronger in developing countries than in developed countries. GDP per capita has a positive effect on the unadjusted labor share while it has a negative effect on the adjusted labor share of income for both developing and developed countries. Trade liberalization has similar negative and significant effects on the national income share in both developing and developed countries. However, the coefficient on government spending, technological progress, population and labor market regulations are more ambiguous, varying between positive and negative depending on the measures of financial openness and the measure of the labor share of income used.

The most important results are reported in Table I.21, Table I.22 and Table I.23. While the capital account openness measured by the de jure Kaopen index is negatively driving the labor share of income in both developing and developed countries. I see different results between two countries samples when financial openness is measured by de facto FO1 and FO2. It seems that the financial openness leads to a small increase in adjusted labor share in developing countries while the higher level of capital account openness is negatively correlated to the share of labor in the developed countries. Therefore, developing countries with an abundance of low cost of labor would gain from

[14] See Table A.I.1 (Appendices): There are 30 countries in the whole sample including 15 developing countries and 15 developed countries.

capital inflows while the bargaining power of labor in developed countries with the threat of capital relocating abroad is weakened and results in a decrease in their labor income share.

The relationship between unemployment rate and the labor share of income is also different for the developing and developed countries. In all three tables, unemployment rate is positively but not significantly related to the labor share of income in the developing countries while it is negatively and significantly related in developed countries. We can link these results to the story of self-employment in developing countries. Numerous studies show that the ratio of self-employment is higher than the ratio of paid employees in developing countries (Le, 1999; Blanchflower, 2000). On the one hand, unemployment rate plays a crucial role in driving the propensity to be self-employed and on the other hand, self-employment is considered as a possible strategy to reduce unemployment and poverty. The higher of unemployment rate leads to a higher rate of the self-employed then results in an increase in the adjusted labor share of income in developing countries.

Table I. 21. Results of Developing and Developed Countries Panels: Laborshare1, Laborshare2, Laborshare3, Laborshare4 and Kaopen Index

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	laborshare1	laborshare1	laborshare2	laborshare2	laborshare3	laborshare3	laborshare4	laborshare4
	Devloping	Developed	Devloping	Developed	Devloping	Developed	Devloping	Developed
Kaopen_index	-0.00236	0.000123	-0.00763	**-0.0166*** **	**-0.00895***	**-0.0157*** **	**-0.0135** **	**-0.00527** **
	(0.00276)	(0.00192)	(0.00490)	(0.00389)	(0.00487)	(0.00391)	(0.00550)	(0.00232)
logGDPpcpt	-0.0216	**0.199*** **	**-0.476*** **	-0.0603	**-0.495*** **	0.163	**-1.096** **	**-0.667*** **
	(0.0420)	(0.0592)	(0.164)	(0.163)	(0.165)	(0.167)	(0.460)	(0.104)
sqrtlogGDPpcpt	0.00346	**-0.0109*** **	**0.0227** **	0.00277	**0.0248** **	-0.00842	**0.0655** **	**0.0315*** **
	(0.00245)	(0.00301)	(0.00966)	(0.00793)	(0.00975)	(0.00809)	(0.0270)	(0.00524)
Trade_Openness	-3.83e-05	**-0.000701*** **	-0.000218	**-0.00126*** **	**-0.000345** **	**-0.00141*** **	**0.00281** **	**-0.00148*** **
	(8.30e-05)	(0.000105)	(0.000168)	(0.000201)	(0.000169)	(0.000179)	(0.00115)	(0.000139)
Unemrate	0.00213	**0.00637*** **	**-0.00875** **	**0.00533*** **	**-0.00824** **	-0.000461	**-0.00894*** **	**0.00296*** **
	(0.00161)	(0.000736)	(0.00387)	(0.00183)	(0.00322)	(0.00135)	(0.00314)	(0.000908)
Govshare	0.000453	**-0.00452*** **	**0.00615** **	**-0.00170** **	**0.00586** **	-0.000776	0.00286	**-0.00356*** **
	(0.00132)	(0.000397)	(0.00288)	(0.000677)	(0.00263)	(0.000672)	(0.00252)	(0.000621)
Patent_A	**-2.86e-07*** **	2.79e-08	4.55e-07	**-8.70e-07*** **	4.94e-07	2.94e-08	**7.84e-06*** **	-3.44e-08
	(7.02e-08)	(2.51e-08)	(5.18e-07)	(1.57e-07)	(3.01e-07)	(4.88e-08)	(2.67e-06)	(2.58e-08)
Logpop16_60	**-0.129*** **	-0.0195	-0.0158	**-0.205*** **	-0.0220	**-0.162*** **	**-0.952*** **	**0.0977*** **
	(0.0357)	(0.0252)	(0.0861)	(0.0688)	(0.0894)	(0.0610)	(0.135)	(0.0340)
Linear_lamrig	-0.0132	0.00127	**0.0569*** **	-0.00698	**0.0549*** **	**-0.0127** **	0.00968	**0.00735** *
	(0.00851)	(0.00317)	(0.0163)	(0.00553)	(0.0160)	(0.00553)	(0.0247)	(0.00376)
Constant	0.769***	-0.372	3.053***	1.545*	3.130***	0.496	8.862***	3.799***
	(0.208)	(0.321)	(0.683)	(0.850)	(0.690)	(0.853)	(2.045)	(0.570)
Observations	277	432	128	181	142	246	82	287
R-squared	0.108	0.465	0.526	0.719	0.477	0.629	0.642	0.665
Number of Country_name1	14	15	11	12	11	15	6	11
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country_code	1	2	1	2	1	2	1	2

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 22. Results of Developing and Developed Countries Panels: Laborshare1, Laborshare2, Laborshare3, Laborshare4 and FO1

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	laborshare1	**laborshare1**	**laborshare2**	**laborshare2**	**laborshare3**	**laborshare3**	**laborshare4**	**laborshare4**
	Developing	**Developed**	**Developing**	**Developed**	**Developing**	**Developed**	**Developing**	**Developed**
FO1	0.000575	**0.00118****	**0.00456***	**0.00456***	**0.00550****	-0.000536	**0.0927*****	**0.00388*****
	(0.00146)	(0.000594)	(0.00239)	(0.00239)	(0.00247)	(0.000871)	(0.0250)	(0.000993)
logGDPpcpt	-0.00643	0.240***	-0.399**	-0.399**	-0.388**	-0.148	-1.172**	-0.815***
	(0.0497)	(0.0569)	(0.164)	(0.164)	(0.164)	(0.171)	(0.518)	(0.0929)
sqrtlogGDPpcpt	0.00248	-0.0131***	0.0180*	0.0180*	0.0183*	0.00676	0.0740**	0.0386***
	(0.00288)	(0.00294)	(0.00962)	(0.00962)	(0.00962)	(0.00834)	(0.0307)	(0.00473)
Trade_Openness	-7.02e-05	-0.000828***	-0.000377*	-0.000377*	-0.000524***	-0.00176***	0.00297***	-0.00204***
	(9.93e-05)	(0.000110)	(0.000193)	(0.000193)	(0.000194)	(0.000167)	(0.00107)	(0.000158)
Govshare	0.00207	0.00611***	-0.00819**	-0.00819**	-0.00854***	-0.00104	-0.0129***	0.00125
	(0.00172)	(0.000757)	(0.00381)	(0.00381)	(0.00320)	(0.00140)	(0.00316)	(0.000954)
Unemrate	0.000376	-0.00451***	0.00536*	0.00536*	0.00545**	-0.00108	0.00130	-0.00327***
	(0.00136)	(0.000417)	(0.00280)	(0.00280)	(0.00260)	(0.000720)	(0.00252)	(0.000588)
Patent_A	-2.93e-07***	3.93e-08	6.29e-07	6.29e-07	6.38e-07**	2.95e-08	7.31e-06***	-1.16e-08
	(7.18e-08)	(2.63e-08)	(5.08e-07)	(5.08e-07)	(2.91e-07)	(5.18e-08)	(2.53e-06)	(2.56e-08)
Logpop16_60	-0.126***	-0.0301	-0.0612	-0.0612	-0.0780	-0.151**	-1.457***	0.0671**
	(0.0392)	(0.0256)	(0.0867)	(0.0867)	(0.0897)	(0.0637)	(0.161)	(0.0318)
Linear_lamrig	-0.0127	0.00145	0.0562***	0.0562***	0.0541***	-0.00735	0.00356	0.00795**
	(0.00869)	(0.00315)	(0.0162)	(0.0162)	(0.0159)	(0.00555)	(0.0231)	(0.00363)
Constant	0.704***	-0.519*	2.885***	2.885***	2.881***	2.047**	10.96***	4.720***
	(0.224)	(0.305)	(0.683)	(0.683)	(0.688)	(0.861)	(2.277)	(0.495)
Observations	268	418	128	128	142	246	80	276
R-squared	0.103	0.491	0.532	0.532	0.484	0.603	0.692	0.699
Number of Country_name1	14	15	11	12	11	15	6	11
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country_code	1	2	1	2	1	2	1	2

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table I. 23. Results of Developing and Developed Countries Panels: Laborshare1, Laborshare2, Laborshare3, Laborshare4 and FO2

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	laborshare1	laborshare1	laborshare2	laborshare2	laborshare3	laborshare3	laborshare4	laborshare4
	Developing	Developed	Developing	Developed	Developing	Developed	Developing	Developed
FO2	0.00300	-0.00292	**0.00963****	**-0.00650*****	**0.0110****	**-0.00794*****	**0.255*****	0.00269
	(0.00292)	(0.00184)	(0.00428)	(0.00246)	(0.00443)	(0.00250)	(0.0680)	(0.00313)
logGDPpcpt	0.00963	0.189***	-0.380**	-0.468***	-0.362**	-0.254	-0.924*	-0.840***
	(0.0502)	(0.0561)	(0.164)	(0.159)	(0.165)	(0.161)	(0.501)	(0.0967)
sqrtlogGDPpcpt	0.00149	-0.0103***	0.0165*	0.0229***	0.0164*	0.0121	0.0574*	0.0401***
	(0.00295)	(0.00289)	(0.00964)	(0.00776)	(0.00970)	(0.00784)	(0.0295)	(0.00490)
Trade_Openness	-0.000149	-0.000643***	-0.000543**	-0.00161***	-0.000696***	-0.00157***	0.00381***	-0.00185***
	(0.000129)	(0.000116)	(0.000229)	(0.000179)	(0.000230)	(0.000170)	(0.00106)	(0.000182)
Govshare	0.00219	0.00611***	-0.00729*	0.00320*	-0.00782**	-0.00134	-0.0138***	0.00226**
	(0.00170)	(0.000760)	(0.00379)	(0.00187)	(0.00319)	(0.00136)	(0.00318)	(0.000942)
Unemrate	0.000172	-0.00493***	0.00428	-0.00220***	0.00444*	-0.00141**	0.00323	-0.00373***
	(0.00137)	(0.000407)	(0.00281)	(0.000702)	(0.00261)	(0.000693)	(0.00243)	(0.000598)
Patent_A	-2.91e-07***	2.83e-08	6.57e-07	-7.18e-07***	6.75e-07**	6.33e-09	5.93e-06**	-2.24e-08
	(7.10e-08)	(2.64e-08)	(5.05e-07)	(1.58e-07)	(2.91e-07)	(5.03e-08)	(2.59e-06)	(2.62e-08)
Logpop16_60	-0.125***	-0.0331	-0.0192	-0.168**	-0.0292	-0.121*	-1.620***	0.0704**
	(0.0370)	(0.0256)	(0.0848)	(0.0736)	(0.0879)	(0.0628)	(0.189)	(0.0331)
Linear_lamrig	-0.0128	0.00154	0.0525***	-0.00236	0.0502***	-0.00709	0.0175	0.00747**
	(0.00866)	(0.00316)	(0.0161)	(0.00560)	(0.0159)	(0.00544)	(0.0230)	(0.00375)
Constant	0.645***	-0.286	2.724***	3.523***	2.671***	2.474***	10.68***	4.786***
	(0.230)	(0.300)	(0.689)	(0.813)	(0.697)	(0.815)	(2.241)	(0.520)
Observations	268	418	128	181	142	246	80	276
R-squared	0.106	0.489	0.538	0.700	0.488	0.620	0.693	0.682
Number of Country_name1	14	15	11	12	11	15	6	11
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country_code	1	2	1	2	1	2	1	2

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

V. Robustness Checks

1. OLS Estimations

In order to check for the robustness of the negative effect of the opening of financial markets on the labor share of income, I use an alternative econometric model, which is an OLS regression (based on the diagnostic tests, OLS is the appropriate estimation method). The dependent variables are still the four indicators of the labor share of income which are laborshare1, laborshare2, laborshare3 and laborshare4. I also run the OLS regression for all three financial openness indices included Kaopen_index, FO1 and FO2 for both developed and developing countries. Since OLS assumes that errors are both independent and identically distributed, robust standard errors have been used to relax either or both of those assumption and to avoid bias of standard errors caused by heteroskedascity.

The estimations of Table A.I.2, A.I.3 and A.I.4 in appendix demonstrate the results of OLS estimations for all four dependent variables using Kaopen index, FO1 and FO2 respectively as proxies for capital account openness. We have seen significant and negative correlations between all four dependent variables: laborshare1, laborshare2, laborshare3, laborshare4 and capital account mobility for all three proxies.

The OLS estimations for the adjusted labor share of income (laborshare2) is the preferred model. The uses of alternative measurements of both dependent variables and the proxies of financial openness lead to the similar results which suggest that the hypotheses are robust.

Table A.I.5, Table A.I.6 and Table A.I.7 in appendix display the results of conditional OLS regressions for both developing and developed countries. Interestingly, we see some specification with positive relationships between capital account openness and the labor share of income in

developing while the correlations are negative and significant for developed countries such as in column (2), (4) of Table A.I.6, and columns (2), (4), (6) and (8) in Table A.I.7 whenever I use de facto measures of financial openness. The results of OLS estimations are consistent with the fixed effect regressions. The results, once again, support the idea that the labor share in developing countries increases during financial liberalization. They also suggest that the actual measures used have a strong impact on the conclusions of empirical studies.

2. Self-employed Income and Capital Account Openness

One explanation of the effect of capital account openness on the labor share of income in developed and developing countries is the role of self-employment. To investigate the robustness of the negative effect of capital account openness on the labor share of income, I employ the fixed effect regression of Kaopen index and self-employed income for whole sample and for two panels: developing and developing countries as well. The measure of the income share of the self-employed is generated based on the laborshare2's adjustment and is as follows:

$$Selfincome = \frac{\frac{Compen\_employees * \sum Self\_employed}{\sum Employees}}{Gross\_value\_added}$$

$$\Rightarrow Selfincome = \frac{\frac{Compen\_employees * (\sum Total\_workforces - \sum Employees - \sum Employers)}{\sum Employees}}{Gross\_value\_added}$$

Table A.I.8 in the appendix displays positive and strongly significant effects of financial openness measured by the de facto measure (FO2) on the national income share of self-employed workers. The results suggest that the higher degree of capital account openness leads to an increase in the self-employed income share. The positive effect is consistent with the negative effect of capital

account openness on the national labor share of income. As documented in the previous section, capital account openness generates more chances to relocate the production to low cost countries and weakens the bargaining power of labor while increasing unemployment. Therefore, employees of the formal sector are laid off and self-employment increases, leading to an increase in the share of self-employed workers. What is noteworthy is that this increase in the share of self-employed workers does not reverse the impact of capital account openness on reducing the share of income going to labor, even when the earnings of self-employed are included.

The impact of capital account openness on increasing the share of income going to self-employed workers is greater in developing countries compared to developed countries (see Table A.I.9 in appendix). This result is consistent with the opposite effects of the national income share going to labor in the previous section whenever FO1 and FO2 are used to measure for financial openness.

3. The correlation of Capital Account Openness and Unemployment Rate

An alternative way to check the robustness of the negative correlation of financial integration and the labor share of income is to investigate the influence of capital account openness on unemployment rate. Positive and strongly significant effects of Kaopen index on unemployment rate are reported in Table A.I.10. The coefficients are relatively high and significant. This indicates that a higher degree of capital account openness leads to an increase in unemployment rate. The analysis of negative effect of capital account openness on the labor share of income is supported by the positive correlation of financial openness and unemployment rate. As discussed in the previous section, capital account openness leads to the relocation of companies to foreign countries with lower cost of production. It might result in a lay-off of unskilled labor and reduction of their

bargaining power and therefore an increase in the unemployment rate and a decrease in the labor share of income even when it does account for the earnings of the self-employed workers.

In conclusion, the negative effect of capital account openness on the labor share of income is robust across the different measures of financial openness measurements and the different adjustments of labor income share and also the alternative econometric models. In addition, the positive influence of financial openness on the income share of self-employed workers also supports the interpretation of the mechanisms by which financial integration impacts of the labor share. Despite the increase in self-employment, income share still falls.

VI. Conclusion

There has been a declining trend in the labor share of income all over the world since the mid-1980s. Technological progress, international trade and capital account openness have been regarded as three key determinants of the declining trend in the labor share of income. However, the effects of capital account openness on the income share of workers are still contentious and the most accepted argument for these debates is that the different measures of financial openness as well as the different adjustments to share of labor yields different results. Adjusting for the earnings of self-employed in total labor share of income is important, especially for developing countries where the share of self-employment is relatively high.

This paper aims to investigate the relative impact of financial openness on the labor share of income, adjusted for the self-employment. To the end, I employed a panel dataset of 30 countries including 15 developing and 15 developed countries. I utilized both de jure and de facto measures of capital account openness and four measures of the national labor income share.

The negative effect of capital account openness on the labor share of income was tested with a panel fixed effect model using controlling for trade openness, technological change and other economic variables. Two panels of developing and developed countries were also estimated. Four interesting stylized facts emerge from the results:

- Capital account openness is negatively and significantly correlated to both unadjusted and adjusted labor share of income in almost all specification.
- The results hold for both fixed effect and OLS regressions for developed countries but do not hold for developing countries when employing de facto measures of financial openness.
- After adjustment for the income of the self-employed, the total labor share of income for the whole sample increase 0.1 percentage points and it is relatively higher than the unadjusted one in developing countries while it is lower in advanced countries, indicating the important role of self-employed' earnings in total labor share of income in general and in developing countries, in particular.
- The positive impact of capital account openness in the income share of the self-employed is not high enough to change the declining trend in the total labor share of income. After adjustments for self-employed income, the correlation between financial openness and the labor share of income is still negative.

I also examine the influences of financial openness on the income share of self-employment itself and the unemployment rate. Capital account openness measured by both de jure and de facto indicators are positively correlated to the income share of self-employment which suggests that opening up the financial market results in an increase in unemployment and self-employment rates as workers in the formal sector are laid off to reduce the labor costs and increase efficiency. This leads to an increase in the earnings of the self-employed. However, this increase is not large enough

to increase the total income share of the labor workforce. Financial openness is also positively correlated with the unemployment rate, suggesting that financial openness leads to a further weakening of labor's bargaining strength. These results support the analysis of the negative effects of capital account openness on the labor share.

The critical question is how this negative impact on labor income share can be mitigated or counteracted? One way would be by bolstering worker's bargaining power by stronger trade unions and labor market regulations. Self-employment has played a very important role not only in the income share of labor but also in solving the problem of unemployment. Governments should support this type of labor when they start their own entrepreneurship. For instance, the Australian government has provided training and loan to the unemployed who choose to be a self-employed worker in the future through a program called the New Enterprise Incentive Scheme. In the United Kingdom and France, the unemployed will receive transfer payments from their government if they start their own small business (Le, 1999; Blanchflower, 2000). In the United States, the government assists the self-employed through Self Employment Assistance (SEA) program. Unemployed entrepreneurs will be supported with financial aid equal to their unemployment insurance benefits for a maximum of 26 weeks and will receive entrepreneurial training and other resources to launch their own business (www.sba.gov/blogs/laid-and-want-start-business-self-employment-assistance-programs-may-help). The Self Help Groups (SHG) is one of the most popular projects in India, which provide training in livestock rearing, vegetable and fish cultivation and household business setup for rural self-employed women in India. The program also provide help with nationalized banks for leveraging larger credit to scale up their self-employed enterprises. Other solutions might work well to raise the labor share of income for both

developed and developing countries such as minimum wage policy on both informal and formal sectors.

In sum, the sober conclusion drawn from this analysis is that capital mobility and the opening of the capital account has a negative impact on the labor even when account is taken of the growing self-employed work force.

CHAPTER II

ECONOMIC REFORMS, EXTERNAL LIBERALIZATION AND MACROECONOMIC PERFORMANCE IN VIETNAM

I. Introduction

In the past three decades, Vietnam has experienced "one of the highest rates of economic growth anf poverty reduction in the world" (Vandemoortele and Bird, 2011, p 3). The successful implementation of its extensive economic and political reforms, called Doi Moi – "a comprehensive program of external and domestic reforms that placed the country on the path to a more market-oriented economy"- in 1986, transformed the nation from a closed and centralized economy to a market-oriented system (Le, 2006, p 456). Vietnam also became a full-fledged member of the international community. Vietnam signed several trade agreements and joined regional associations such as the trade agreement with the European Union (EU) in 1992; normalized diplomatic relations with the United States in 1995; joined the Association of Southeast Asian Nations (ASEAN) and the ASEAN Free Trade Agreement (AFTA) in 1995; became a member of the Asia Pacific Economic Cooperation Forum (APEC) in 1998; signed a Bilateral Trading Agreement (BTA) with the United States in 2001 and became a member of the World Trade Organization (WTO) in 2007 after eleven years of negotiations (Nguyen et al, 2012). Vietnam has enjoyed an improvement in its diplomatic and political relationship with more than 170 countries in the world.

After 30 years of its economic reforms (Doi Moi), Vietnam has now integrated with the global community (Tsuboi, 2007) and become one of the fastest growing economies in the South East Asia (Bhatt, 2013) with a gross domestic product (GDP) of $202.62 billion and per capital GDP

of $2,115 in 2016 (UN dataset, 2016). High rates of economic growth and an impressive macroeconomic performance have also been observed in Vietnam since its economic opening in the 1990s. Trade openness measured by the sum of exports and imports as a percentage of GDP rose to 169 percent in 2014[15] while FDI inflows have been increasing substantially since the approval of the first Law on Foreign Investment in 1987. The poverty rate has been reduced from 37.4 percent in 1998 to 14.2 percent in 2010 and 7 percent in 2015 (GSO dataset, 2015). The thirty-year successful economic reforms have also led to a notable human capital development performance. The human development index (HDI) value in Vietnam had increased by about 40 percent during the period 1990-2012 (OECD, 2014). The implementation of Doi Moi has transformed the nation from an agriculture-oriented economy to a modern industry-oriented system, bringing about a high rate of growth of gross industrial output (GIO) (Statistical Yearbook of Vietnam, 2014).

In view of these developments, the questions arises - what are the main mechanisms driving the spectacular performance of Vietnamese economy since its reform? What lies behind the increasing trend in economic growth of Vietnam recently, and to what extent and how is Vietnamese economic growth related to its comprehensive reforms and external liberalization? This essay investigates the macro-economic performance of Vietnam through the six phases of Doi Moi reform, and analyzes the impact of external liberalization on economic growth, aggregate demand, employment and distribution.

The paper is structured into six sections. An overview of the Doi Moi Policy and its major policies which has transformed the nation from a centralized and closed economy to an open and market-

[15] Author's calculation from export and import's dataset of GSO and GDP's dataset of United Nations.

oriented system is introduced in section II. Section III is an overview of the trends in external liberalization and macroeconomic performance in Vietnam since the reforms. The specific impact of effective demand and employment are discussed in section IV and section V respectively. Section VI is the concluding remarks and recommendations.

II. Overview of Economic Reform in Vietnam

1. The Introduction of Vietnamese Economic Reform

After almost a century of conflict through the French and American wars, Vietnam faced a severe economic crisis, near famine, hyperinflation after unification in 1975 (Vuong, 2014). The American trade embargo which prevented trade with the western economies, together with the collapse and disintegration of the trading system of the Soviet Union Bloc in 1989 worsened the economic crisis. These severe economic conditions forced the Communist Party and Vietnamese government to embrace New Economic Policy and launch extensive reforms.

The Vietnamese economic reforms (the Doi Moi Policy) was adopted after the 6th National Congress of the Communist Party of Vietnam in 1986, however the Policy only got fully on track from late 1989. In Vietnamese, "doi moi" means "renovation". The Doi Moi policy refers to a comprehensive program of external and domestic reforms that transformed the economy from closed and centralized to an open and market-oriented one. In other words, "Doi Moi was a policy that abandoned doctrinaire socialist theories, introduced a market economy and opened the country to the global economy" (Tsuboi, 2007, p 1). The policy was adopted and commenced subsequently to the reforms and openness under Chinese leadership of Deng Xiao Ping in 1978 and Perestrika reforms of the Soviet Union that significantly changed the fundamentals of the socialism of the past (Tsuboi, 2007). As a result, the closed and centrally-planned economy has been replaced by

a particular kind of market-oriented system, while adopting the concept of a multi-sectoral economy, with open-door policies towards international trade and investment, and recognized private sectors, while emphasizing the state sectors.

The 7th National Congress of the Communist Party of Vietnam in 1991 deepened and strengthened the Doi Moi Policy in 1986. It was followed by the Amended Constitution in 1992 which enshrined the Doi Moi Policy in the set of "supreme laws" of the nation in statutory form. The Amended Constitution introduced the economic policy of a market system; recognized freedom in proprietary rights and private sector in the economy, approved and recognized long-term land-use rights and encouraged joint enterprises with foreign countries. Since the adoption of Doi Moi Policy in 1986, Vietnam has embraced massive economic and political reforms which are the most important catalyst for dramatic changes and economic growth and development in Vietnam. The Vietnamese government has introduced a host or other economic and political policies depending on real economic situations. Table II.1 introduces the milestones of the Doi Moi Policy from 1986 to present day.

In short, the Doi Moi Policy is a package of comprehensive economic reforms. It included reforms in agriculture, where the abandonment of state-led land collectivization and encouragement of privatization gave more rights to farmers; improvement of price-control by the gradual reduction of subsidies for state enterprises, encouragement of private business in all sectors and allowing commodity prices to be set up by the market and integration to the global trade through an export-led strategy (Keough, 2016).

2. The Major Policy Phases of Doi Moi

Table II. 1. Milestones of the Doi Moi Policy from 1986 to Present Day

Year	Significant Events
1986	• The Sixth National Congress Meeting of the Communist Party of Vietnam launched the Doi Moi Policy.
1987	• Land Law was introduced 1st time (amended in 1993, 1998, 2001, 2003 and 2013) • Foreign Investment Law was introduced 1st time (amended in 1990, 1992, 1995, 1996, 2000 2005, 2009)
1988	• Resolution 10 in agricultural management was adopted, abandoning collectivization
1990	• Corporate Law and Private Enterprise Law were launched to stimulate private business • The ideas about privatization of state-owned enterprise was introduced • One-tiered banking system was changed into a two-tiered one
1991	• Soviet Union Bloc collapsed, the Communist Party of Vietnam decided to remain with the socialist ideology.
1992	• The Amended Constitution was introduced, which recognized the role of private sector in the economy. • A trade agreement with the European Union (EU) was signed

1995	• Joined the Association of Southeast Asian Nations (ASEAN) and the agreements of the ASEAN Free Trade Agreement (AFTA) • Normalized the diplomatic relations with the United States
1998	• Became a member of the Asia Pacific Economic Cooperation Forum (APEC)
2000	• The Enterprise Law was enacted
2001	• Signed the Bilateral Trading Agreement (BTA) with the United States. • New Socioeconomic Development Strategy for 2001-2010 and five-year plan to 2005 was introduced • Decree 44/2001/ND-CP allows all kinds of companies to export and import all permissible goods was passed
2002	• The Fifth Party Plenum gives Party members the right to own private business.
2007	• Became a member of the World Trade Organization (WTO) after eleven long years of negotiations.
2009	• Vietnamese government released the stimulus package of US$8 billion after the global financial crisis in 2008
2010	• Became a negotiating party of the Trans Pacific Partnership (TPP) agreement in November, 2010. After the US withdrew from this agreement, the future of this agreement is now being reconsidered.

2011	• Resolution No.11/NQ-CP was approved on 02/24/2011 to control inflation and stabilize the macroeconomy.
2013	• An economic stimulus package of VND30,000 billion (approximately USD1.5 billion) was approved to revive and stimulate the real estate market.
2016	• Approved the Socio-Economic Development Plan (SEDP) for 2016-2020 in 4/2016, which emphasized the importance of structural reforms, environmental sustainability, social equity and highlighted emerging issues of macroeconomic stability.

Source: Author's compilation

Since the adoption of Doi Moi Policy in 1986 by the 6th National Congress of the Communist Party of Vietnam in 1986, Vietnam has integrated more fully with international economy and successfully modernized its economy which was mostly based on agriculture, and also produced dramatic growth and poverty reduction. The following section set out the major policies of six different phases of thirty years of the Doi Moi Policy (1986-2016).

Phase I: The first adoption of comprehensive reforms (1986 – 1993)

The first phase from 1986 to 1993 was marked by the adoption of the Doi Moi Policy during the 6th National Congress of the Communist Party of Vietnam in December 1986. During this phase, the Communist Party of Vietnam started implementing the Doi Moi Policy which has embraced multi-sectoral economic mechanisms with open door policies towards trade, encouraging private sectors while continuing to emphasize the state sector.

The introduction of the Foreign Investment Law in 1987 strengthened the effort of Vietnamese government in opening their economy to the global community. As a result, Vietnam enjoyed continuous inflows of Foreign Direct Investment (FDI) which has been regarded as the main catalyst of its economy.

An important thrust of Doi Moi Policy is the recognition of the private sector and the "decooperatization" as well as the "decollectivization" of agriculture. As a result, during the first phase, a centrally collective model of the agriculture production system was gradually replaced by the private ownership of land. For example, in 1988, Resolution 10 in agricultural management was adopted, abandoning collectivization. Together with the introduction of Land Law in 1987, Resolution 10 granted and recognized longer-term land use rights for famers who could now exchange, mortgage, transfer, rent and inherit land. In 1989, Vietnam became the second largest rice exporter in the world (Statistical Year Book of Vietnam, 1990).

In 1987, Vietnamese government launched policies to strengthen the financial markets by eliminating subsidies and imposing budget controls. It also started to liberalize the exchange rate and pricing system, so as to narrow the price disparity between free market and official market. A new currency was introduced in 1988, and the central treasury was established in 1987. Vietnamese government also separated commercial and central banking functions by the New Banking Laws in 1989.

The disintegration of the main Vietnamese trading partner - the Soviet Union Bloc in 1990 also forced the government to find new trading partners. The Corporate Law and Private Enterprise Law initiated in 1990 allowed private enterprises and private property rights. As a result, the number of start-up entrepreneurial enterprises increased by 17,400 in 1994 (Vuong, 2014).

Moreover, starting from 1991, Vietnamese government also gave private enterprises permission to directly export and import goods and services.

In 1992, a constitutional amendment was passed, officially recognizing human rights in all civil, political, social, economic and cultural fields including the right of access to information; the right to assembly, the right to association; the right to free movement and residence in the country, the right to demonstrate in accordance with law; the right to follow or not follow any religion. The constitution also recognized the multi-sectoral economy and deepened the Doi Moi Policy by reaffirming the leading role of the Communist Party of Vietnam with socialist orientations.

Phase II: The period of political and economic integration: Implementing the Doi Moi Policy (1994 – 1997)

The Communist Party of Vietnam continued extensive reforms in the second phase (1994-1997), the most active and busiest stage of the Doi Moi Policy. Vietnamese government continued further economic integration and diplomatic relations within the region and with the rest of the world. The second phase of Doi Moi was marked by the lifting of U.S trade embargo and the normalization of diplomatic relation with the United States in 1995. Vietnam joined the Association of Southeast Asian Nations (ASEAN); signed the agreements of the ASEAN Free Trade Agreement (AFTA) in 1995, cementing the international integration of its economy.

In the second phase, the Law on State-Owned Enterprises (SOE) was enacted. This law placed the SOEs under direct supervision of Ministry of Finance in 1995. However, the leading role of the SOEs sector was still being debated among communist party members. During the Eighth Party Congress in 1996, some communist members agreed to remain the leading role of the SOEs sector, while the others pushed the shift from state-own enterprises to non-state-owned enterprises.

The state budget was also under better management by Law on the State Budget, initiated in 1996. The State Budget Law defines tax and expenditure responsibilities of the different levels of government. Preferential credit for selected sectors and disadvantaged regions was provided by the National Investment Fund.

The Vietnamese government also used temporary import bans for selected goods such as cement, steel, paper, beer, sugar and confectionary to support the domestic market. They have given more rights to private enterprises to export rice but under certain conditions. The amended Law on Foreign Investment reduces import duty exemptions for FDI companies and clarifies some investment policies. Besides the open-door policy, Vietnamese government has also attempted to stimulate domestic investment through the Law on Promotional of Domestic Investment in 1995.

After the Asian financial crisis in 1997, Vietnamese policy-maker and the newly opened market-oriented economic mechanisms faced new challenges.

Phase III: Facing with the first economic turmoil since Doi Moi Policy (1998 – 2000)

The Doi Moi policy was deepened in the third phase from 1998-2000. The country became a member of the Asia Pacific Economic Cooperation Forum (APEC) in 1998 two years after applying for membership. However, the market-oriented economy was hurt by the Asian financial crisis in 1997 and more active policy intervention was needed. In response to the crisis, the government started applying non-tariff measures and exchange-rate controls to restrict imports and protect domestic production in late 1998. New regulations were introduced to encourage and support exports such as the New Enterprise Law in 1999 and Decree 57 which gives more rights for export companies. For example, companies that were owned by foreign investors were permitted to export goods not specified in investment licenses.

The most significant achievements of the third phase was the introduction of a formal stock market in Ho Chi Minh city in 2000 and the commitment of the Communist Party of Vietnam at the Tenth Party Plenum to pursue the Doi Moi Policy in which the first priority was to continue with regional and global integration.

Phase IV: Recovery from the Asian crisis and economic boom (2001 – 2007)

The fourth phase of Doi Moi Policy was marked by the US-Vietnam bilateral trading agreement (the BTA) in 2001, which opened up new prospects and opportunities for bilateral trade. The open-door policies towards international trade and investment of the Vietnamese government was strengthened by its relationships with the IMF and the World Bank who restarted structural adjustment lending to Vietnam in 2001.

The Ninth National Party Congress in 2001 reaffirmed the leading role of the state government while recognizing the role of the private domestic sectors and foreign investors in economic development. Those policies facilitated restructuring and corporatization of state enterprises under the Enterprise Law. Enterprises, individuals, cooperatives and foreign investors have been permitted to export and import all permissible commodities by Decree 44/2001/ND-CP in 2001. Since 2002, communist party members have been permitted to establish and own private businesses.

In January 2007, Vietnam has officially become a full member of the World Trade Organization (WTO) after eleven years long of negotiations. This has brought emerging opportunities and challenges for its economy and people.

Phase V: Market-oriented economy and the global financial crisis (2008 – 2012)

The Vietnamese economy has been on the path to a market-oriented system since 1986. It has fully integrated with the global economy after becoming an official member of the World Trade Organization. This has also made the economy vulnerable to the global crisis. Vietnam's unstable macroeconomy with two-digit inflation in 2008 together with spillover effect of the global crisis made the stock market bubble burst in 2009 resulting a dramatic decrease in VN-index[16] from the peak of 1170 points in March 2007 to less than 250 points in February in 2009. The boom of stock market bubble also pulled down the real estate market in 2010.

The contemporary state-run conglomerate model also poses problems of inefficiency, corruption and crony capitalism. The macro economy faced a chaotic period of high inflation, budget deficit, a decline in foreign exchange reserve, unformulated and mismanaged fiscal and monetary policies, high unemployment and sluggish commercial activities in late 2012 (Vuong, 2014). Many state-run conglomerates such as Vinashin have suffered overwhelming losses, growing debt burdens, or corruption scandal.

Despite its vulnerable macroeconomy, Vietnamese government has been continuing their open-door policies and been very active with regional integration. Vietnam has been a full member in the negotiations on the Trans-Pacific Partnership Agreement (TPP) which covers almost sectors of the economy included trade, investment, intellectual property rights, labor and environment since November 2010, until the recent stalling of the negotiations.

[16] "The Vietnam Stock Index or VN-Index is a capitalization-weighted index of all the companies listed on the Ho Chi Minh City Stock Exchange", https://www.bloomberg.com/quote/VNINDEX:IND.

Phase VI: Stabilization of the market-oriented economy: Lessons from the global financial crisis (2013 – present)

Faced with the global financial crisis and the slump in the domestic stock market, banking and real estate sectors, as well as overwhelming business closures during the 2007- 2012 phase, Vietnamese government decided to reorient policy toward controlling inflation and stabilizing the macroeconomy, using direct tools and comprehensive monetary policies. For example, since 2011, the Vietnamese State Bank has devalued the national currency seven times. Resolution No.11/NQ-CP was approved on 02/24/2011 to control inflation and stabilize the macroeconomy. In 2013, an economic stimulus package of VND 30,000 billion (about USD1.5 billion) was approved to revive the real estate market after its 2011 collapse.

The Amended Constitution in 2013 was also one of the most remarkable transformations in this phase. This is the first time, the Vietnamese Constitution has determined subjects of human rights to "everyone", not only "citizen", which removed the confusion between human rights and citizens' rights in the 1992 Constitution. A number of new rights, including the rights to life; the rights to live in a clean environment; the rights to conduct scientific research and the rights to access and enjoy culture values, have been supplemented in the 2013 Constitution, reflecting the progress of integration and development in Vietnam. The Constitution also introduces a new principle of mutual control among the three branches of government, based on the idea of direct democracy while continuing to give more rights to private enterprise.

In April 2016, the Vietnamese government approved the Socio-Economic Development Plan (SEDP) for the period 2016-2020. The plan highlights the importance of structural reforms, environmental sustainability, social equity and also the need for stabilizing macroeconomic. The

plan also addresses some of the structural problems facing the economy by focusing on promoting skills-development for modern industry and innovation; improving market institutions, and further development of infrastructure.

III. External Liberalization and Macroeconomics in Vietnam since Its Economic Reform

The comprehensive economic and political reforms – under the Doi Moi Policy have been the major catalyst of economic growth and development in Vietnam since 1986. During thirty years of the Doi Moi Policy, economic domestic reforms and an open-door policy toward international investment have brought about higher growth rates of GDP, a massive influx of FDI, an impressive industrial performance as well as a higher level of inequality in Vietnam. This section analyzes the evolution of economic growth; inflation, exchange rates and foreign exchange reserves; trade openness; foreign direct investment (FDI); industrial performance and income distribution as well as inequality during the six phases of the Doi Moi Policy.

1. Economic Growth of Vietnam since Its Economic Reform

Since the launch of Doi Moi, Vietnam has transformed the nation from one of the poorest countries in the world to a middle-income country and from a closed centrally-planned economy to a socialist market-oriented economy (Bhatt, 2013). The country has displayed high rates of economic growth as well as an impressive performance in financial integration and trade liberalization. After Doi Moi, Vietnam has also been reducing its poverty rate and stabilizing its macroeconomic variables and has become one of the fast-growing economies in the South East Asia with GDP of US$202.62 billion and per capita GDP US$2,115 in 2016. The GDP growth rate of Vietnam was 6.1 percent in 2016 while it was 3.2 percent, 1.7 percent and 4.3 percent in Thailand, Singapore and Malaysia respectively. In terms of current US dollars, GDP of Vietnam

rose from $5 billion in 1986 to a 1996 level of $25 billion and about $202.62 billion in 2016. There has also been a dramatic increase in GDP per capita which rose from $81 in 1986 to a 1996 level of $276 and $2,115 in 2016.

Figure II.1 presents the growth rate of GDP and GDP per capita of Vietnam since its Doi Moi. During the first phase of the Doi Moi Policy (1986-1993), the growth rate of GDP grew from 4 percent in 1985 to almost 8 percent in 1989 after the introduction of the first Law on Foreign Investment in 1987 and other reforms. However, the disintegration of the most important trading partners – the Soviet Union Bloc led to a decline in GDP growth rate to 5 percent in 1991. The collapse of the Soviet Union was the catalyst to more extensive reforms. The Corporate Law and Private Enterprise Law initiated in 1990 granted private enterprises which led to an increase by 17,400 start-up entrepreneurial enterprises in 1994. Finding new trading partners through an open-door policy was also the first priority of Vietnamese economy during 1991-1993. Since 1991, the government has also given private enterprises permission to directly export and import. Those policies resulted in an increase in 8.5 percent in GDP growth rate in 1993.

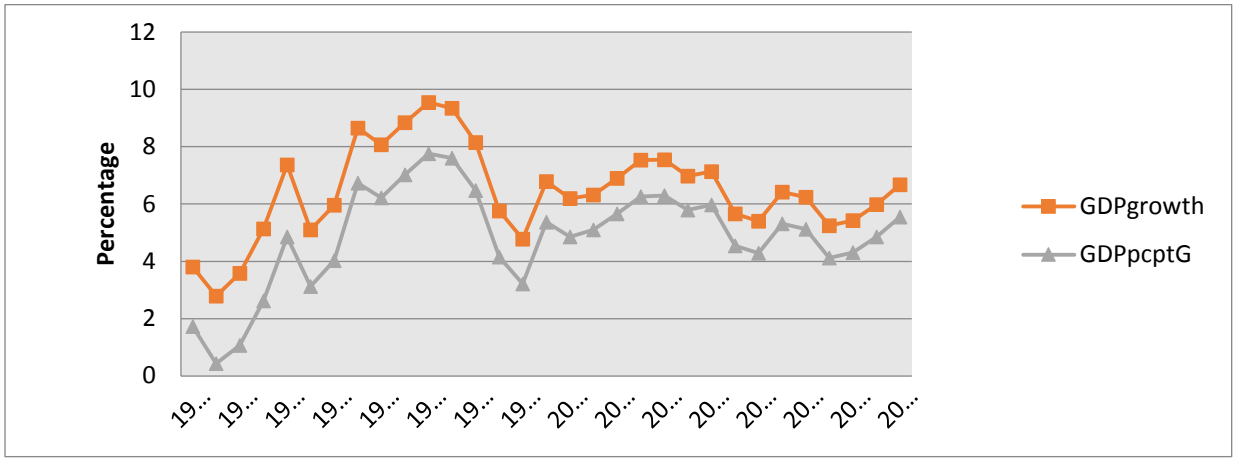


Figure II. 1. The Growth Rates of GDP and GDP Per Capita in Vietnam
Source: Author's computation from UN dataset

We see remarkable growth rates of both GDP and GDP per capita in Vietnam during the second phase of the Doi Moi Policy (1994-1997), especially after 1995 when Vietnam gradually integrated to the world economy through various trade agreement (Nguyen et al, 2012).

The growth rate of GDP reached a peak of 9.8 percent in 1996, thanks to the comprehensive economic reforms in domestic in the second phase of the Doi Moi Policy. However, the growth rates of GDP and GDP per capita of Vietnam decreased to 4 and 3 percent respectively in 1999 due to the Asian financial crisis in 1997.

The fourth phase of the Doi Moi Policy (2001-2007) experienced more stable economic growth rates at around 7 percent but fell to 6 percent after the world financial crisis in 2008. The Vietnamese government has focused on stabilizing macroeconomic performance and controlling inflation through an economic stimulus package of VND 30,000 billion (about USD1.5 billion) in early 2013 which has restored the growth rate of both GDP and GDP per capita in the current phase.

In short, during thirty years (1986-2016) of the Doi Moi Policy, Vietnam has integrated her economy to the world and regional economic market and experienced a notable economic growth rate.

2. Inflation, Exchange Rate and Foreign Reserves in Vietnam

Table II. 2. Inflation, Exchange Rates and Foreign Exchange Reserves

Year	Inflation (%)	Exchange Rates (VND/USD)	Foreign Exchange Reserves (% Nominal GDP)
1995	5.67	11038.25	6.37
1996	3.20	11032.58	7.11
1997	7.26	11683.33	7.5
1998	4.11	13268.00	8.01
1999	-1.71	13943.17	13
2000	-0.43	14167.75	12.11
2001	3.83	14725.17	12.5
2002	3.21	15279.50	13.23
2003	7.75	15509.58	16.2
2004	8.28	15746.00	15.9
2005	7.38	15858.92	15.8
2006	8.30	15994.25	20
2007	23.11	16105.13	30.36
2008	7.05	16302.25	25
2009	8.86	17065.08	15
2010	18.67	18612.92	11
2011	9.09	20509.75	9.8
2012	6.59	20828.00	17
2013	4.08	20933.42	15
2014	0.63	21148.00	17.62

Source: The data of inflation and exchange rate is from UN datasets, the data of foreign exchange reserves is from CEIC (www.ceicdata.com/indicator/vietnam/foreign-exchange-reserves--of-gdp).

Table II.2 presents the evolution of inflation, exchange rate and foreign exchange reserves in Vietnam during the period of 1995-2014. In Vietnam, the monetary policy, the exchange rate policy and foreign exchange reserves are administered and implemented by its central bank (the State Bank of Vietnam – SBV). The State Bank of Vietnam administers interest rate, exchange rates and control inflation and economic growth.

After thirty years of Doi Moi, the management of monetary policy has been more effective in easing and controlling inflation as well as stabilizing the macroeconomy. The Vietnamese government is pursuing a target of keeping inflation below 7 percent. However, the monetary policy is still not mature, and is sometimes conducted in a passive manner, reflecting the central banks limited capacity to control liquidity and inflation. For example, to deal with high inflation pressure, the State Bank of Vietnam pursued a tight monetary policy. Table II.2 shows mild inflation in Vietnam in the period of 1995 to the middle of 2007. During this period, the State Bank of Vietnam maintained a loose monetary policy and an expansive fiscal policy. The high inflation rate of 23 percent in late 2007 was eased by reducing required reserved ratio successively over a period of mid 2006-mid 2007. After the global financial crisis in 2008, the State Bank of Vietnam continues easing pressure of high inflation by loosening monetary policy.

During the thirty years of Doi Moi, Vietnam's exchange rate regime has transformed from a multiple exchange rates to an announced fixed rate mechanism, then to the current system of a narrow fluctuation range around the official rate, which is itself set on a daily basis and reflects the interaction of foreign exchange market with other market forces (Nguyen and Nguyen, 2010). In Vietnamese foreign market, the US dollar has been considered as a key nominal anchor. Table II.2 presents the evolution of VND/USD exchange rate from 1995 to 2014. Since 1995, the VND/USD rate indicated major weakening of the VND against the USD. The State Bank of Vietnam is pursuing a policy of a controllable floating exchange rate regime to prevent increasing dollarization and the appreciation of Vietnamese Dong (VND) and also tightening the fluctuation range of USD/VND exchange rate.

Table II.2 also shows the movement of foreign exchange reserves as percent of nominal GDP in Vietnam since 1995. Vietnam's foreign exchange reserves as share of GDP was reported at only

6.37 percent in 1995 but rose to 30.36 percent in 2007, reflecting the buoyant exports of the country. Due to the impact of the global financial crisis in 2008, the foreign exchange reserves in Vietnam declined to 9.8 percent in 2011 and has experienced an upward trend since 2012.

3. Trade Performance of Vietnam since Its Reform

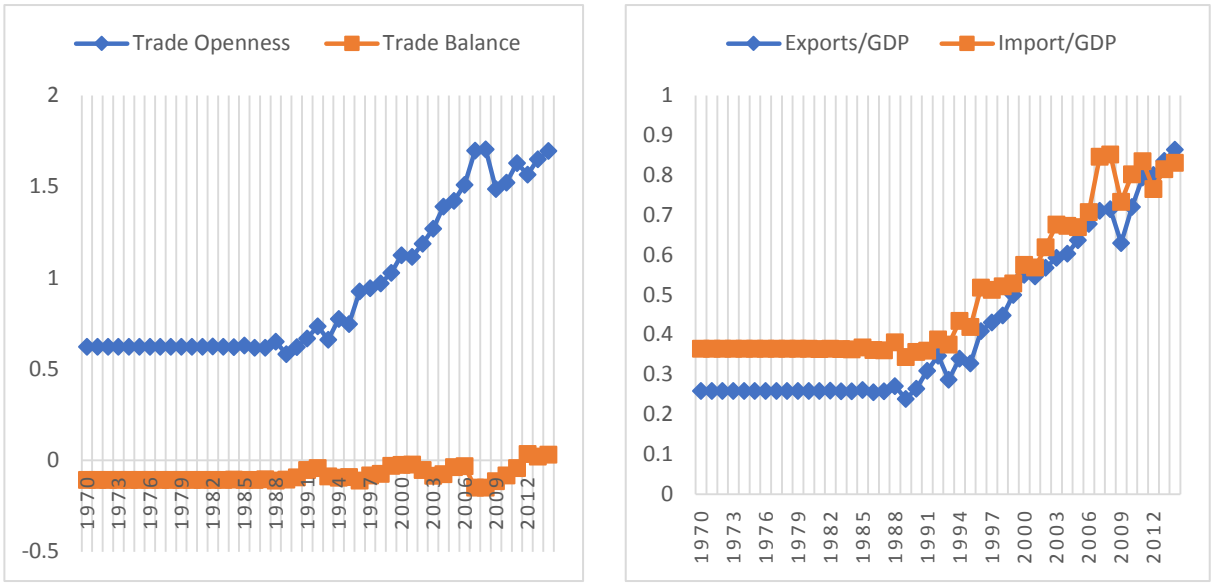


Figure II. 2. Ratio of Trade in Vietnam
Source: Author's computation from different issues (1970-2014) of General Statistical Office, Statistical Yearbook of Vietnam and Vietnam Foreign Trade's dataset

Under the Doi Moi policy regime, Vietnam underwent remarkable transformation thanks to integration with the world trade market. The export-led growth strategy gave a boost to Vietnamese economy. The contribution of exports to GDP rose from 26 percent in 1970 to 40 percent in 1996 and 86 percent in 2014 (Figure II.2). Trade openness measured by the sum of exports and imports as a percentage of GDP has increased from 62.3 percent in 1970 to 92.7 percent in 1996 and 169.5 percent in 2014.

Trade balance was always negative from 1970 to 2011 (see Figure II.2). Since 2012, the trade balance has been positive thanks to the export-led policies through six phases of the Doi Moi Policy such as the private enterprises' permission to directly export and import in the first phase;

the New Enterprise Law in 1999 and Decree 57 which gives more rights for export companies in the third phase; the permission to enterprises, individuals, cooperatives and foreign investors to export and import all permissible commodities by Decree 44/2001/ND-CP in 2001.

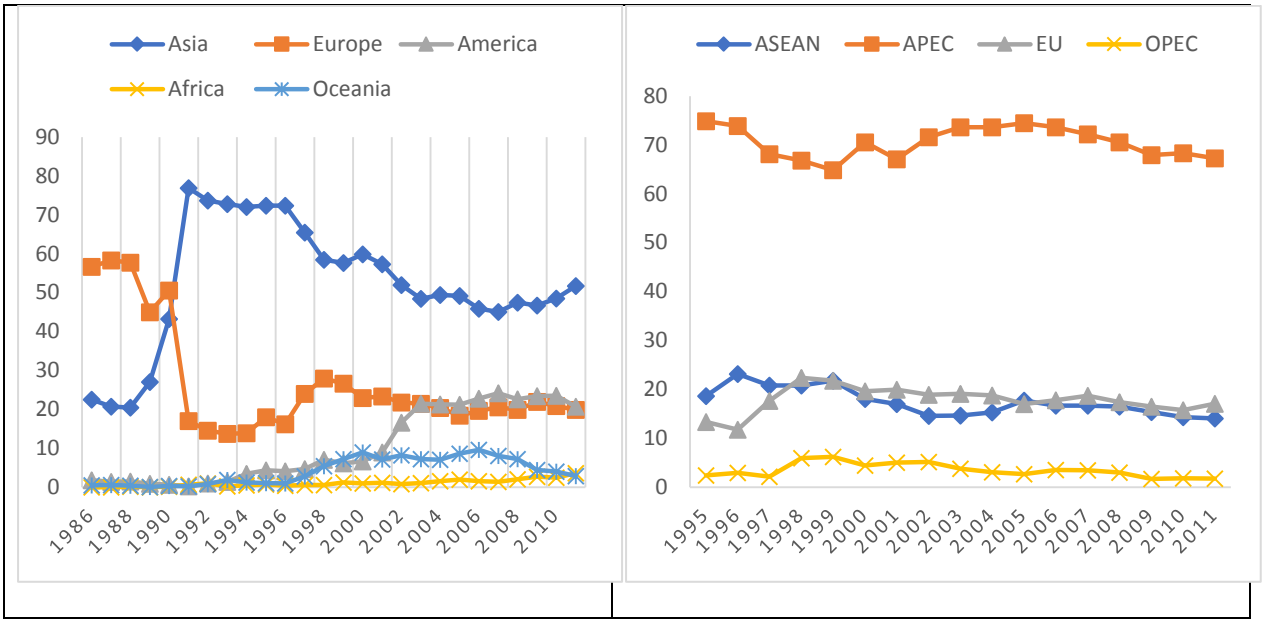


Figure II. 3. Shares of Export by Region
Source: Author's computation from various issues (1997-2012) of General Statistical Office, Statistical Yearbook of Vietnam

Before Doi Moi, Eastern Europe which provided 57 percent of Vietnam's imports used to be the main trading partner (Le, 2006). However, after Doi Moi and the disintegration of Soviet Union Bloc, Vietnam built trading relationship with other Asian countries. Figure II.3 and Figure II.4 describes the shares of Vietnamese export and import by regions (Asia, Europe, America, Africa and Oceania) and economic regions (ASEAN, APEC EU, OPEC) from 1997 to 2012. Among five regions, Asia has been the main export and import partners of Vietnam. Figure III.3 shows a downward trend of Vietnamese export volumes to Europe. The export volumes to America has been increasing due to the normalization with the United States in 1995 and the bilateral trade agreement with the US in 2001. The share of export volumes to American region increased from 0.3 percent in 1986 to 7.8 percent in 2011. Vietnam used to import mostly from Europe because

of the trading relationship with Western Europe. However, after the disintegration of the Soviet Union, import value from Europe decreased from 79 percent in 1986 to 10 percent in 2011. While, Vietnam import volume from Asia increased from 10 percent in 1986 to 78 percent in 2011. Among 4 economic regions, the main export and import partners of Vietnam are APEC, EU and ASEAN. Since the Doi Moi, APEC countries have always been the major export and import partners of Vietnam. The shares of export and import volumes to APEC were 74.8 percent and 79.6 percent in 1995 respectively. The share of export volume to APEC declined slightly to 67.3 percent in 2011, while the share of import volume from APEC increased slightly to 81 percent in 2011.

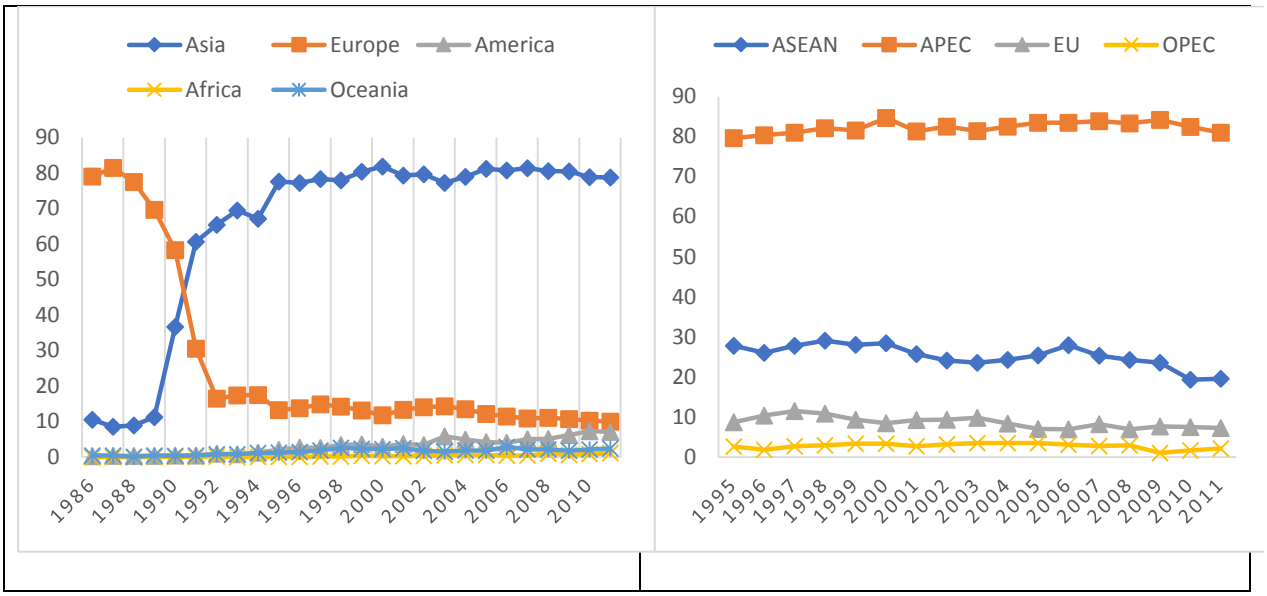


Figure II. 4. Shares of Import by Region
Source: Author's computation from various issues (1997-2012) of General Statistical Office, Statistical Yearbook of Vietnam

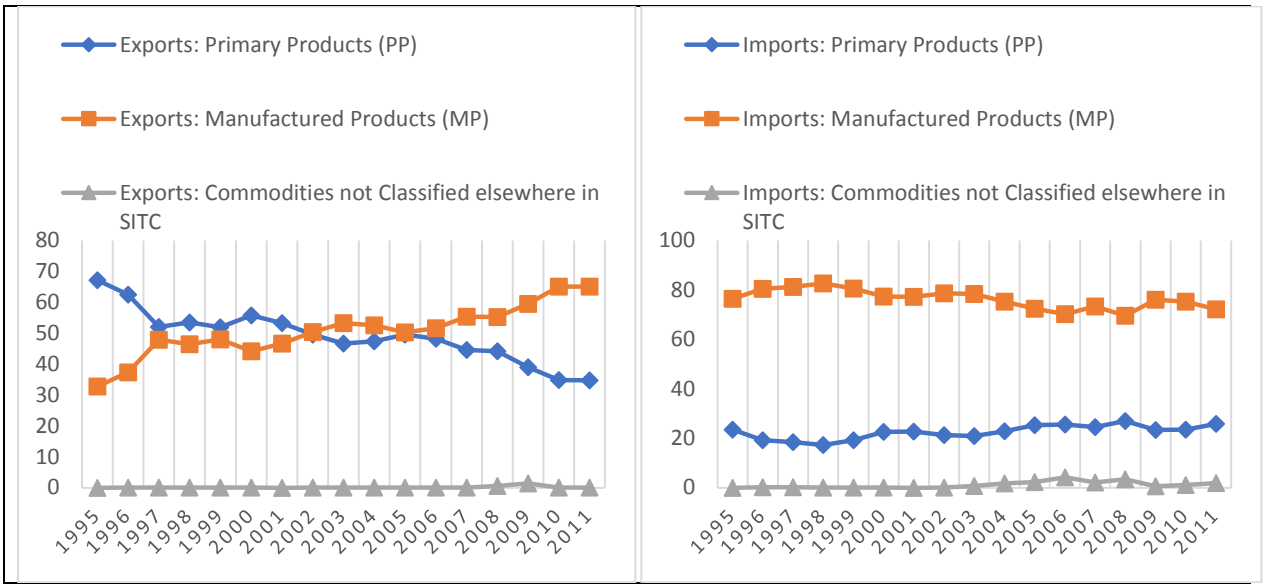


Figure II. 5. Export and Import Value by SITC Classification
Source: Author's computation from different issues (1995-2011) of General Statistical Office, Statistical Yearbook of Vietnam. Unit: USD million.

The composition of Vietnamese exports had shifted during the period of 1995-2011. In the first few years of the launch of the Doi Moi, Vietnam only focused on the export of five main primary products: crude materials; food and live animal; beverage and tobacco; mineral fuels, lubricants and related material; animal and vegetable oils fat and wax. Later, Vietnamese export and import's structure have changed from mainly primary products to manufactured products. Figure II.5 depicts the shares of export and import value of primary and manufactured products. In the early stages of the comprehensive reform and external liberalization, Vietnam mostly exported primary products and imported manufactured products. The share of primary product' export value decreased from 67 percent in 1995 to 34.8 percent in 2011, while the share of the manufactured product' export value increased from 32.7 percent in 1995 to 65.1 percent in 2011. In contrast, Vietnam mostly imports manufactured product, which share accounts for 72 percent in 2011, while the share of primary product' import value was 25.8 percent in the same year.

All in all, Vietnam has experienced substantial increase in international trade. During the period of 1970-2014, trade openness of Vietnam (measure by the sum of exports and imports as a percent of GDP) rose from 62 percent in 1970 to 169 percent in 2014 (Figure II.4).

4. The Trend of FDI in Vietnam since Its Reform

Vietnam has exhibited a substantial increase in FDI inflows since the approval of the Law on Foreign Investment in 1987 (which was amended in 1992, 1996, 2000, 2003 and 2013). Also, in November 2005, the Unified Enterprise Law was passed and followed by the Unified Law on Investment in 2006, both laws supported foreign companies seeking to invest into Vietnam. These laws have had a positive impact on FDI inflows.

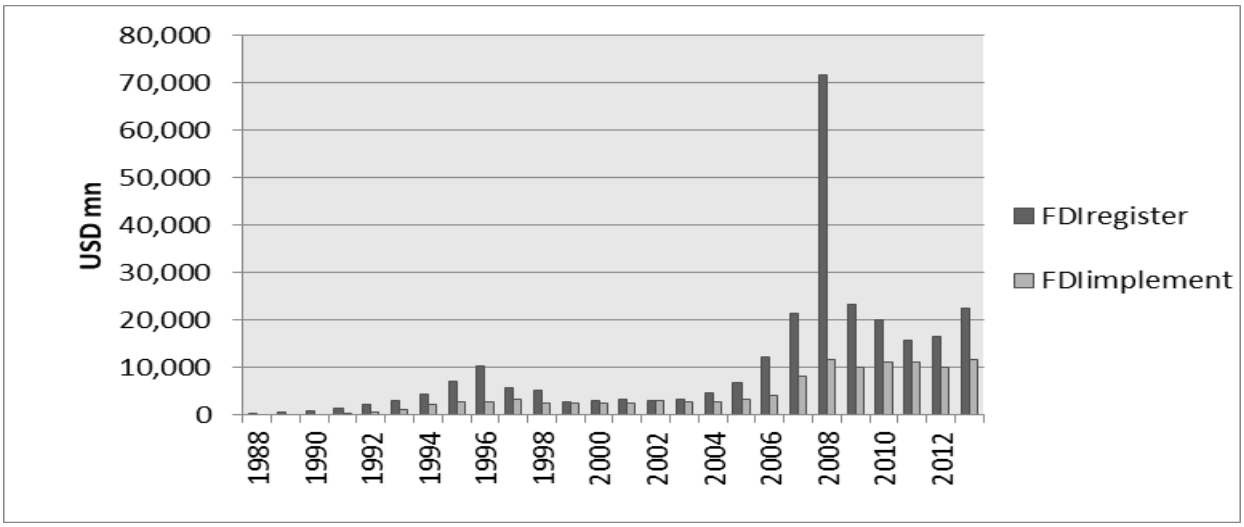


Figure II. 6. FDI Inflows in Vietnam from 1988 to 2013
Source: Author's computation from various issues (1988-2013) of General Statistical Office, Statistical Yearbook of Vietnam

Figure II.6 presents the trend of FDI in Vietnam in the period of 1988-2013 (both registered and implemented FDI[17]). The figure reflects the impact of Vietnamese reforms with new laws, which

[17] Registered FDI is the amount of FDI registered in the contract between foreign companies and Vietnamese government; implemented FDI is the real amount of FDI invested in Vietnam by foreign companies.

supported foreign investors and also the effects of trade liberalization through bilateral and multinational agreements. Registered FDI which represent 'potential FDI flows should be distinguished from implemented FDI which is the actual inflow. The registered FDI inflows rose nearly 30 times between 1988-1996. Registered FDI decreased substantially in the year following the Asian financial crisis but resumed the upward trend after 2002 and reached the peak in 2008 thank to the US-Vietnam Bilateral Trade Agreement in 2000 and the notable reform of FDI-related policy in late 2005. After the global financial crisis in 2008, the registered FDI inflows in Vietnam have been reduced by almost 75 percent in 2012 and resumed the upward trend since 2013. During the second phase of the Doi Moi Policy (1991-1997), the implemented FDI also increased nearly 10 times between 1991-1997. After the Asian financial crisis in 1997 and the global financial crisis in 2008, the implemented FDI inflows decreased in 1998 and in 2011, however it resumed the upward trend since 2012 following those tight policies of Communist Party of Vietnam to control inflation and stabilize the macroeconomy.

Table II. 3. Sectoral Composition of FDI Inflows by Sectors from 2010-2013

Year	**2010**	**2011**	**2012**	**2013**
Agriculture, Forestry & Fishery	0.18	0.91	0.61	0.44
Mining & Quarrying	0.00	0.00	0.00	0.00
Manufacturing	**30.07**	**49.93**	**71.58**	**76.69**
Electricity, Gas, Air Con Supply	**14.85**	**16.21**	**0.59**	**9.11**
Water Supply, Sewerage, Remediation	0.05	2.07	0.00	0.23
Construction	**9.13**	**8.31**	**2.12**	**0.99**
Wholesale, Retail Trade, Motor Repair	2.32	3.20	4.73	2.81
Transportation, Storage	4.43	0.48	1.39	0.30
Accommodation, Food Service	1.59	3.06	0.66	1.11
Information, Communication	0.54	5.75	2.55	0.39
Financial, Banking, Insurance	**0.30**	**0.00**	**0.00**	**0.00**
Real Estate Activities	**34.34**	**5.58**	**12.11**	**4.26**
Professional, Scientific, Tech	0.36	1.70	0.60	1.96
Administration, Support Service	0.02	0.03	0.03	0.04
Education, Training	0.38	0.07	0.64	0.57
Human Health, Social Work	1.03	0.57	0.86	0.40
Arts, Entertainment, Recreation	0.31	0.98	0.37	0.23
Other Activities	0.08	0.51	0.13	0.07

Source: Author's computation from various issues (2010-2013) of General Statistical Office, Statistical Yearbook of Vietnam and GSO's website. Unit: Percent of total FDI capital

Table II.3 presents share of FDI in Vietnam by sector from 2010 to 2013. FDI has flowed into almost all sectors in Vietnam. However, as shown in the table, the majority of FDI inflows in Vietnam were into manufacturing and real estate activities. The share of FDI inflows into manufacturing rose from 30.07 percent in 2010 to 76.69 percent in 2013 while the share of FDI inflows into real estate activities declined dramatically from 34.34 percent in 2010 to 4.26 percent in 2013 due to the effect of the global financial crisis in 2008 and the bubble and boom of property market in 2011.

Table II. 4. Top 21 Countries of Origin of FDI into Vietnam in 2015

No	Country of Origin	Number of projects	Percent of total FDI capital
1	Korea	736	28.9
2	Malaysia	29	10.2
3	Singapore	138	8.6
4	Japan	319	7.4
5	Taiwan	115	6.1
6	Samoa	24	5.3
7	United Kingdom	32	5.3
8	British Virgin Islands	56	5.1
9	Hong Kong SAR (China)	96	4.7
10	China. PR	175	3.1
11	Turkey	2	2.7
12	Netherlands	26	1.8
13	Thailand	35	1.4
14	Seychelles	19	1.3
15	Cayman Islands	6	1.1
16	United States	57	0.9
17	Australia	36	0.83
18	Brunei	20	0.81
19	British West Indies	4	0.6
20	India	24	0.5
21	Switzerland	9	0.4

Source: GSO website: https://www.gso.gov.vn/default_en.aspx?tabid=776, download date 11/18/2016

Most of FDI inflows to Vietnam have come from Asian countries and has been directed toward "oil and gas production, import-substituting industries, and export sectors such as garments and footwear" from 1990 to 2000 (Le, 2006) and toward manufacturing, real estates and construction since 2001. Table II.4 presents the distribution of FDI by country of origin in 2015. There are 21 countries which invested more than US$100 million. Korea invested in 736 projects worth about

US$6,983.2 million and accounted for 29 percent of total FDI capital, was the biggest foreign investor in Vietnam in 2015 followed by Malaysia with US$2,478 million and Singapore with US$2,082.5 million. The other top five foreign investors in Vietnam are Japan with US$1,803.4 million and Taiwan with US$1,468.2 million. Geographical proximity and propinquity is the main reason why most of FDI inflows into Vietnam originated from Asian countries.

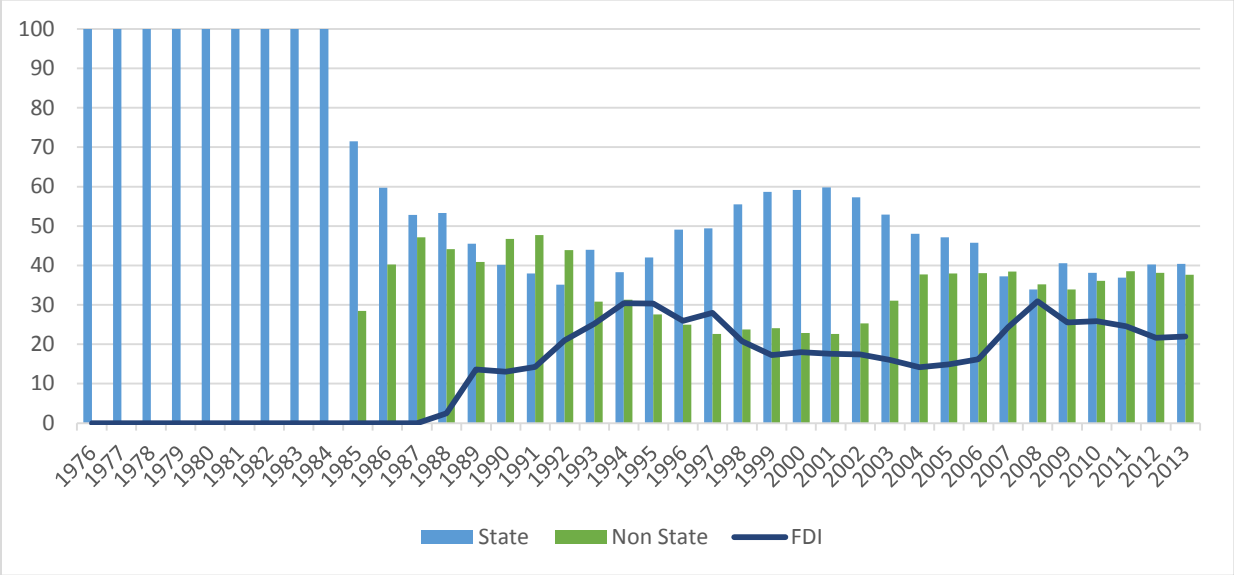


Figure II. 7. Investment by Ownership Sectors in Vietnam
Source: Author's computation from various issues (1988-2013) of General Statistical Office, Statistical Yearbook of Vietnam and GSO's website. Unit: percent of total investment.

Thus, FDI inflows have played an important role in Vietnamese economy in general and in total investment of the whole country. Figure II.7 depicts the shares of investment by ownership in Vietnam from 1976 to 2013, of which the investments of state government are majority. Before Doi Moi, the share of state investment was 100 percent. Private sectors launched investments in 1986, while foreign investors began to enter in 1988. The share of FDI inflows in the total investment of Vietnam have been increasing during the period 1988-2013. Especially, FDI inflows accounted for 30 percent of the total investment in 1995, 1996 and over 31 percent in 2008. There has been a downward trend in the share of government investment relative to private and FDI

sectors since 1995 reflecting the transition from centralized to a market-oriented economy and from isolation to international integration.

5. Industrial Performance of Vietnam since 1976

During trade liberalization and the comprehensive economic reforms, Vietnam has experienced an impressive industrial performance. The growth rate of gross industrial output (GIO) fluctuated in the period of 1976 - 1994, then grew at a more stable rate of around 15 percent till 2007, and then declined after the global financial crisis of 2008. Before the Doi Moi Policy, the trade embargo from advanced capitalist countries made Vietnam into an effectively closed economy and domestic industries did not have to compete with foreign competitors and imports. After 1989, because of the collapse of Soviet bloc and the open-door economic policy which subjected domestic industry to new global competition, there was a sharp decline in GIO growth rate in 1990. However, during the period 1994-2007, Vietnam had enjoyed a stable and higher rate of GIO through 2007 until the global financial crisis of 2008 led to a decline of 6.3 percent in GIO growth rate in 2012 (Figure II.8).

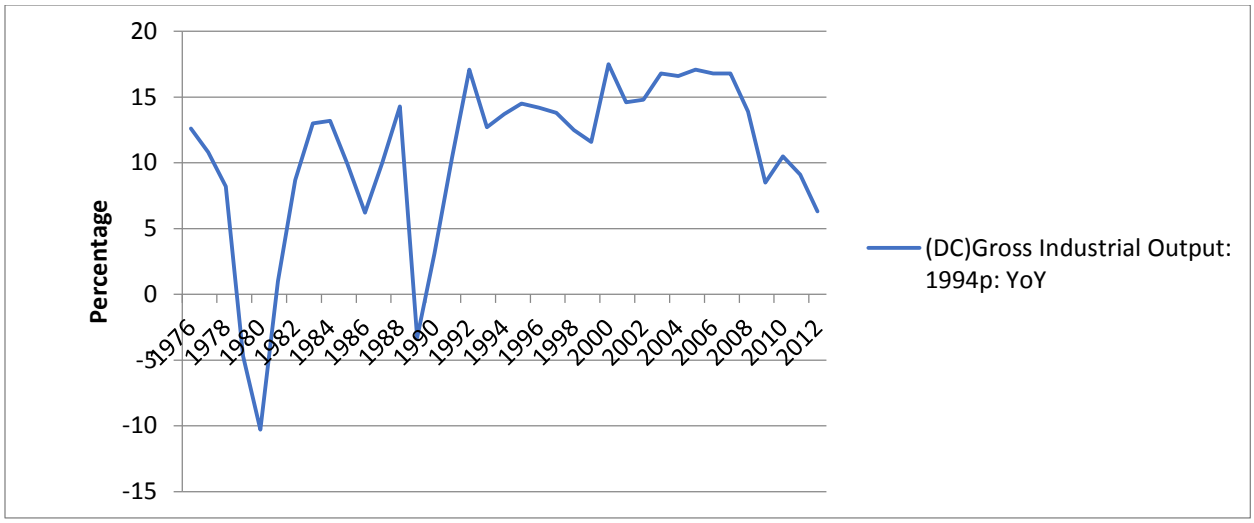
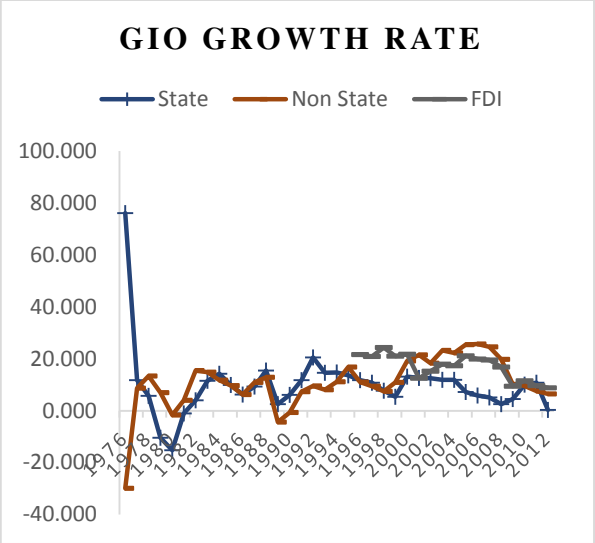


Figure II. 8. Gross Industrial Output Growth Rate of Vietnam
Source: The growth rates of Gross Industrial Output were calculated by General Statistical Office. The data was collected from different issues (1976-2012), Statistical Yearbook of Vietnam.

Figure II.9 presents the growth rate of gross industrial output calculated by General Statistical Office (GSO) in the period of 1976-2012 and the gross industrial output from 1996 to 2013 by ownership: state, non-state and foreign investment sector. As shown in the figure, from 1976 to 1986, the gross industrial output of state owned companies grew fast in 1976 after the country's reunification then declined significantly in 1982. After 1986, growth rate of GIO in the state-owned sector rose steadily until 1995. The growth rate of GIO of state owned sections decreased while the GIO growth rates of non-state owned and foreign investment sectors increased significantly and reached their peak in 2005 with 25 percent and 21 percent growth respectively. However, after the global financial crisis in 2008, the GIO growth rate of non-state-owned companies was only 0.4 percent in 2012 while they are 6.3 percent and 6.5 percent for state owned and foreign investment sectors.



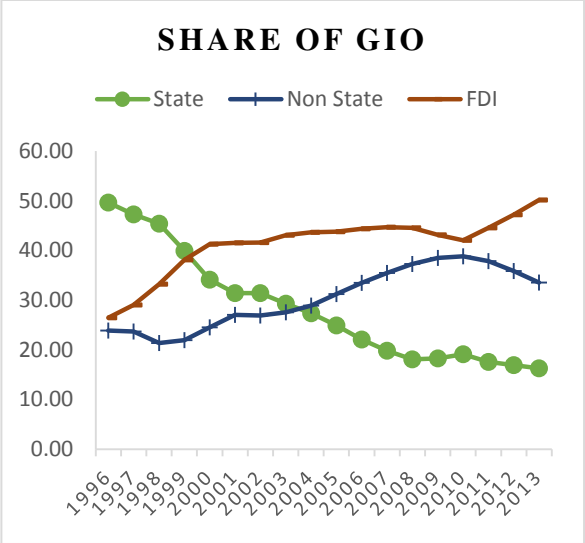


Figure II. 9. Gross Industrial Output and GIO Growth Rate by Ownership Sectors
Source: Author's computation from various issues of Statistical Yearbook of Vietnam (General Statistical Office) from 1976 to 2012 for GIO growth rate and from 1996 to 2013 for the share of GIO.

The gross industrial output of Vietnam has been increasing significantly since 1996 for all sectors by ownership. A rise in the shares of non-state and foreign investment sector in the gross industrial output of Vietnam during the period 1996-2013 is observed. In 1996, the share of GIO in the state-owned sectors was about 50 percent while it was only 24 percent for non-state owned and 26 percent foreign investment sectors. Yet, in 2013, the shares of GIO in FDI sectors rose to about 50 percent, while the share of state-owned sector declined to about 16 percent. This is a reversal of the relative positions of the two sectors and suggests that the foreign investment sectors have grown in importance in Vietnam's industrial sector.

6. Income Distribution, Inequality and Poverty in Vietnam since Doi Moi

The Doi Moi reforms and liberalization have brought prosperity to Vietnamese economy and also improved Vietnamese people's living standards in both urban and rural areas. After thirty years of the Doi Moi Policy, income distribution in Vietnam has experienced impressive changes. For example, during the period of 2005-2015, per capita GDP grew annually at rate of 5 percent while

the expenditure per month of Vietnamese family has increased by from VND 792 (US$40) in 2008 to VND 1,888 (US$80) in 2014.

However, there is a growing urban-rural gap in average income per capita in Vietnam, which can be explained by the widening labor productivity growth gap between the primary (agriculture, forestry and fishing), manufacturing, construction and service sectors. The monthly average income per capita in both urban and rural areas has grown which were VND 517 thousand (US$30) and VND 225 thousand (US$15) in 1999, respectively, while it was VND 3,964 thousand (about US$200) and VND 2,038 thousand (US$100) in 2014, respectively (see Table II.5 and Table A.II.1 in appendix).

Table II. 5. Monthly Average Income Per Capita and GINI Index

Year	Whole Country		Urban		Rural	
	Per Capita Income	GINI	Per Capita Income	GINI	Per Capita Income	GINI
1999	295	n.a	517	n.a	225	n.a
2002	356	0.42	622	0.41	275	0.36
2004	484	0.42	815	0.41	378	0.37
2006	636	0.424	1058	0.393	506	0.378
2008	995	0.434	1605	0.404	762	0.385
2010	1387	0.433	2130	0.402	1070	0.395
2012	2000	0.424	2989	0.385	1579	0.399
2014	2637	0.43	3964	0.397	2038	0.398

Source: GSO, Unit: Thousand Vietnamese Dong at current prices

Vietnamese inequality (Gini coefficient) has continually increased since the Doi Moi and opening-up policies. For example, the Gini coefficient of the whole country increased from 0.42 in 2002 to 0.43 in 2014. However, the Gini coefficient of urban area has declined from 0.41 in 2002 to 0.397 in 2014, while the Gini coefficient of rural area has increased from 0.36 to 0.398 (see Table

II.4). Thus, while inequality in rural Vietnam has declined, inequality is seen some increase in urban Vietnam.

The adoption and implementation of the Doi Moi Policy has brought spectacular changes in the socio-economic-political situation of the country in the past 30 years (1986-2016). Poverty reduction is one of the most remarkable achievement of Doi Moi Policy. Table II.6 exhibits some key social indices with some improvements evident in all social indicators such as HDI.

Table II. 6. Some Key Social Indicators

Year	2006	2008	2010	2012	2013	2014	2015
Human Development Index (HDI)	n.a.	n.a.	0.6	0.7	0.7	0.7	0.7
Patient bed per 10000 inhabitants (Bed)	n.a.	n.a.	22	24.9	25	26.3	27.1
Doctor per 10000 inhabitants (Pers.)	n.a.	n.a.	7.1	7.3	7.6	7.9	8
Monthly average income per capita at current prices (Thous. VND)	636	995	1387	2000	n.a.	2637	n.a.
Monthly average expenditure per capita at current prices (Thous. VND)	511	792	1211	1603	n.a.	1888	n.a.
Percentage of household having hygienic water (%)	89.1	92.1	90.5	91	n.a.	93	n.a.
Percentage of household using toilet (%)	59.1	65	75.7	77.4	n.a.	83.6	n.a.
Percentage of household using electricity (%)	96	97.6	97.2	97.6	n.a.	98.3	n.a.
Percentage of households having durable goods (%)	99	99	98.4	99.4	n.a.	99.7	n.a.
Average dwelling area per capita (m2)	14.7	16.3	17.9	19.4	n.a.	21.4	n.a.

Source: Author's computation from various issues of Statistical Yearbook of Vietnam

Table II. 7. General Poverty Rate by Residence in Vietnam

Year	1998	2002	2004	2006	2008	2010	2011	2012	2013	2014	2015
Whole Country	37.4	28.9	18.1	15.5	13.4	14.2	12.6	11.1	9.8	8.4	7
Urban	9	6.6	8.6	7.7	6.7	6.9	5.1	4.3	3.7	3	2.5
Rural	44.9	35.6	21.2	18	16.1	17.4	15.9	14.1	12.7	10.8	9.2

Source: GSO website

During the period of 1998-2015, the poverty rate has decreased from 37.4 percent in 1998 to 7 percent in 2015. However, Doi Moi Policy has also brought growing inequality between the rich and the poor, between the rural and urban population and between ethnic minorities and the majority of the population. Table II.7 presents the general poverty rate by residence and region in Vietnam which shows a big difference in poverty rate between the urban and rural area. In 1998, the rate was 9 percent in urban area while it was much higher of 44.9 percent in rural area. The gap was narrowed by 2015 with the poverty rate falling to 2.5 percent and 9.2 percent respectively. Moreover, according to Vietnam Living Standard Survey (VLSS) in 2000, per capita income in the richest region is 4.5 times higher than that of the poorest (Tran & To, 2000). There is also greater disparity between the access of the rich and the poor to basic social services especially in health care and education. For example, illiteracy rates and the quality of education are very high in a poor region based on VLSS in 1992 and 1998. The disparity in access to health care services between the rich and the poor has also increased.

IV. Decomposition of Shifts in Effective Demand

1. The Decomposition Technique of Effective Demand

Thus, Vietnam has exhibited notable economic growth and development during the past thirty years thanks to the comprehensive reforms with an open-door policy toward international trade

and investment. This section will examine the role of external liberalization as a determinant of macroeconomic performance in Vietnam during this period. Following Berg and Taylor (2000), I decompose aggregate demand with a two-step process. We distinguish the foreign sector from the domestic sector in the first step and decompose the domestic demand into government and private sectors in the second step.

Effective demand is the outcome of the balance between demand "injections" and "leakages" (Taylor, 2006, page 2). The injections are private investment in fixed capital and inventories, government spending and exports, while leakages are private saving, taxes and imports.

The total value of supply (X) is determined by injections and leakages. The injections of public sector, private sector and external sector are total government spending (G), private investment (Ip) and exports (E), respectively. The corresponding leakages of the three sectors are taxation (tX), savings (sX) and imports (mX).

Then the decomposition of the sources of effective demand is the following equation:

$$(I - sX) + (G - tX) + (E - mX) = 0$$

Where: X is the total supply; I is investment and s is saving rate; G is government spending, t is tax rate and; E is export, m is the propensity to import.

2. Analyzing the Sources of Effective Demand in Vietnam

In the gross domestic product by expenditure approach, Vietnamese's GDP is divided into three parts: consumption, investment and exports. Table II.8 presents the average growth rate of consumption, investment, and exports and imports of goods and services in real term since 1990, while the decomposition of foreign and domestic sectors is presented in Table II.9. As shown in

Table II.8, the second phase of the Doi Moi Policy (1994-1997) experienced the highest growth rates of GDP, consumption spending, aggregate investment and export growth. For example, aggregate investment spending grew to its peak in 1995, increasing by nearly 15 percent, GDP growth rate reached to its peak of 9.5 percent in the same year, suggesting that the implementation phase of the Doi Moi Policy brought better macroeconomic performance in Vietnam. The growth rate of exports and imports also reflect impact of the Doi Moi Policy. The export-led strategy adopted under the Doi Moi Policy lead to high growth rates of exports, with a peak of 29.8 percent in 1991. Vietnamese exports continued to grow at high rates through the period of 1994-2008. However, the growth rate of export fell by 5 percent in 2009 following the global financial crisis in 2008. Following the comprehensive policies to control inflation and stabilize domestic macroeconomic as well as comprehensive monetary policies to devalue currency and the stimulate package of USD1.5 billion in 2013, exports grew at higher rates of 15 percent and 17 percent in 2012 and 2013.

Table II. 8. GDP Expenditure Components: Average Annual Growth Rate

Year	GDP (%)	Consumption (%)	Private Consumption (%)	Government Consumption (%)	Fixed Capital Formation (%)	Exports of Goods and Services (%)	Imports of Goods and Services (%)
1990	5.10	3.54	n.a.	n.a.	n.a.	12.93	-4.50
1991	5.96	0.08	n.a.	n.a.	n.a.	29.86	-6.36
1992	8.64	3.87	n.a.	n.a.	n.a.	24.67	18.79
1993	8.07	10.38	n.a.	n.a.	n.a.	9.13	41.82
1994	8.83	7.43	n.a.	n.a.	n.a.	16.00	31.47
1995	9.54	7.41	7.21	8.40	14.75	20.00	16.27
1996	9.34	8.14	9.09	7.43	14.01	24.00	21.30
1997	8.10	6.01	5.91	4.00	10.16	16.00	9.65
1998	5.76	4.29	4.47	3.22	12.41	19.00	18.39
1999	4.77	2.19	2.60	-5.70	1.58	23.00	12.56
2000	6.78	3.92	3.08	5.01	10.18	21.10	16.61
2001	6.19	4.37	4.47	6.60	10.72	17.18	16.44
2002	6.32	7.41	7.63	5.38	12.86	10.37	15.79
2003	6.89	7.22	8.01	7.19	11.90	19.95	22.72
2004	7.53	4.49	7.09	7.77	10.44	25.62	21.94
2005	7.54	3.39	7.26	8.20	9.75	17.78	14.18
2006	6.97	5.77	7.47	8.50	9.90	11.20	11.99
2007	7.12	13.12	9.78	8.90	24.16	12.50	26.93
2008	5.66	7.80	7.67	7.52	3.84	13.70	15.01
2009	5.39	2.37	2.25	7.60	8.73	-5.09	-6.82
2010	6.42	4.55	8.19	12.28	10.89	8.45	8.22
2011	6.24	5.79	4.10	7.12	-7.81	10.78	4.10
2012	5.25	-0.20	4.88	7.19	1.87	15.71	9.09
2013	5.42	5.19	5.18	7.26	5.30	17.37	17.34
2014	5.98	6.24	6.12	7.00	9.27	11.56	12.80
2015	6.68	13.29	6.33	9.96	9.37	12.64	18.12

Source: Author's calculation from WDI (2016)

Table II. 9. Decomposition of Foreign and Domestic Sectors

Year	X=GDP+M	m=M/X	s=(GDP-C)/X	I/s	E/m
1994	23,364	0.30	0.11	35,372	18,285
1995	29,426	0.30	0.13	41,446	23,039
1996	37,439	0.34	0.11	57,508	29,517
1997	40,598	0.34	0.13	53,765	34,150
1998	41,400	0.34	0.14	51,444	35,601
1999	43,834	0.35	0.16	45,477	41,465
2000	51,562	0.35	0.16	54,753	48,357
2001	53,887	0.35	0.18	53,538	52,152
2002	59,672	0.36	0.15	71,460	52,720
2003	69,476	0.39	0.14	94,725	58,199
2004	82,716	0.40	0.12	125,537	67,417
2005	96,256	0.40	0.18	98,887	91,493
2006	113,227	0.41	0.19	112,181	108,608
2007	142,510	0.46	0.14	192,451	119,512
2008	182,380	0.46	0.12	253,868	152,749
2009	183,764	0.42	0.15	232,194	157,787
2010	208,926	0.45	0.15	248,176	187,535
2011	248,747	0.46	0.14	260,395	236,438
2012	275,061	0.43	0.17	216,480	287,653
2013	310,713	0.45	0.16	254,792	318,943
2014	340,996	0.45	0.16	269,913	354,430
2015	365,879	0.47	0.15	317,181	369,132

Source: Author's calculation from WDI (2016). Unit: billion VND.

Note: GDP: gross domestic product. C: final consumption expenditure. I: gross capital formation. M: import of goods and services. E: Export of goods and services. Unit: Vietnamese Dong (VND)

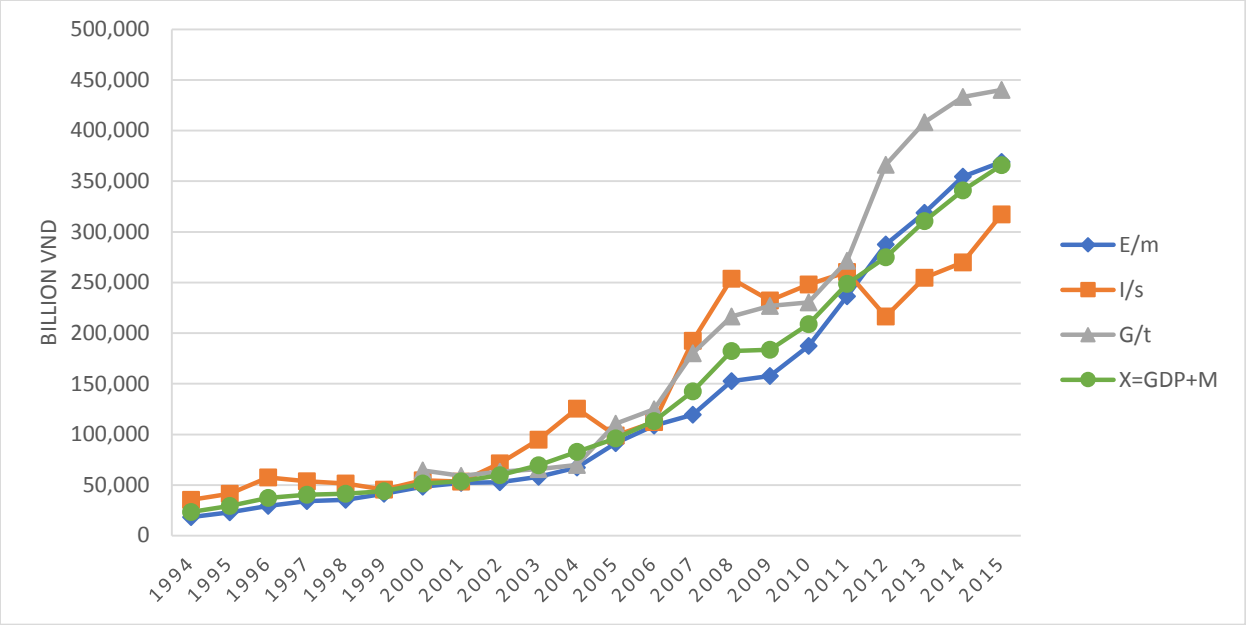


Figure II. 10. Contribution of Components of Aggregate Demand to GDP

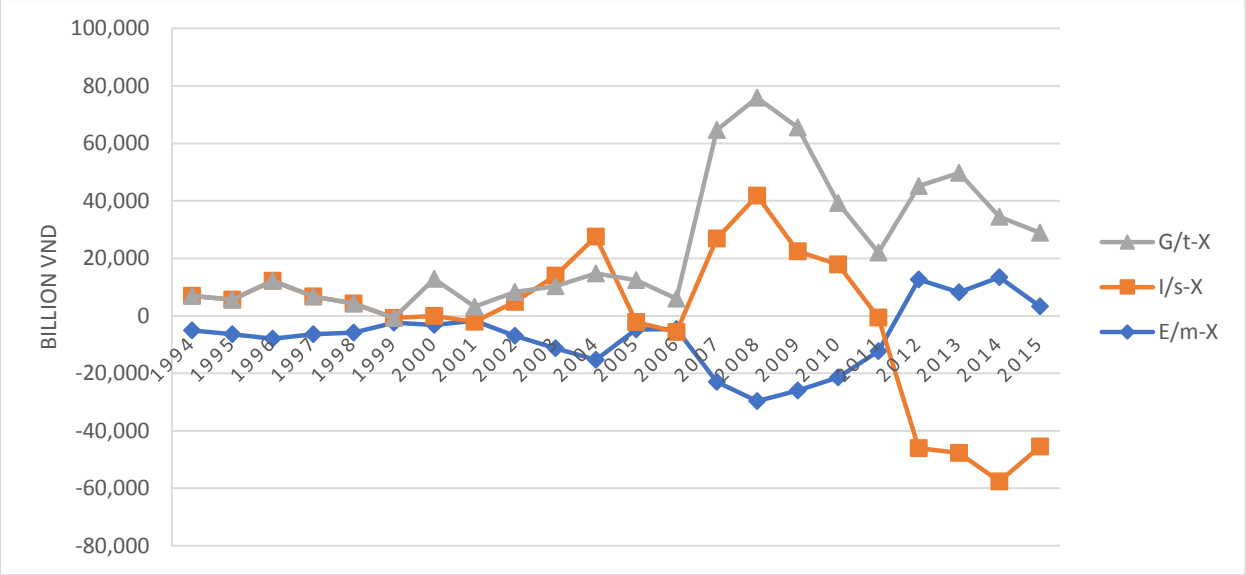


Figure II. 11. Sources of Demand: Direct Multiplier Effects minus Total Supply

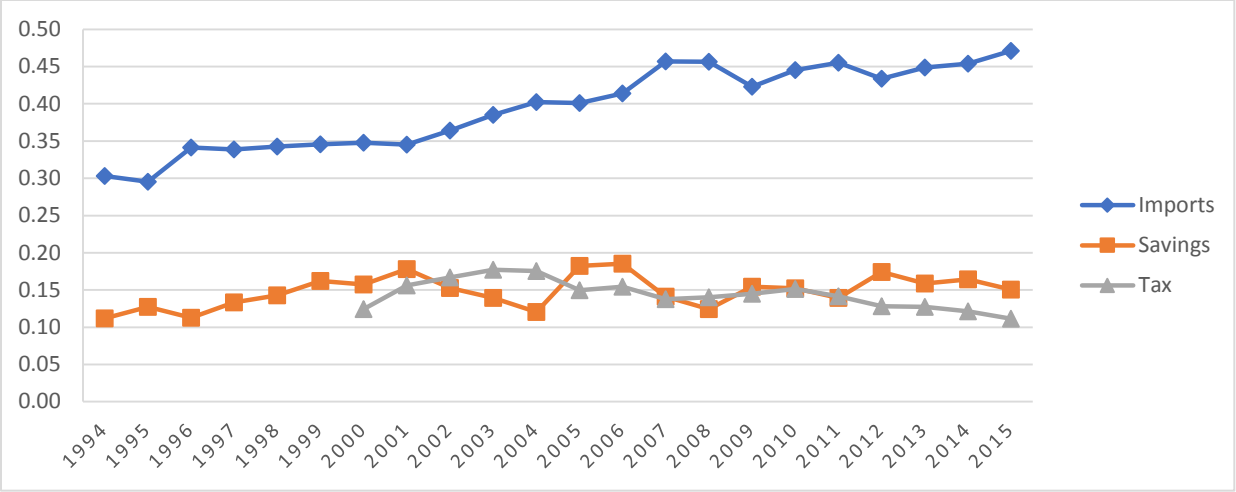


Figure II. 12. Leakages: Saving, Tax and Import Propensities

Figure II.10 and Figure II-11 indicate that Vietnamese economy has not shown a definitive export orientation during 1994-2011. The total supply (X) was always higher than the contribution of exports to GDP (*E/m*) since 1994 to 2011. However, E/m has been higher than X since 2012, with a greater contribution of exports to the total supply or total output. With the Doi Moi policy reforms, Vietnam shifted the country to a more market oriented economy, and the export of goods and services has been an important priority. However, Vietnam's economy has still been recovering from the impact of war, the collapses of Soviet Union Bloc, as well as from Asian economic crisis in 1997 and global financial crisis in 2008. The greater contribution of external sector since 2011 has convinced many that the liberal reform of Vietnamese government since Doi Moi was correct.

Figure II.10 also suggests that private investment's contribution (*Ip/s)* was always greater than X, and private investment a strong impetus to Vietnamese economic growth after Doi Moi until 2011. However, private investment has no longer been the main determinant of total output in Vietnam since 2012.

Between 1997 to 2005, there was a decline in government contribution to output due to the transition to a market oriented system, the weak ability of the government to tax the emerging private sector. The contributions of state sector to government revenues has declined even as that of the private sector increased. Government budget rose after 2005 and become the main driving force of Vietnamese output since 2012. The increase from 7.2 percent to 12.2 percent annual growth rate in government spending from 2010 to 2015 (see Table II.8) were offset by an increase in government revenues as a share of GDP.

In short, government spending and private investment were the main drivers of Vietnamese economic growth during 1994 – 2011, while the very high propensity of imports (Figure II.12) led to the negative impact of exports on overall demand throughout this period. The external sector together with government expenditure have become the important driving factors of Vietnamese economic growth since 2012.

V. Employment Changes and Decompositions of Labor Productivity Growth in Vietnam

1. The Decomposition Technique of Labor Productivity

1.1.The Decomposition Technique

This section presents the decomposition of movements across sectors and time in labor productivity growth, as well as employment following Berg and Taylor (2000).

The decomposition is as follows:

X is output, L is employment, which x and l denote the growth rate of output and employment respectively. Subscript i denote the ith sector. $\frac{X_i}{X}$ is share of sector i output and $\frac{L_i}{L}$ represents the share of sector i employment. Then labor productivity in sector i is given by $\frac{X_i}{L_i}$ and the growth rate

of labor productivity is $\varepsilon_i = x_i - l_i$. The growth rate of labor productivity for the whole economy is decomposed into two parts as the following:

$$\varepsilon_L = \sum_i [\frac{X_i}{X}\varepsilon_i + (\frac{X_i}{X} - \frac{L_i}{L})l_i]$$

1.2.Challenges of Measuring Labor Productivity in Service Sectors

Labor productivity is defined as a ratio of a volume measure of output to a volume measure of input use and productivity measurement in manufacturing sector has been mostly based on comparing input and output (OECD, 2001). However, measuring the productivity of services has been challenging because of its difficulty in how to measure output and input.

The problem of measuring a service output is that the output indexes have to be quantifiable and independent of input indicators (Mark, 1982). For example, we cannot count boxes as the output for a day of a broker, an expediter or a quality control officer. We must find a way to quantify service output by measuring the number of services, number of customers or number of problems which are solved. There is quantity data available in some service sectors such as for utilities and transportation services. Price deflation may be used to measure output for gasoline service stations or retail food stores. The problem of measuring a service input is data gaps. Employment data, working hours by age and occupation of service sector are limited.

2. Employment Growth and Changes in Employment Structure in Vietnam

Since the adoption of its reform and opening-up policy, there has been a continuous growth in employment in Vietnam. The total of employed persons was 37.07 million in 2000 and up to 52.8 million after 15 years in 2015 (see Table II.11). There are significant changes in the structure of employment in Vietnam in the past 10 years. As shown in Table II.10, the share of the total

employed persons in the primary sector[18] (AFF) has declined from 69 percent in 1999 to 55.1 percent in 2005 and to 44 percent in 2015, a reduction of 25 percent (GSO's website). Meanwhile, the employment shares of other sectors such as manufacturing, construction and services have increased from 11.8 percent; 4.6 percent and 26.7 percent in 2005 to 15.3 percent; 6.5 percent and 32.5 percent in 2015 respectively. These trends reflect and are consistent with external liberalization in Vietnam during 2005-2015.

Table II. 10. Employment by Industry

Year	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015
Agriculture, forestry and fishing (AFF)	55.1	52.9	52.3	51.5	49.5	48.4	47.4	46.7	46.3	44
Manufacturing	11.8	12.5	12.9	13.5	13.5	13.8	13.8	13.9	14.1	15.3
Construction	4.6	5.2	5.3	5.4	6.3	6.4	6.4	6.3	6.3	6.5
Services	26.7	27.7	28	28.2	29	29.9	30.8	31.3	31.7	32.5

Source: GSO, unit: percentage

The share of the foreign investment sector in employment has increased in Vietnam. The share of total employed persons working in enterprises with foreign investment was 1 percent in 2000, and increased to 4.2 percent in 2015, which is consistent with trade-integration activities in Vietnam during the fifth and sixth phase of the Doi Moi Policy. Employment in the non-state sector remains high in Vietnam with the shares of 87.3 percent in 2000 and 86 percent in 2015 (Table II.11) due to the massive restructuring of state-owned enterprises (SOEs) under the Doi Moi policy and the requirements of being an official member of WTO.

[18] The primary sector includes agriculture, forestry and fishing, and denoted as AFF.

Table II. 11. Employment by Types of Ownership in Vietnam

Year	Total (Thous. Persons)	State (%)	Non-state (%)	Foreign investment sector (%)
2000	37,075.3	11.7	87.3	1
2001	38,180.1	11.7	87.4	0.9
2002	39,275.9	11.8	87.1	1.1
2003	40,403.9	12.1	86	1.9
2004	41,578.8	12.1	85.7	2.2
2005	42,774.9	11.6	85.8	2.6
2006	43,980.3	11.2	85.8	3
2007	45,208	11	85.5	3.5
2008	46,460.8	10.9	85.5	3.6
2009	47,743.6	10.6	86.2	3.2
2010	49,048.5	10.4	86.1	3.5
2011	50,352	10.4	86.2	3.4
2012	51,422.4	10.4	86.3	3.3
2013	52,207.8	10.2	86.4	3.4
2014	52,744.5	10.4	85.7	3.9
2015	52,840	9.8	86	4.2

Source: GSO

3. Decomposition Results of Overall Labor Productivity Growth

During every stage of the Doi Moi Policy and liberalization since 1986, foreign investment and the participation of domestic enterprises in international trade play a very important role in boosting domestic production as well as overall labor productivity. Labor productivity has increased impressively from 22.8 percent in 2005 to 23.8 percent in 2008. However, it decreased to 5.84 percent in 2010 after the global financial crisis (see Table II.14). There was an upward trend of the growth of labor productivity in 2011 thank to the stimulus package of the Vietnamese government. However, the growth rate of labor productivity has been declining since 2013 due to the crash of domestic stock market and, the banking and real estate sectors, as well as

overwhelming number of business closures during the period of 2007- 2012. Labor productivity grew at different rates in different sectors, and the service sector productivity was the fastest growing during the period 2005-2015.

The decomposition of overall productivity in Table II.12, Table II.13 and Table I.14 show that sectoral productivity growth, especially in the case of the service sector in 2005, 2008 and 2010, played an important role in the improvement of overall productivity in Vietnam (see Table II.13). Meanwhile, labor productivity of AFF and construction sectors remained lower. However, the AFF sector was still the second contributor to employment growth, although its labor share declined by 11 percent after 15 years (see Table II.10). The decomposition also shows that in the fifth phase of the Doi Moi policy when the domestic economic market faced with the global financial crisis (2008 – 2012) employment growth in manufacturing sector in 2011, 2013, 2014 and 2015 and construction sector in 2008, 2011 and 2012 (see Table II.13) had a negative effect on overall productivity.

The decomposition indicates that sectoral productivity growth was the main driver of overall productivity in Vietnam from 2005-2015. The service sector accounted for significant sectoral productivity gains due to its large output share, while the employment reallocation of manufacturing, and construction sectors slowed down the productivity gains (see Table II.12 and Table II.13). We can link these results to the macroeconomic performance in Vietnam. Under the Doi Moi Policy and external liberalization, services have been attractive and profitable sectors thank to emerging demand in wholesaler, retailer, tourism and education as well as encouraging policies of the Vietnamese government on these sectors. There was a significant movement of labor into the services sector during the period 2005-2015. The employment share of service sector increased from 26.7 in 2005 to 32.5 in 2015 (see Table II.10). However, the growth of output share

in service sector was the highest rate compared to other sectors that contributed mainly to the sectoral productivity growth. Meanwhile, the contribution of the industry sector (manufacturing and construction) was unexpectedly weak because of the massive shifts from state-owned enterprises (SOEs) to private enterprises and their greater involvement in a more liberalized and competitive market. As a result, a large number of workers from SOEs shifted over to the private service sectors in urban areas during 2005-2015 and it became an important driver of employment growth in Vietnam. Moreover, the Doi Moi and opening-up policies have been bringing in more FDI during this period leading to new demand and labors for service sectors.

In short, the analysis of Vietnamese employment and the decomposition of labor productivity growth during 2005-2015 suggests that labor reallocation between sectors (AFF, manufacturing, construction and services) and growth in sectoral productivity are important. However, we should note that productivity gains from employment reallocation between sectors have not been particularly significant during this period, while sectoral productivity growth in service sector was the main driver of overall productivity growth.

Table II. 12. Contributions of Sectoral Productivity Growth to Overall Productivity

Year	$\sum \left(\frac{X_i}{X}\right) \varepsilon_i$ (%)	$\left(\frac{X_i}{X}\right) \varepsilon_i$			
		AFF (%)	Manufacturing (%)	Construction (%)	Service (%)
2005	19.06	4.81	2.64	2.01	9.6
2006	7.34	1.5	2.28	0.72	2.84
2007	13.15	3.68	2.28	0.74	6.44
2008	23.04	8.21	3.22	0.92	10.70
2009	6.7	0.7	0.44	0.58	4.98
2010	3.36	2.87	-2.35	0.03	2.81
2011	22.39	7.2	3.56	0.76	10.87
2012	11.83	2.84	1.87	0.54	6.57
2013	5.41	0.56	1.12	0.21	3.51
2014	7.77	1.47	0.84	0.47	4.98
2015	5.38	1.19	0.02	0.52	3.48

Source: Author's calculation based on Vietnamese Statistical Yearbook (various issues from 2005 to 2015)

Table II. 13. Contributions to Employment Reallocation Effect on Overall Productivity Growth

Year	$\sum\left(\frac{X_i}{X} - \frac{L_i}{L}\right) l_i$ (%)	$\left(\frac{X_i}{X} - \frac{L_i}{L}\right) l_i$			
		AFF (%)	Manufacturing (%)	Construction (%)	Service (%)
2005	3.379	0.639	1.2	0.14	1.4
2006	2.364	1.344	0.32	0.08	0.62
2007	1.01	0.06	0.12	0.73	0.1
2008	0.76	0.36	0.18	0.02	0.2
2009	0.72	0.5	0.22	-0.01	0.01
2010	2.12	1.21	0.01	0.1	0.8
2011	0.81	0.64	-0.01	-0.02	0.2
2012	0.98	0.58	0.01	-0.01	0.4
2013	0.63	0.42	-0.01	0.02	0.2
2014	0.21	0.2	-0.01	0.01	0.01
2015	1.47	1.34	-0.01	0.13	0.01

Source: Author's calculation based on Vietnamese Statistical Yearbook (various issues from 2005 to 2015)

Table II. 14. The Growth Rate of Overall Labor Productivity

Year	$\varepsilon_L = \sum_i [\frac{X_i}{X}\varepsilon_i + (\frac{X_i}{X} - \frac{L_i}{L})l_i]$ (%)	$\sum \left(\frac{X_i}{X}\right) \varepsilon_i$ (%)	$\sum \left(\frac{X_i}{X} - \frac{L_i}{L}\right) l_i$ (%)
2005	22.439	19.06	3.379
2006	9.704	7.34	2.364
2007	14.16	13.15	1.01
2008	23.8	23.04	0.76
2009	7.42	6.7	0.72
2010	5.84	3.36	2.12
2011	23.2	22.39	0.81
2012	12.81	11.83	0.98
2013	6.04	5.41	0.63
2014	7.98	7.77	0.21
2015	6.85	5.38	1.47

Source: Author's calculation based on Vietnamese Statistical Yearbook (various issues from 2005-2015)

VI. Conclusions and Recommendations

This essay attempts to investigate Vietnamese macroeconomic performance since its comprehensive reforms in 1986 (the Doi Moi Policy). It seeks to shed some light on the main driver of aggregate demand, employment and labor productivity. To this end, the author investigates the main mechanisms driving the remarkable performance of Vietnamese economy since the Doi Moi Policy. The author tried to explore factors resulting the upward trend in economic growth of Vietnam recently and elaborate the relationship between economic growth and the Doi Moi policy as well as external liberalization. The results of the decomposition of aggregate demand highlighted the following aspects:

- Private investment was the most important determinants of Vietnamese economic growth during 1994 – 2011, while government expenditure has contributed its influences on total output since 2005.

- The very high propensity of imports had resulted in the negative stance of exports through the period of 1994-2011.
- The external sector together with government expenditure have become important driving factors of Vietnamese economic growth since 2012.

The analysis of employment growth and the decomposition of overall labor productivity highlighted the following aspects:

- During the Doi Moi and opening-up policies, employment has grown dramatically in Vietnam, with the total of employed persons of 52.8 million in 2015. The share of total employed persons in the primary sector (agriculture, forestry and fishing - AFF) has declined while employment share of the foreign invested sectors has increased.
- The decomposition of labor productivity shows that that sectoral productivity growth, especially in the case of the service sector, plays an important role in the improvement of overall productivity in Vietnam.
- During the thirty years of the Doi Moi Policy and opening their economy, the income gap between regions and people in Vietnamese urban and rural areas has continued to be apparent however it has been narrowed.

The success of government's intensive reforms underlines the important role of government policies on Vietnamese economy. To continue benefiting from trade liberalization, Vietnamese government should preserve and extend their role in managing the market-oriented economy by formulating rules and regulations for the external sectors, while encouraging private investment. The State Bank of Vietnam should pursue a flexible of loosening or tightening monetary policy to ease pressure of high inflation and stabilize macroeconomic. Restructuring of commercial banking

sectors and stabilizing exchange rate seem to be a necessary policy to maintain macroeconomic stability.

The decomposition of effective demand and labor productivity growth suggests that Vietnamese government should promote the private sector, which plays very important role in accelerating economic growth. This can be achieved by streamlining bureaucratic procedure for business start-up, giving private enterprises equal rights with state-owned companies, while removing any limitation to them to access to international market. Vietnamese government should encourage and support domestic enterprises in trading in the international market by more open regulations, intensive training and education for their employees as well as continuing the shift from state-owned enterprises to non-stated owned enterprises. Since the sectoral productivity growth of the service sector seems to be the most important driver of overall productivity growth in Vietnam during the past ten years, it would appear that the government should pay more attention on this sector by investing and building more infrastructure as well as improving regulations governing service activities. At the same time steps can be taken to improve productivity in the manufacturing sector which constitutes a significant share of employment. This is particularly important if Vietnam is to avoid premature deindustrialization that external liberalization has given rise to in many developing countries.

CHAPTER III

TRADE OPENNESS, VIETNAMESE ECONOMIC GROWTH AND INDUSTRIAL PERFORMANCE AT REGIONAL AND PROVINCIAL LEVELS

I. Introduction

Trade liberalization and Foreign Direct Investment (FDI) have catalyzed economic growth and industrial performance in developing countries and there has been a lot of research investigating these impacts in different countries. Some positive effects of trade openness and FDI on economic growth and industrial performance have been observed in empirical studies in developing countries. External liberalization leads to a faster rate of technological absorption and generates the positive spillover effects and accelerates economic growth (Dutta & Ahmed, 2006). In the long run, a more open economy generates economic of scale due to research and development, and knowledge spillover; accumulation of human capital and learning by doing (Lucas, 1988). Empirical studies have shown positive effects of FDI, such as raising employment and wages or income share of labor; leading to technological spillovers in the host country. This results in an increase in overall productivity; enhancing export activities both for the countries where FDI comes from and for the host countries thus improving the balance of payments (Milberg, 1999). The benefits of trade openness and FDI on macroeconomic variables have been of enduring interest of economists. However, empirical studies on the effects of trade liberalization as well as FDI on economic growth especially on industrial performance at both regional and provincial levels in Vietnam and other emerging countries are rare.

Vietnam is composed of 68 provinces and cities divided into eight regions including Southeast, Red River Delta, Mekong River Delta, Northeast, Northwest, North Central Coast, South Central

Coast and Central Highlands[19]. Since the Doi Moi Policy, Vietnam has experienced one of the highest rates of economic growth and development as well as high volumes of external liberalization. The results of the decomposition of effective demand and productivity growth in Essay 2 show that the external and government sector have been crucial drivers of Vietnamese economic growth, while the growth of labor productivity in service sector plays an important role in the improvement of overall productivity in Vietnam. Moreover, Vietnam is also one of the few countries in Asia that has been able to sustain manufacturing growth and has become a significant FDI destination in Asia. However, the volume of FDI inflows into each of these eight regions is different depending on their economic conditions. In this essay, the author continues elaborating the correlation of trade openness and economic growth, as well as industrial performance by focusing on the regional and provincial levels. This essay investigates the main drivers of economic growth and industrial performance in Vietnam at the regional and provincial levels in the most recent phases of the Doi Moi Policy.

This essay is organized into six sections. The second section reviews regional and provincial economic and industrial performance in Vietnam during the period of vigorous reforms and external liberalization (1995-2015). The third section summarizes the literature of the relationship between external liberalization, economic growth, and industrial performance. The fourth section will introduce the factors driving the relation between openness and economic performance at provincial and regional levels as well as data and econometric models. The results of empirical investigation will be analyzed in the fifth section. Conclusions with some recommendations are provided in the sixth section.

[19] Vietnam Briefing, GSO, 2012

II. Regional and Provincial Economic and Industrial Performances in Vietnam

1. Regional and Provincial Economic Performance in Vietnam

Vietnam is composed of 68 provinces and centrally-governed cities which are divided into eight geographical regions and three key economic zones. The Northern key economic zone includes seven municipalities and provinces: Hanoi, Hai Phong, Quang Ninh, Hai Duong, Hung Yen, Bac Ninh and Vinh Phuc. The economic growth of the Northern economic zone is based on agricultural manpower. The Southern key economic zone covers seven provinces and cities which are Ho Chi Minh city, Binh Duong, Ba Ria – Vung Tau, Dong Nai, Tay Ninh, Binh Phuoc and Long An. The economy in this zone is driven by the development of commerce, exports, telecommunications, tourism, finance, banking, services, technology. Agriculture which mainly produces rubber, coffee, cashew nuts, sugarcane is also an important drivers of the zone's economic growth. The Central key economic zone includes 5 provinces: Thua Thien Hue, Quang Nam, Quang Ngai, Binh Dinh and Da Nang. This zone's economic growth mostly relies on oil and gas, shipbuilding, logistics, high-tech industries and coastal tourism.

The Vietnamese government and the General Statistics Office divides the eight geographical regions into six economic regions (see Figure III.1). The Red River Delta constitutes the industrial heart of Vietnam and is one of the richest and most developed regions in the country with the second lowest poverty rate of 3.2 percent in 2015 (see Table II.1) and the second highest average income of VND4,113 thousand in 2014 (USD200, see Table A.III.1 in appendix). The capital of Vietnam - Hanoi, which is located in this area, is the economic center of the Red River Delta. The region is highly industrialized, resulting in high electricity demand but consists mainly of flood plains. The Red River Delta is one of the most attractive destinations of FDI in the nation as well.

Figure III. 1. Maps of Vietnamese Economic Regions and Key Economic Zones
Source: http://www.vietnam-briefing.com/news/vietnams-regions-key-economic-zones.html/, last updated 10/10/2017.

The northern midlands and mountain areas includes two geographical regions: Northeast and Northwest. The Northeast includes the mountainous areas in the north and center, bordered by China to the north and northeast. The region is rich in mineral resources such as coal, metals, building materials, industrial minerals with more than 300 mines of different types of minerals. The Northeast's economy mostly focuses on high technology, engineering and energy sectors. However, agriculture, in particular, the cultivation of rice, maize, potatoes, tea, lemongrass and vegetables, remains an important driver of their economy. The Northeast also focuses on forestry which can produce approximately 3.5 million cubic meters of wood and 500 million trees of bamboo and neohouzeaua per year[20]. Besides agriculture and forestry, the region also has a power sector with several hydro-electric power plants and coal fired thermal power plants. Tourism is an important source of GDP with few popular tourist destinations such as Sapa (Lao Cai) and Ha

[20] The author summarized from Vietnam Briefing: http://www.vietnam-briefing.com/news/vietnams-regions-key-economic-zones.html/, "Vietnam's Provinces, Regions and Key Economic Zones" by Samantha Jones and Julia Gu, posted on 5/29/2012.

Long Bay (Quang Ninh). The Northwest, which is covered by a number of mountains is one of the poorest regions in Vietnam with the highest poverty rate of 16 percent in 2015 (see Table III.1) and the lowest average income of VND1,613 in 2014 (about USD81, see Table A.III.1 in appendix). Its economy mostly focuses on the cultivation of products such as tea, medicinal and aromatic herbs, and fruits and the region has recently begun mining coal, clay, iron and gold, which include a large number of self-employed workers resulting in a lower rate of unemployment (see Table III.3)

The General Statistics Office (GSO) combines the North and South-Central Coast as the third economic region, called as North Central and Central Coastal area. The economy of the region with a long coastline, large estuaries, ports and excellent coastal lagoon system, is based mainly on aquaculture. The region has several minerals such as iron, gold, titanium, lead and also relies heavily on hydropower plants. Moreover, tourism is one of the most important sector of their economy.

The central highland area's economy is based heavily on the manufacturing sector, agriculture and forestry exports, which account for 60 percent of the region's GDP. The region's economy exports a high volume of coffee, sugar, vegetable oil and meat products. This region has the lowest rate of unemployment. The unemployment rate was 1.03 percent in contrast to the Mekong River Delta, which had the highest rate of unemployment of 2.77 percent in 2015 (Table III.3). However, Central highlands is also the least attractive destination of FDI in the country (see Table II.2).

The Southeast region (Ho Chi Minh city area) has been the primary destination of foreign investment in Vietnam. This region's economy is based on heavily industry production such as rubber products and polyethylene production. The region is endowed with a wide variety of

minerals including sand glass, granite, bentonite clay. More recently, the Southeast economy has begun focusing heavily on oil and gas production. The South East region always has the lowest poverty rate and the highest monthly average income in the nation which was VND4,125 thousand in 2014 (about USD202, see Table A.III.I in appendix).

Table III. 1. Poverty Rates by Regions in Vietnam

Year	1998	2002	2004	2006	2008	2010	2011	2012	2013	2014	2015
Red River Delta	30.7	21.5	12.7	10	8.6	8.3	7.1	6	4.9	4	3.2
Northern midlands and mountain areas	64.5	47.9	29.4	27.5	25.1	29.4	26.7	23.8	21.9	18.4	16
North Central area and Central coastal area	42.5	35.7	25.3	22.2	19.2	20.4	18.5	16.1	14	11.8	9.8
Central Highlands	52.4	51.8	29.2	24	21	22.2	20.3	17.8	16.2	13.8	11.3
South East	7.6	8.2	4.6	3.1	2.5	2.3	1.7	1.3	1.1	1	0.7
Mekong River Delta	36.9	23.4	15.3	13	11.4	12.6	11.6	10.1	9.2	7.9	6.5

Source: GSO website

Table III. 2. Foreign Direct Investment Projects Licensed in 2015 by Regions

Region	Number of projects	Total registered capital (Mill. USD)[21]
Whole Country	2120	24,115
Red River Delta	725	7,812
Northern midlands and mountain areas	105	856
North Central area and Central coastal area	146	1,140.6
Central Highlands	8	40.9
South East	977	10,594.5
Mekong River Delta	158	3,656

Source: GSO's website, last updated 01/25/2017

[21] Including supplementary capital to licensed projects in previous years.

Table III.2 displays foreign direct investment projects licensed in 2015 by six economic regions in Vietnam. South East and Red River Delta have attracted almost FDI projects with the total of capital of $10,594.5 and $7,812 million USD in 2015 while the Central Highlands is the least attractive destination of FDI with $40.9 million USD.

Mekong River Delta focuses on various sectors ranging from tourism to oil and gas, however, agriculture with products of rice, coconuts, tobacco, sugarcane and cocoa remains the most important sector. The region's economy mostly depends on agriculture, while the fisheries sector in the region is the largest and most developed in the country. The region has been the third attractive destination of FDI inflows in the nation, which is USD 3,656 million in 2015 (see Table III.2)

Table III. 3. Unemployment Rate by Regions

Region	2008	2009	2010	2011	2012	2013	2014	2015
Whole country	2.38	2.9	2.88	2.22	1.96	2.18	2.1	2.33
Red River Delta	2.29	2.69	2.61	1.99	1.91	2.65	2.82	2.42
Northern midlands and mountain areas	1.13	1.38	1.21	0.87	0.75	0.81	0.76	1.1
North Central area and Central coastal area	2.24	3.11	2.94	2.28	2.21	2.15	2.23	2.71
Central Highlands	1.42	2	2.15	1.31	1.47	1.51	1.22	1.03
South East	3.74	3.99	3.91	3.2	2.64	2.7	2.47	2.74
Mekong River Delta	2.71	3.31	3.59	2.77	2.17	2.42	2.06	2.77

Source: GSO's website, last updated 01/25/2017

2. Regional and Provincial Industrial Performance in Vietnam

Vietnam's domestic industry is mostly concentrated in and around the South East (Ho Chi Minh City and its neighboring provinces) and in the Red River Delta (the Hanoi-Haiphong area). As shown in Figure III.2, two-thirds of all Vietnamese industry during the period 1995-2013 was

concentrated in these two regions. The gross industry output in the Red River Delta and the South East of Vietnam in 2013 were VND1,607,154.8 billion (approximately USD80,400 billion) and VND2,423,563.1 (about USD122,178 billion) respectively. Most of the rest was distributed in the Mekong River Delta.

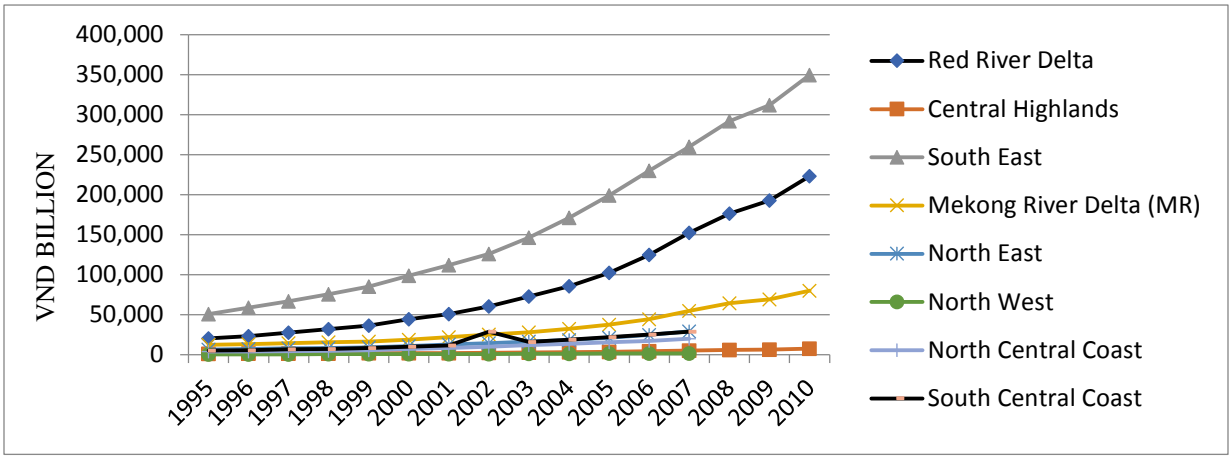


Figure III. 2. Gross Industrial Output by Region in Vietnam
Source: Author's computation from various issues (1995-2013) of General Statistical Office, Statistical Yearbook of Vietnam and Vietnam Production's Dataset.

Table III.4, III-5 and III-6 display gross industrial output by state, non-state and foreign invested companies in six economic regions. The gross industrial output of the three categories is also concentrated in South East and Red River Delta and followed by Mekong River Delta.

Gross industrial output from foreign invested companies is mostly concentrated in South East area where is the most attractive destination of FDI. They were VND20,958.900 billion (approximately USD 1 billion) in 1995 but reached the peak of VND200,946.500 (about USD10 billion) in 2010. However, the gross industrial output of foreign invested companies has decreased from 80.82 percent in 1995 to 57.6 percent in 2015 in South East, while it has increased from 11.42 percent in 1995 to 33.3 percent in 2015 in the Red River Delta which reflects shift of FDI inflows from South East region to the Red River Delta recently.

Table III. 4. The Share of Gross Industrial Output by State Companies

Region	1995	2000	2005	2010	2015
Red River Delta	26.49	26.37	28.40	29.61	30.1
Northern Midlands & Mountain Areas (NM)	6.99	6.93	6.89	6.98	6.1
Northern Central & Central Coastal Area (NC)	11.63	12.62	14.10	20.34	22.2
Central Highlands	0.90	0.75	0.75	0.75	0.75
South East	42.01	41.25	39.08	34.40	37
Mekong River Delta	11.97	12.08	10.77	7.92	4.85

Source: Author's computation from various issues (1995-2010) of GSO, Unit: percent of total gross industrial output of state companies

Table III. 5. The Share of Gross Industrial Output by Non-State Companies

Region	1995	2000	2005	2010	2015
Red River Delta	19.59	20.74	26.01	27.30	29
Northern Midlands & Mountain Areas (NM)	3.19	2.94	3.67	4.53	4.7
Northern Central & Central Coastal (NC)	12.85	13.90	12.67	13.76	14.2
Non-State: Central Highlands	2.82	2.71	1.87	1.97	2.1
South East	39.11	42.35	39.09	33.39	24.6
Mekong River Delta	22.44	17.36	16.68	19.05	25.4

Source: Author's computation from various issues (1995-2010) of GSO, Unit: percent of total gross industrial output of non-state companies

Table III. 6. The Share of Gross Industrial Output by Foreign Invested Companies

Region	1995	2000	2005	2010	2015
Red River Delta	11.42	22.08	23.72	29.75	33.3
Northern Midlands & Mountain Area (NM)	1.59	1.47	1.15	1.24	1.3
Northern Central & Central Coast (NC)	2.19	3.70	4.61	4.71	5.9
Central Highlands	0.34	0.24	0.23	0.18	0.8
South East	80.82	69.71	67.49	60.15	56.6
Mekong River Delta	3.64	2.79	2.80	3.96	2.1

Source: Author's computation from various issues (1995-2010) of GSO, Unit: percent of total gross industrial output of foreign invested companies

III. Literature Review

1. The Impact of Trade Openness on Economic Growth and Industrial Performance

The relationship between trade liberalization and economic growth as well as industrial performance has been a contentious topic in the field of international economics and development.

Most empirical studies support the positive impact of trade liberalization on economic growth (Krueger, 1978; Cline, 1979; Lucas, 1988; Grossman and Helpman, 1991; Dollar, 1992; Odusola & Akilo, 1995; Edwards, 1998; Ahmed, 1999; Tybout, 2000; Adenikinju & Olofin, 2002; Dollar & Kraay, 2004). Cline (1979), Pack (1988) and Tybout (1992) suggested a positive effect of opening up the economy on economic growth due to increasing returns to scale with an increase in output and a reduction of costs per unit. Technological innovation which is generated from trade openness plays an important role in accelerating economic growth because it creates more investment in product development (IMF, 2010). Exports generates higher levels of competition and improvements in production and leading to economies of scale and accelerated economic growth in both developing and advanced countries (Krueger, 1978). In addition, imports can also generates higher rate of economic growth by promoting technology transfer from advanced countries to developing countries.

Trade openness can also play a crucial role on accelerating growth rates of industrial sectors in developing countries. Martin and Page (1992); Grossman and Helpman (1991) showed evidence that an open economic policy generates a rise in foreign competition and provides access to imported inputs. More advanced technologies are imported and more innovations are generated resulting in productivity improvements and higher growth rates of industrial sectors. Turning to country studies, Udegbunam (2002). Umoru & Eborieme (2013); Edeme & Karimo (2014) found

a positive and significant correlation between trade openness and growth rate of industrial sectors in Nigeria. In particular, Edeme & Karimo (2014) found the positive effects of trade liberalization only on Nigerian manufacturing, mining and quarrying and power subsectors. Trade liberalization was also found to be the main determinant of industrial growth in Pakistan during the period 1973-1995 (Dutta & Ahmed 2006). In short, the efficiency gains from an open trade policy seem to be one of the most important mechanisms of higher industrial growth rate (Krueger & Tuncer, 1982; Page, 1984; Edwards, 1992; Paulino, 2002; Ynikkaya, 2003).

The positive effects of trade liberalization on economic growth as well as industrial performance have been observed in most empirical studies. Yet, few studies show negative or even ambiguous impacts. For example, Helleiner (1986) and Havrylyshyn (1990) found no strong and significant linkage between openness and productivity. Okamoto (1994) found no clear impacts of effective rates of protection on TFP growth. Havrylyshyn (1990) concluded that protection at moderate degrees would generate direct benefits to an economy and increase productivity. However, too much protection in the economy might result in a "sharp deterioration" in productivity. Rodrik (2015) studied deindustrialization in advanced countries and premature deindustrialization in developing countries and pointed out that developing economies becoming service economies without going through a proper phase of industrialization and at lower levels of income due to a drying up of opportunities in the context of globalization. The study found that premature deindustrialization in Latin America leads to a decline in manufacturing growth and an increase in informality which lowers the overall productivity, while it is associated with an expansion of employment share in African service sectors instead of manufacturing. The premature deindustrialization in developing countries also limits the possibilities for keeping up with the developed countries.

In sum, empirical studies show external liberalization and trade openness can have both positive and negative impacts on economic growth and industrial performance.

2. The Effects of FDI on Economic Growth and Industry Sector

The world has experienced a notable growth of FDI in the past three decades in both advanced and emerging countries (Contessi & Weinberger, 2009). However, the effects of FDI on economic growth are also a disputed topic and the real benefits of FDI for economic growth and domestic industrial performance is not a settled question.

Together with import and export trade, FDI is considered as a catalyst of economic growth and industrial performance (Findlay, 1978; Aitken & Harrison, 1994; Alexynska, 2003; Toulanoe et al, 2009; Akulava, 2011, Trinh & Nguyen, 2015). The positive impacts of FDI inflows are enhanced by its effects on technology spillover. Technology spillovers lead to a higher rate of factor productivity and efficiency in utilizing the host countries' resources hence results in economic growth. Findlay (1978) points out that FDI inflows increase the rates of technological progress and lead to higher rates of industrial growth. FDI inflows generate higher rates of competition and require improvements in domestic production. Aiken and Harrison (1994) examined the performance of 4000 Venezuelan firms during 1975-1989 and found that FDI sectors experienced better industrial performance than domestic sectors and concluded that FDI inflows is positively correlated with productivity growth.

Empirical studies also highlight the negative effects of FDI on growth (Boyd and Smith, 1992; Milberg, 1999; Aiken and Harrison, 1999). For instance, Boyd and Smith (1992) argued that FDI might slow down economic growth because of distortions in resource allocation, financial, prices and trade. Provisions favoring FDI would therefore be harmful to the economy. FDI intensifies

competition and crowds out domestic firms, due to the entry of multinational companies (Aitken and Harrison, 1999). Milberg (1999) pointed out that social standards might be undermined by policies adopted by governments to attract FDI such as the repression of labor income share or a reduction of labor standards. This would also lead to an increase in wage inequality, especially in developing countries.

In sum, FDI's contribution to economic growth depends on the absorptive capacity of the recipient country. Countries with higher levels of financial development gain significantly from FDI, while countries with weak-developed financial market might have a negative effect of FDI on economic growth (Alfaro et al, 2004).

IV. Theoretical Framework, Data and Empirical Model

1. The Determinants of Economic Growth and Industrial Performance

This paper examines the relationship between trade openness, and macroeconomic and industrial performance at the provincial and regional levels in Vietnam. This section discusses the main mechanisms through which external liberalization and FDI affect economic growth rates and industrial performance in Vietnam during the period of 1995-2015. According to IMF (1990), countries with more open economies will grow faster if they experience stable macroeconomic policies, minimal financial distortions, higher rates of capital formation and domestic investment.

1.1.Macroeconomic stability

Macroeconomic stability is one of the most important mechanisms driving economic growth and industrial performance. Inflation rate has been used as an indicator of macroeconomic stability (Friedman, 1977). Recently the real exchange rate has also been widely used as a measure of

macroeconomic stability since it reflects the effects of macroeconomic policies, which may lead to a fluctuation of exchange rate market (Husain et al, 2005). Moreover, Agarwal (1983) confirmed that exchange rate policy plays a vital role in international trade activities and the economic growth of developing countries. He further argued that countries with a major and appropriate exchange rate policy are very likely to grow faster since they can eliminate misalignments of real exchange rate. Hence, exchange rate can serve as proxy of macroeconomic stability in this paper.

1.2.Human capital and Education

Human capital plays a vital role in economic growth (Barro and Sal-i-Martin, 2004) and is the main "engine" of economic growth (Lucas, 1988). Human capital drives economic growth positively through its interaction with FDI and productivity of both labor and physical capital. In addition, industrial output grows faster with a higher level of human capital which is measured by a high level of educational attainment (Mankiw et al, 1992). A number of proxies have been used to measure human capital. The number of pupils of upper secondary school will be used as a proxy for human capital in Vietnam in this paper.

1.3.Population

The growth of fertility rate and population especially the working-age population is also one of the most important determinants of economic growth and industrial performance.

On one hand, growing populations give rise of the numbers of both workers and consumers who are the main contributions to the growth of economies. Gamble (2014) argued that Western economies have experienced the substantial success of in the past 200 years due to higher rate of their population growth. The Sheffield Political Economy Research Institute (SPERI, 2014) found evidences of a positive relation between population growth and economic growth during the period

of 1960 – late 1990s in the UK, however, the link between them has been weakened down in recent decades since the UK' strong population growth and outpacing productivity may motivate enterprises to invest in labor-intense but low-valued sectors, which would lead to a downward trend of both productivity and economic growth.

On the other hand, a very strong population growth also affects GDP per capita negatively and leads to lower rates of economic growth. For instance, Barro (2003) found that a higher fertility rate is associated with a negative impact on economic growth. The study suggests that a one-standard-deviation decline in the log of the fertility rate by 0.54 in 1980 resulted in an increase in the economic growth rate by 0.007.

1.4.Law

The economic policies of government, during periods of liberalization play a crucial role, especially the laws governing foreign investment in developing countries. Empirical studies on FDI inflows in Vietnam show that after the first Law on Foreign Investment in 1987 and Law on Investment and Unified Law on Enterprises in 2005, there was a substantial increase in FDI inflows in the Central and North Central Coast of Vietnam (Nguyen & Zhang, 2012). Therefore, we create a dummy variable of this law to examine the effects of these laws on economic growth as well as on industrial performance.

1.5. Economic Condition and Infrastructure Development

Economic precondition also plays an important role in economic growth and manufacturing growth as well as attracting FDI in host countries. Studies shows that countries with better infrastructure development and economic condition attract more FDI or get more benefits form external liberalization (Anwar & Nguyen, 2010). In this paper, the author employs the Provincial

Competitiveness Index (PCI) as a proxy of economic conditions for both regional and provincial level estimations. PCI is the result of an annual business survey conducted by Vietnam Chamber of Commerce and Industry (VCCI). The survey assesses and ranks the economic and governance condition and infrastructure quality of 68 provincial administrations in creating a favorable business environment for development of the private sector.

The overall PCI is composed of ten sub-indices reflecting economic governance and infrastructure development, including: low entry costs for business start-up; access to land and security of business premises; transparence of business environment and equitable business information; minimal informal charges[22]; has limited time requirements for bureaucratic procedures and inspections; limit crowding out of private activity from policy biases toward state, foreign, or connected firms; high expenditure on road transport; low cost of transportation; sound labor training policies; and fair and effective legal procedures for dispute resolution[23].

2. Hypotheses

This paper examines the relationship between trade liberalization which is proxied by export and import volume, as well as FDI inflows and Vietnamese economic growth and industrial performance both in general and at provincial levels. The author tries to test the following hypotheses:

1) Higher levels of FDI inflows lead to a higher rate of economic growth at both regional and provincial levels in Vietnam.

[22] The informal charges are an obstacle extra fees which may be charged by provincial officials while administering business activities.

[23] The author summarized from website of Vietnam Chamber of Commerce and Industry (VCCI): http://eng.pcivietnam.org/gioi-thieu-pci-c2.html

2) Provinces with better infrastructure and located in the key economic regions (proxied by Provincial Competitive Index - PCI) get relatively more benefits from trade liberalization.
3) Economic growth is one of the most important driving forces attracting FDI at provincial level in Vietnam.
4) Provinces with better economic conditions have attracted more FDI.
5) Higher levels of trade openness and FDI lead to greater industrial performance at both regional and provincial levels in Vietnam.

3. Data

3.1.The Definitions of Data

For the purpose of testing these hypotheses, we make use of a recently released panel dataset which provides annual data and monthly data on 61 provinces of Vietnam for the period 2005-2015. Table III.7 presents variables, definitions and sources of data in this paper. The data of exchange rate is from the dataset of United Nations. Other variables such as the growth rate of GDP, FDI, working-age population, import, export, GIO ang IPI growth rates are from General Statistical Office of Vietnam (GSO).

To test the impact of trade liberalization on Vietnamese industrial performance, this paper utilizes both the Industrial Production Index (IPI) and Gross Industrial Output (GIO). The Industrial Production Index (IPI) is defined as an economic indicator which measures the output of businesses in the industrial sector of the economy such as manufacturing, mining, and utilities. Industrial production indexes are computed mainly as Fisher indices with the weights based on annual estimates of value added by GSO. The data of IPI is monthly, while Gross Industrial Output which is measured as the sum of an industry's value added and intermediate inputs is annual.

3.2.The Analysis of Data

To ensure the goodness of fit of the estimated model, the author employed few diagnostic tests including Breusch-Pagn Lagrange multiplier (LM) for random effect and the Durbin-Wu-Hausman test for endogeneity. There was evidence of significant differences across provinces, therefore ordinary least square (OLS) estimates might be biased and inconsistent. The Pasaran CD and the Pagan-Hall tests were used to test whether the residuals are correlated across provinces and for the presence of significant heteroskedasticity. The null hypothesis that residuals are not correlated and the null hypothesis of homoscedasticity were rejected, suggesting that Driscoll and Kraay standard errors might be consistent for the estimations. The Hausman test to choose a better estimation between fixed and random effects suggested that the fixed effects model was more appropriate (Torres-Reyna, 2007).

Table III. 7. Summary of Variables

Variables	Definitions	Sources
GDP Growth	Regional and provincial economic growth rate (annual %)	GSO
Exports	Exports, USD	GSO, WDI
Imports	Imports, USD	GSO, WDI
FDI	Net inflows of Foreign Direct Investment, USD	GSO
Exchange Rate	IMF based exchange rate	UN dataset
Industrial Production Index(IPI)	Industrial Production Index: VSIC 2007: 2010=100	GSO
Gross Industrial Output (GIO)	Gross Industrial Output: 1994p: VSIC 2007	GSO
Education	Number of pupils of general education (Upper secondary) as of 30th, September by province	GSO
Population	The working-age population (in thousands)	GSO
Law	Common Investment Law and Unified Enterprise Law, before 2005, LAW=0; if after 2005, Law=1.	Adopted the idea from Nguyen and Zhang (2012)
Lib	Liberalization: before 1995, Lib=0; if after 1995, Lib=1	Based on massive bilateral and multilateral agreements with the United States and other important economic partners
WTO	The effect of joining the World Trade Organization on Vietnamese economic growth and industrial performance, if before 2007, WTO=0; if after 2007, WTO=1.	Adopted the idea from Nguyen and Zhang (2012)
PCI	The Provincial Competitiveness Index (PCI)	VCCI Vietnam

4. Empirical Models

4.1.The Correlation between Economic Growth and Trade Liberalization

The paper employs the fixed effect regression to test the correlation of economic growth at both regional and provincial levels, trade liberalization and other control variables. The log-linear form

(with an error term, ε_{it}) is utilized to estimate the coefficient of variables. The value of coefficients could then be interpreted in terms of percentages or elasticities (Trinh & Nguyen, 2015). The baseline specification for the sample with all provinces in is as follows:

$$LogGDPrate_{it} = \beta_1 + \beta_2 LogFDI_{it} + \beta_3 PCI_{it} + \beta_4 Logpop_{it} + \beta_5 LogEXR + \beta_6 LogEDU_{it} + \\ + \beta_7 FDI * PCI + \beta_8 FDI * EDU + \gamma_2 E_2 + ... \gamma_n E_n + \varepsilon_{it}$$

Where *i* and *t* designate province and region and time period respectively. The dependent variable is the provincial and regional GDP growth rate. FDI is Foreign Direct Investment and it can proxy for the degree of trade openness in each province; PCI is provincial competitive index; Pop is the working-age population; EXR is the exchange rate, EDU is the number of pupils of general education (Upper secondary) as of 30th, September by province. β_k is the coefficient for the independent variables. ε_{it} is the error term. E_n is the entity n. γ_n is the coefficient for the binary country regressors, while δ_n is the coefficient for the binary time regressors.

4.2.The Correlation between Industrial Performance and Trade Liberalization

To address the relationship between industrial performance, trade liberalization and other control variables, the paper employs the following aggregate industrial production function:

$$GIO = F(Export, Import, FDI, Pop, EDU, Law, Lib)$$

Specifying the aggregate industrial production function in log-linear form, the baseline specification for the sample with all provinces in Vietnam using an annual dataset and a monthly dataset as is follows:

$$LogGIO_{it} = \beta_1 + \beta_2 Loge\,\mathrm{xp}\,ort_{it} + \beta_3 Logimport_{it} + \beta_4 Logpop_{it} + \beta_5 LogEXR + \beta_6 Law_{it} + \\ \beta_7 Lib + \gamma_2 E_2 + ... \gamma_n E_n + \varepsilon_{it}$$

$$LogIPI_{it} = \beta_1 + \beta_2 Loge\,\mathrm{xp}ort_{it} + \beta_3 Logimport_{it} + \beta_4 LogFDI_{it} + \beta_5 Logpop_{it} + \\ + \beta_6 LogEXR + \beta_7 Law_{it} + \beta_8 WTO + \gamma_2 E_2 + ...\gamma_n E_n + \varepsilon_{it}$$

Where GIO_{it} and IPI_{it} are the gross industrial output and industrial production index in province and region *i* in period *t*. GIO_{it} and IPI_{it} are used as dependent variables for the annual and monthly dataset respectively. Export and import values as well as FDI inflows are used as proxies of trade openness (the uses of export, imports and FDI as a proxy for trade openness is depending on how is the availability of data).

V. Analysis of Estimation Results

1. The Impact of Trade Openness on Regional Economic Growth and Industrial Performance in Vietnam

1.1.FDI and Regional Economic Growth

This section analyzed the correlation of FDI and economic growth of six economic regions in Vietnam. The dataset was divided into six regions including the Red River Delta, Northern midlands and mountain areas, North and South Central Coast, Central Highlands, South East and Mekong River Delta, respectively.

Table III.8 and Table III.9 report the results for regional economic growth and industrial performance. The estimation results in Table III.8 indicate that the effect of FDI on economic growth is positive and strongly significant for five economic regions in Vietnam namely Red River Delta (Region 1), Northern midlands and mountain areas (Region 2), North and Central coastal area (Region 3), South East (Region 5) and Mekong River Delta (Region 6). The impact of FDI on growth is negative but not significant in the Central highlands (Region 5). This region might be less attractive for FDI in Vietnam due to poorer economic conditions as well as lack of

infrastructure. Similarly, the Provincial Competitiveness Index (PCI) has positive and strongly significant effect on economic growth in South East and Mekong River Delta.

The effect of the exchange rate which proxied for macroeconomic stability is positive and strongly significant for all six economic regions which indicates that the higher degree of macroeconomic stability leads to higher growth rates of GDP in every economic region of Vietnam. The working-age population (logpop) is also positively correlated with economic growth in Red River Delta, North Central area and Central coastal area, Central Highlands and South East since it creates more labor supply for those four regions.

Table III. 8. The Results of Fixed Effect Model for Six Economic Regions: Dependent Variable – GDP Growth Rate

VARIABLES	Red River Delta	Northern & Mountain Areas	North & South Central	Central Highlands	South East	Mekong River Delta
logFDI	**0.319*** **	**0.0427** **	**0.0796*** **	-0.00369	**0.190*** **	**0.0740*** **
	(0.0431)	(0.0203)	(0.0144)	(0.0341)	(0.0689)	(0.0262)
PCI	0.00420	-2.04e-05	0.00274	-0.00327	**0.0151** **	**0.00652** *
	(0.00541)	(0.00379)	(0.00351)	(0.00741)	(0.00710)	(0.00359)
logEXR	**2.519*** **	**3.894*** **	**3.525*** **	**3.207*** **	**2.840*** **	**3.110*** **
	(0.371)	(0.239)	(0.205)	(0.418)	(0.345)	(0.224)
logpop	**1.223*** **	0.722	**2.349*** **	**4.457*** **	**1.273** **	-0.0174
	(0.324)	(0.746)	(0.715)	(1.107)	(0.499)	(0.0657)
logEDU	-0.468	**-0.539*** **	-0.200	-0.286	0.495	**-0.452** *
	(0.287)	(0.174)	(0.153)	(0.462)	(0.342)	(0.243)
Constant	-27.57***	-35.51***	-46.82***	-56.63***	-40.81***	-23.20***
	(4.259)	(4.005)	(4.638)	(6.466)	(4.858)	(4.103)
Breusch-Pagn Lagrange test *(p – value)*	0.00	0.00	0.00	0.00	0.00	0.00
Durbin-Wu-Hausman test *(p – value)*	0.01	0.00	0.01	0.00	0.01	0.00
Pasaran CD test *(p – value)*	0.00	0.01	0.00	0.00	0.00	0.00
Pagan-Hall test *(p – value)*	0.00	0.00	0.00	0.00	0.00	0.00
Hausman *(p – value)*	0.00	0.00	0.00	0.00	0.00	0.00
Observations	108	120	153	40	55	130
R-squared	0.932	0.933	0.936	0.968	0.939	0.908

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

1.2.FDI and Vietnamese Industrial Performance at Regional Level

Table III.9 reports the relationship between FDI and industrial performance in the six economic regions. The estimated results indicate that the effect of FDI on the gross industrial output is positive and strongly significant in Red River Delta, Northern Midlands and Mountain areas, South East and Mekong River Delta. FDI has a negative, but insignificant effect on industrial performance in Central Highlands.

The coefficient of exchange rate is statistically significant at 10% level in Region 1, Region 2, Region 3 and Region 6 which suggests that an increase in exchange rate would lead to increases in the gross industrial output in Red River Delta, Northern midlands and mountain areas, North Central area and Central coastal area and Mekong Delta River.

The coefficient of logpop is strongly significant in Model (4) and Model (5) which indicates that an increase in working-age population in the Central Highlands and South East leads to around 9 and 3 percentage point increase in the gross industrial output of these two regions.

Table III. 9. The Results of Fixed Effect Model for Six Economic Regions: Dependent Variable – GIO Growth Rate

VARIABLES	Red River Delta	Northern & Mountain Areas	North & South Central	Central Highlands	South East	Mekong River Delta
logFDI	**0.268*** **	**0.163*** **	0.0195	**-0.0986* **	0.120	**0.155*** **
	(0.0414)	(0.0488)	(0.0280)	(0.0468)	(0.0809)	(0.0413)
PCI	0.000273	0.000503	-0.00585	**-0.0320*** **	0.0112	**0.0111** **
	(0.00477)	(0.00513)	(0.00804)	(0.00822)	(0.00931)	(0.00509)
logEXR	**2.379*** **	**2.089*** **	**4.354*** **	**1.682** **	0.292	**2.253*** **
	(0.524)	(0.488)	(0.695)	(0.652)	(0.619)	(0.577)
logpop	0.913	1.282	-2.178	**9.057*** **	**3.015*** **	-0.00912
	(2.074)	(1.097)	(2.250)	(1.603)	(0.684)	(0.0721)
logEDU	-0.382	0.152	0.651	**-1.855** **	0.786	-0.0888
	(0.403)	(0.317)	(0.592)	(0.675)	(0.511)	(0.379)
Constant	-18.27	-24.48***	-25.77*	-50.87***	-25.49***	-13.99*
	(15.77)	(8.625)	(13.98)	(8.315)	(7.269)	(8.229)
Breusch-Pagn Lagrange test *(p – value)*	0.00	0.00	0.00	0.00	0.00	0.00
Durbin-Wu-Hausman test *(p – value)*	0.01	0.00	0.01	0.00	0.01	0.00
Pasaran CD test *(p – value)*	0.00	0.01	0.00	0.00	0.00	0.00
Pagan-Hall test *(p – value)*	0.00	0.00	0.00	0.00	0.00	0.00
Hausman *(p – value)*	0.00	0.00	0.00	0.00	0.00	0.00
Observations	60	72	84	24	31	72
R-squared	0.875	0.725	0.522	0.858	0.819	0.696

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

2. The impact of External Liberalization on Provincial Economic Growth and Industrial Performance in Vietnam

2.1.FDI and Provincial Economic Growth

The correlation of FDI and economic growth at provincial level will be analyzed in this section. Table III.10 suggests that FDI has a positive and significant impact on economic growth at the provincial level in Vietnam as expected. Column (1) gives results on regression without education and the interaction variables. Column (2) is the results of estimation with education. The interaction terms between FDI and PCI and FDI and education are introduced in estimations (3) and (4) respectively.

The estimated results indicate that FDI is an important determinant of the provincial economic growth in Vietnam. The coefficient of FDI is positive but only strongly significant in Model (1) and (2). A one percent increase in FDI inflows would result in an increase of 8 percent in provincial economic growth. Other important determinants of economic growth at provincial level in Vietnam are PCI, the exchange rate and the working-age population. The coefficient of PCI is statistically significant at 10% level in Model (1), (2) and (4) while the coefficient of exchange rate is positive and significant at 10% level in all specification, which suggests that a one percent increase in the exchange rate would lead to around 3.9 percentage points increase in economic growth. The working-age population is also positively correlated to economic growth since it creates more labor supply for the economy.

Table III. 10. The Results of Fixed Effect Model for Provincial Level: Dependent Variable - GDP Growth Rate

VARIABLES	(1) GDPrate	(2) GDPrate	(3) GDPrate	(4) GDPrate
logFDI	**0.0870*** **	**0.0853*** **	0.0482	0.0753
	(0.0111)	(0.0111)	(0.0458)	(0.106)
PCI	**0.00619*** **	**0.00609*** **	0.00230	**0.00619*** **
	(0.00185)	(0.00185)	(0.00483)	(0.00186)
logEXR	**3.922*** **	**3.859*** **	**3.924*** **	**3.925*** **
	(0.0819)	(0.0937)	(0.0819)	(0.0863)
logpop	0.105	**0.128***	**0.109***	0.103
	(0.0661)	(0.0681)	(0.0664)	(0.0679)
logEDU		-0.120		
		(0.0861)		
FDI*PCI			0.000691	
			(0.000793)	
FDI*EDU				0.00113
				(0.0101)
Constant	-36.99***	-35.25***	-36.82***	-37.01***
	(0.769)	(1.468)	(0.793)	(0.789)
Breusch-Pagn Lagrange test *(p – value)*	0.00	0.00	0.00	0.00
Durbin-Wu-Hausman test *(p – value)*	0.01	0.00	0.01	0.00
Pasaran CD test *(p – value)*	0.00	0.01	0.00	0.00
Pagan-Hall test *(p – value)*	0.00	0.00	0.00	0.00
Hausman *(p – value)*	0.00	0.00	0.00	0.00
Observations	637	637	637	637
R-squared	0.907	0.907	0.907	0.907
Number of id	61	61	61	61

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The results in both estimations (4) and (5) show positive but insignificant signs of the interaction term FDI*PCI and FDI*EDU. The provincial competitive index is a proxy for infrastructure and economic conditions in each province. The positive coefficient of the interaction term between FDI and PCI indicates that the higher degree of PCI would lead higher positive effect of FDI on provincial economic growth. Similarly, the interaction term between FDI and education proxied by the number of pupils of general education (Upper secondary) as of 30th, September by province is positive but insignificant.

Table III. 11. The Results of Fixed Effect Model for Provincial Level: Dependent Variable – FDI

VARIABLES	(1) logFDI	(2) logFDI	(3) logFDI	(4) logFDI	(5) logFDI
GDPrate	**1.001*** **	**1.017*** **	**1.111*** **	**1.122*** **	**1.097*** **
	(0.0430)	(0.0489)	(0.143)	(0.143)	(0.143)
PCI		0.00312	0.00248	0.00137	0.00194
		(0.00670)	(0.00671)	(0.00672)	(0.00671)
logEXR			0.428	0.488	0.543
			(0.658)	(0.658)	(0.669)
logpop				**0.410***	0.398
				(0.237)	(0.245)
logEDU					**0.515** **
					(0.308)
Constant	3.009***	2.775***	6.982	9.314	17.55**
	(0.141)	(0.361)	(6.062)	(6.192)	(7.426)
Breusch-Pagn Lagrange test *(p – value)*	0.00	0.01	0.00	0.00	0.00
Durbin-Wu-Hausman test *(p – value)*	0.00	0.00	0.00	0.00	0.00
Pasaran CD test *(p – value)*	0.01	0.01	0.00	0.00	0.00
Pagan-Hall test *(p – value)*	0.00	0.00	0.00	0.00	0.00
Hausman *(p – value)*	0.00	0.00	0.00	0.00	0.00
Observations	672	637	637	637	637
R-squared	0.471	0.465	0.466	0.469	0.472
Number of id	61	61	61	61	61

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

This paper also attempts to investigate the two-way linkage between FDI and provincial economic growth in Vietnam. Table III.11 shows that economic growth has a significant positive influence

on FDI at the provincial level in Vietnam. The estimated coefficient is significant at the 10% level. The estimated coefficient indicates that, other things remaining constant, a 1% increase in provincial economic growth would lead to an increase in the stock of FDI flows to province by 1%. This result is consistent and suggests that higher provincial economic growth in Vietnam is an important determinant of FDI inflows. The provincial competitive index also seems to have a positive impact on attracting FDI inflows however the coefficient is not significant.

2.2.Trade Liberalization and Vietnamese Industrial Performance at Provincial Level

To investigate the relationship between external liberalization and industrial performance at provincial level in Vietnam, we employ both annual and monthly dataset. The choice of two proxies for industrial performance is dictated by the availability of data.

Table III.12 and Table III.13 present the results of fixed and random effects models, which estimate the relationship between Vietnamese industrial performance proxied by gross industrial output (GIO) and industrial production index (IPI) and trade openness proxied by exports and imports.

There are positive and strongly significant impacts of exports on gross industrial output in almost all specifications (see Table III.12), while the coefficients of imports are positive but insignificant except for model (8) when random effects are employed. A one percent increase in export value leads to an increase of 5 to 10 percent in gross industrial output.

Exchange rate and population also influences industrial output positively and significantly. The estimated coefficient of exchange rate and the working-age population are significant (at 10% level). For example, an increase in real exchange rate by 1 percent results in around 1.8 percentage points increase in gross industrial output. The working-age population is also positively correlated

to gross industrial output. This result is consistent since an increase in population at working age leads to an increase in labor supply which is the main determinant of industrial performance.

The positive coefficients of dummy variable of law indicates that the passage of the Law on Foreign Investment and Unified Law on Enterprise have positive and strongly significant impacts on industrial performance since it gave more benefits for manufacturing companies such as it is easier to start up an enterprise than before.

Table III. 12. The Results of Fixed and Random Effects Models Using Annual Data: Dependent Variable – GIO Growth Rate

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**FE**	**RE**	**FE**	**RE**	**FE**	**RE**	**FE**	**RE**
logexport	**0.0468****	**0.0729*****			**0.0736*****	**0.0945*****		
	(0.0203)	(0.0198)			(0.0209)	(0.0203)		
logEXR	**1.948*****	**1.663*****	**1.893*****	**1.660*****	**1.824*****	**1.743*****	**1.836*****	**1.825*****
	(0.163)	(0.125)	(0.150)	(0.118)	(0.167)	(0.117)	(0.156)	(0.109)
logpop	0.285	**1.266*****	**0.395**	**1.310*****	**1.250*****	**1.348*****	**1.438*****	**1.396*****
	(0.461)	(0.148)	(0.440)	(0.144)	(0.456)	(0.147)	(0.446)	(0.145)
Law	**0.650*****	**0.563*****	**0.713*****	**0.628*****				
	(0.0991)	(0.0960)	(0.0939)	(0.0936)				
Lib	0.0338	0.0145	0.0612	0.0475				
	(0.0398)	(0.0399)	(0.0378)	(0.0388)				
logimport			-0.00211	0.0162			0.0221	**0.0403****
			(0.0154)	(0.0157)			(0.0161)	(0.0161)
Constant	-13.63***	-18.08***	-13.77***	-18.20***	-19.44***	-19.47***	-20.75***	-20.38***
	(2.522)	(1.363)	(2.411)	(1.279)	(2.360)	(1.288)	(2.284)	(1.188)
Observations	424	424	417	417	424	424	417	417
R-squared	0.652		0.661		0.610		0.605	
Number of id	61	61	61	61	61	61	61	61

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table III. 13. The Results of Fixed and Random Effects Models Using Monthly Data – Dependent Variable – IPI Growth Rate

VARIABLES	(1) FE	(2) RE	(3) FE	(4) RE	(5) FE	(6) RE
logexport	**1.035*** **	**0.678*** **				
	(0.172)	(0.0443)				
logEXR	0.335	**1.129** **	**2.009*** **	**1.363** **	**3.195*** **	**3.192*** **
	(0.577)	(0.443)	(0.628)	(0.579)	(0.374)	(0.378)
logFDI	**0.230*** **	**0.243*** **	**0.249*** **	**0.326*** **	**0.282*** **	**0.290*** **
	(0.0235)	(0.0231)	(0.0280)	(0.0301)	(0.0137)	(0.0137)
Law	-0.715***	-0.566***	-0.322**	-0.712***	-0.217***	-0.207***
	(0.136)	(0.101)	(0.136)	(0.134)	(0.0692)	(0.0699)
WTO	-0.214**	-0.0828	0.0321	-0.146	0.123	0.121
	(0.104)	(0.0849)	(0.120)	(0.112)	(0.0765)	(0.0773)
logimport			0.270	**0.542*** **		
			(0.175)	(0.0752)		
Constant	-0.158	-5.570	-11.57**	-7.445	-22.39***	-22.79***
	(4.928)	(4.240)	(5.390)	(5.494)	(3.608)	(3.650)
Observations	252	252	248	248	747	747
R-squared	0.554		0.494		0.501	
Number of id	61	61	61	61	61	61

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Instead of using gross industrial output as a dependent variable, I utilize the industrial production index as a proxy for industrial performance in Vietnam. Table III.13 presents the results of fixed and random effects models which employ IPI as a dependent variable. The coefficients of exports are positive and strongly significant in all specification while the coefficient of imports is only significant in Model (4). The coefficient of export is significantly positive at around 0.6 to 1.03. As expected, Vietnamese industrial production gets benefits from FDI inflows. This result is reasonable, since FDI inflows into manufacturing have been increased since 1995[24]. The dummy variable to present entry to WTO is adopted in this model. It seems that joining the World Trade Organization since 2007 has had a negative influence on Vietnamese industrial performance. The coefficient of this dummy is negative and significant in Model (1) and (2). The negative effect

[24] FDI inflows' trend in Vietnam by GSO, 2013

might be explained by higher competition from foreign companies due to WTO requirements. The exchange rate seems to drive industrial growth positively. An increase in the exchange rate leads to about 3.2 percentage points increase in industrial production index.

In sum, the results from both the fixed and random effects model using the industrial production index as a dependent variable also supports the hypothesis that a higher degrees of trade openness proxied by exports, imports and FDI volume lead to a better industrial performance at the provincial level in Vietnam.

VI. Conclusion and Policy Discussions

Vietnam has been shifting its economy from a centrally-planned to a more opened and market-oriented economy, since launching extensive reforms (Doi Moi – 1986). The nation has displayed higher growth rate of GDP, better industrial performance and more FDI inflows. Export and import volumes have increased dramatically. This paper aims to investigate the impact of external liberalization on Vietnamese economic growth and industrial performance at both regional and provincial levels. Provincial economic preconditions are also considered, in order to evaluate their influence in attracting FDI and the benefits of external liberalization on growth as well as industrial performance.

To investigate the relationship between trade openness and economic growth at both regional and provincial levels, we have employed a fixed effect estimation models. Three interesting stylized facts emerge from the results:

- The effect of FDI on economic growth is positive and strongly significant in five economic regions in Vietnam namely Red River Delta (Region 1), Northern midlands and mountain areas (Region 2), North Central area and Central coastal area (Region 3), South East (Region 5) and

Mekong River Delta (Region 6). While FDI has a negative but statistically insignificant impact on economic growth in Central Highlands (Region 4), which might be explained by poorer economic condition in this region.

- The results of fixed effect estimations support the hypotheses that higher levels of trade leads to a higher rate of economic growth at provincial level in Vietnam. And provinces with better infrastructure and located in the key economic regions relatively get more benefits from trade liberalization.
- Economic growth is one of the most important driving forces of FDI attraction at provincial level in Vietnam and provinces with better economic condition have attracted more FDI.

We also estimated the correlation between industrial sector growth and trade liberalization at regional and provincial level in Vietnam by employing both annual and monthly dataset for provincial level and annual dataset for regional level. The proxies for trade openness including exports, imports volume and FDI and two proxies of industrial performance including gross industrial output and industrial production index were employed in both fixed and random effects models.

- The effect of FDI on the gross industrial output is positive and strongly significant in Red River Delta, Northern midlands and mountain areas, South East and Mekong River Delta, while FDI has negative effect on industrial performance in Central Highlands, however the coefficient is not significant.
- The results also support the hypothesis that trade openness and FDI have been one of the most important determinants of industrial performance in Vietnam during the phase of vigorous reform in Vietnam (1995-2015).

- The passage of the Law on Foreign Investment and Unified Law on Enterprise have positive impacts on provincial industrial performance in Vietnam.

The study suggests that FDI inflows and trade openness play very important role in accelerating economic growth and industrial performance at both regional and provincial levels in Vietnam. Vietnamese government should enhance FDI and more trading with international market by easing regulations for FDI and foreign invested companies and implementing international trade commitments. Regions and provinces with better infrastructure seem to get more benefit from FDI and trade openness, which suggests that provincial authorities should invest in building new and more modern infrastructure and also improve rules and regulations governing FDI inflows. An open-door policy remains a priority, but the government and the State Bank of Vietnam should pursue a flexible monetary policy to maintain macroeconomic stability and ease the pressure of high inflation. These macroeconomic policies together with appropriate provincial governance structures should lead to greater benefits of external liberalization for the whole country, regions and provinces of Vietnam. Moreover, the Vietnamese government should be cautious about the possibility of premature deindustrialization. Active policy efforts should be made to adopt and innovate in labor intensive technologies and the promotion of manufacturing to prevent premature deindustrialization.

CONCLUDING REMARKS

This study examines the effect of financial account openness on the labor share of income which does account for the income share of self-employment (Chapter I); the relationship of external liberalization, the Doi Moi policy and macroeconomic performance in Vietnam (Chapter II); the mechanisms driving economic growth and industrial performance at both regional and provincial levels in Vietnam (Chapter III). Chapter I demonstrates the recent declining trend of the labor share of income and examines the impact of financial integration on the labor share. It concludes that capital account openness is negatively correlated to the labor share of income even when account for earnings of the self-employed. Chapter II studies the milestones of 6 phases of the comprehensive reforms, the Doi Moi Policy, in Vietnam in the past thirty years (1986-2016). The decomposition of aggregate demand and labor productivity were taken, which suggests that the external sector together with government expenditure have become important driving factors of Vietnamese economic growth since 2012, while sectoral productivity growth of the service sector plays an important role in the improvement of overall labor productivity in Vietnam during the period of 2005-2015. Chapter III investigates the impact of trade openness on economic growth and industrial performance at both regional and provincial levels, it concludes that trade openness and FDI are the main drivers of economic growth and manufacturing sector growth in Vietnam since Doi Moi.

In this context, the three Chapters may complement each other. Chapter I and Chapter II provide the basis for the empirical work on regions and provinces in Vietnam in Chapter III. Chapter I brings a new measure of the labor share of income which accounts for earnings of the self-employed, while investigates the impact of capital account openness on the labor share. The results of Chapter I motivated the author to examine the correlation of the comprehensive reforms,

external liberalization and Vietnamese economic performance. There are few studies have done on the comprehensive reforms of Vietnam (the Doi Moi Policy), however, to best of my knowledge, this is the first paper describes the milestones of 6 phases of the Doi Moi through the past 30 years (1986-2016) and links it with macroeconomic performance and the open-door policies in each phase. The decomposition of aggregate demand and labor productivity found the main drivers of economic growth and labor productivity in Vietnam during the period of 2005-2015. And it motivated the author continue investigating the impact of trade openness on economic growth and industrial growth at regional and provincial levels in Vietnam. There are many studies on Vietnamese economic growth have done, but due to the difficulty of data collecting, Chapter III is one of the first papers attempt to examine the effect of external liberalization on regional and provincial economic growth recently. However, this dissertation shows some weaknesses. The 2005-2015 period for the empirical part in Chapter II and Chapter III may not be long enough for the accurate consideration of the comprehensive reforms and structure changes over thirty years in Vietnam.

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APPENDICES

Table A.I. 1. Country Listings of Chapter I

Country Listings			
Country	**Developing Countries**	**Country**	**Developed Countries**
1	Argentina	16	Australia
2	Brazil	17	Austria
3	Chile	18	Canada
4	China	19	Finland
5	Colombia	20	France
6	Costa Rica	21	Germany
7	Dominican Republic	22	Ireland
8	Hong Kong	23	Italy
9	Iran	24	Japan
10	Mexico	25	Netherlands
11	Paraguay	26	New Zealand
12	Philippines	27	Spain
13	Republic of Korea	28	Sweden
14	Singapore	29	United Kingdom
15	Thailand	30	United States

Table A.I. 2. Results of OLS Regression: Laborshare1, Laborshare2, Laborshare3, Laborhsare4 and Kaopen Index

VARIABLES	(1) laborshare1	(2) laborshare2	(3) laborshare3	(4) laborshare4
Kaopen_index	0.00166	**-0.0203*** **	**-0.0270*** **	**-0.0125** **
	(0.00313)	(0.00527)	(0.00553)	(0.00591)
logGDPpcpt	0.0492	-0.768***	-0.458***	0.275**
	(0.0595)	(0.0914)	(0.0968)	(0.129)
sqrtlogGDPpcpt	-0.00187	0.0393***	0.0228***	-0.0137**
	(0.00318)	(0.00491)	(0.00514)	(0.00649)
Trade_Openness	0.000102**	2.93e-05	1.48e-05	-0.000191
	(4.03e-05)	(5.55e-05)	(5.79e-05)	(0.000133)
Govshare	0.00931***	0.00270**	0.00586***	0.00696***
	(0.000738)	(0.00123)	(0.00128)	(0.00111)
Unemrate	-0.000203	0.00213*	0.000413	0.000719
	(0.000675)	(0.00116)	(0.00119)	(0.00101)
Patent_A	2.25e-07***	3.24e-07***	1.92e-07***	1.59e-07***
	(3.48e-08)	(4.85e-08)	(4.24e-08)	(3.08e-08)
Logpop16_60	0.00315	0.00356	0.00604	-0.00336
	(0.00374)	(0.00376)	(0.00381)	(0.00316)
Linear_lamrig	-0.0171***	-0.00886	-0.0289***	-0.0408***
	(0.00511)	(0.00908)	(0.00843)	(0.00462)
Constant	0.00680	4.235***	2.840***	-0.855
	(0.276)	(0.426)	(0.455)	(0.635)
Observations	709	309	388	369
R-squared	0.465	0.586	0.487	0.323

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.I. 3. Results of OLS Regression: Laborshare1, Laborshare2, Laborshare3, Laborhsare4 and FO1

VARIABLES	(1) laborshare1	(2) laborshare2	(3) laborshare3	(4) laborshare4
FO1	-0.000204	**-0.00705*** **	**-0.00707*** **	**-0.00406*** **
	(0.00102)	(0.00126)	(0.00123)	(0.00141)
logGDPpcpt	0.0432	-0.970***	-0.659***	0.121
	(0.0629)	(0.0939)	(0.0931)	(0.138)
sqrtlogGDPpcpt	-0.00142	0.0498***	0.0329***	-0.00589
	(0.00340)	(0.00514)	(0.00504)	(0.00710)
Trade_Openness	0.000113*	0.000265***	0.000217***	-0.000294**
	(5.87e-05)	(7.53e-05)	(7.91e-05)	(0.000131)
Govshare	0.00932***	0.00163	0.00433***	0.00725***
	(0.000739)	(0.00120)	(0.00125)	(0.00117)
Unemrate	-0.000186	0.00302***	0.000826	0.000148
	(0.000696)	(0.00113)	(0.00120)	(0.00105)
Patent_A	2.24e-07***	3.09e-07***	1.63e-07***	1.13e-07***
	(3.81e-08)	(4.95e-08)	(4.37e-08)	(3.32e-08)
Logpop16_60	0.00355	0.00154	0.00378	-0.00440
	(0.00378)	(0.00424)	(0.00438)	(0.00337)
Linear_lamrig	-0.0178***	-0.00745	-0.0267***	-0.0421***
	(0.00512)	(0.00930)	(0.00869)	(0.00501)
Constant	0.0257	5.185***	3.819***	-0.0925
	(0.288)	(0.432)	(0.429)	(0.676)
Observations	686	309	388	356
R-squared	0.464	0.590	0.467	0.318

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.I. 4. Results of OLS Regression: Laborshare1, Laborshare2, Laborshare3, Laborhsare4 and FO2

VARIABLES	(1) laborshare1	(2) laborshare2	(3) laborshare3	(4) laborshare4
FO2	-0.00299	**-0.0106*** **	**-0.0127*** **	**-0.0305*** **
	(0.00247)	(0.00384)	(0.00431)	(0.00555)
logGDPpcpt	0.0330	-0.881***	-0.583***	0.0386
	(0.0617)	(0.0898)	(0.0932)	(0.143)
sqrtlogGDPpcpt	-0.000774	0.0446***	0.0285***	-0.00126
	(0.00332)	(0.00488)	(0.00504)	(0.00737)
Trade_Openness	0.000152***	0.000173**	0.000156*	-1.58e-05
	(5.52e-05)	(7.61e-05)	(8.13e-05)	(0.000137)
Govshare	0.00924***	0.00241**	0.00488***	0.00744***
	(0.000741)	(0.00120)	(0.00126)	(0.00113)
Unemrate	-8.17e-05	0.00266**	0.000637	1.45e-05
	(0.000695)	(0.00115)	(0.00122)	(0.00102)
Patent_A	2.18e-07***	3.19e-07***	1.84e-07***	9.22e-08***
	(3.72e-08)	(5.02e-08)	(4.37e-08)	(3.28e-08)
Logpop16_60	0.00391	0.00280	0.00432	-0.00321
	(0.00378)	(0.00418)	(0.00431)	(0.00313)
Linear_lamrig	-0.0181***	-0.00723	-0.0251***	-0.0438***
	(0.00507)	(0.00940)	(0.00864)	(0.00485)
Constant	0.0628	4.793***	3.486***	0.259
	(0.284)	(0.415)	(0.430)	(0.697)
Observations	686	309	388	356
R-squared	0.465	0.575	0.455	0.346

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.I. 5. Results of OLS Regression for Developing and Developed Countries Panels: Laborhsare1, Laborshare2, Laborshare3, Laborshare4 and Kaopen index

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	laborshare1	laborshare1	laborshare2	laborshare2	laborshare3	laborshare3	laborshare4	laborshare4
	Developing	Developed	Developing	Developed	Developing	Developed	Developing	Developed
Kaopen_index	-0.00814	-0.000609	**-0.0129***	**-0.0310*****	**-0.0272*****	**-0.0250*****	**-0.0207*****	**-0.00999*****
	(0.00507)	(0.00294)	(0.00719)	(0.00347)	(0.00757)	(0.00372)	(0.00602)	(0.00294)
logGDPpcpt	-0.319***	0.219**	-1.165***	0.371*	-1.038***	0.654***	-0.617	-0.136
	(0.107)	(0.0872)	(0.216)	(0.205)	(0.184)	(0.188)	(0.562)	(0.119)
sqrtlogGDPpcpt	0.0192***	-0.0120***	0.0593***	-0.0189*	0.0536***	-0.0338***	0.0314	0.00517
	(0.00622)	(0.00432)	(0.0128)	(0.0100)	(0.0109)	(0.00919)	(0.0321)	(0.00590)
Trade_Openness	8.32e-05	-0.000363***	8.03e-05	-0.000455***	-6.36e-05	-0.000419***	-0.00346***	0.000201**
	(7.10e-05)	(6.24e-05)	(0.000125)	(0.000109)	(0.000127)	(9.75e-05)	(0.000867)	(9.68e-05)
Govshare	0.00911***	0.00591***	0.00523*	-0.00272***	0.00399	0.00251***	0.000862	-0.00178*
	(0.00191)	(0.000530)	(0.00273)	(0.000922)	(0.00263)	(0.000948)	(0.00221)	(0.000946)
Unemrate	-0.00104	-0.00408***	-0.00125	-0.00105	-0.00399*	-2.16e-05	0.000993	-0.00170**
	(0.00150)	(0.000469)	(0.00183)	(0.000862)	(0.00206)	(0.000723)	(0.00276)	(0.000850)
Patent_A	4.63e-07***	-1.03e-08	9.83e-07***	6.00e-08**	9.75e-07***	2.33e-08	6.02e-06**	-1.65e-08
	(9.41e-08)	(2.33e-08)	(2.85e-07)	(2.92e-08)	(3.26e-07)	(2.55e-08)	(2.31e-06)	(2.44e-08)
Logpop16_60	-0.0172**	0.0212***	-0.0188**	0.0202***	-0.0204**	0.0188***	-0.0882***	0.0155***
	(0.00708)	(0.00209)	(0.00791)	(0.00313)	(0.00803)	(0.00265)	(0.0245)	(0.00218)
Linear_lamrig	-0.0215*	-0.00227	-0.0470***	0.0120**	-0.0631***	-0.000195	0.102***	-0.0113***
	(0.0120)	(0.00298)	(0.0158)	(0.00524)	(0.0178)	(0.00448)	(0.0225)	(0.00328)
Constant	1.663***	-0.600	6.254***	-1.193	5.699***	-2.589***	3.712	1.451**
	(0.457)	(0.439)	(0.911)	(1.040)	(0.774)	(0.961)	(2.522)	(0.598)
Observations	277	432	128	181	142	246	82	287
R-squared	0.287	0.546	0.800	0.740	0.733	0.614	0.620	0.549
Country_code	1	2	1	2	1	2	1	2

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.I. 6. Results of OLS Regression for Developing and Developed Countries Panels: Laborshare1, Laborshare2, Laborhshare3, Laborshare4 and FO1

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	laborshare1	laborshare1	laborshare2	laborshare2	laborshare3	laborshare3	laborshare4	laborshare4
	Developing	Developed	Developing	Developed	Developing	Developed	Developing	Developed
FO1	**0.00804*** **	**-0.00130** **	0.00209	**-0.00221***	0.00258	-0.00139	-0.0165	-0.00139
	(0.00198)	(0.000640)	(0.00225)	(0.00125)	(0.00255)	(0.000938)	(0.0207)	(0.00118)
logGDPpcpt	-0.229**	0.196**	-1.117***	-0.313	-0.897***	0.111	-0.645	-0.331**
	(0.114)	(0.0898)	(0.228)	(0.247)	(0.202)	(0.193)	(0.831)	(0.136)
sqrtlogGDPpcpt	0.0132**	-0.0107**	0.0555***	0.0146	0.0434***	-0.00724	0.0315	0.0147**
	(0.00669)	(0.00452)	(0.0134)	(0.0122)	(0.0119)	(0.00951)	(0.0485)	(0.00676)
Trade_Openness	-0.000228*	-0.000283***	1.34e-06	-0.000421**	-0.000170	-0.000429***	-0.00373***	8.66e-05
	(0.000121)	(6.98e-05)	(0.000170)	(0.000164)	(0.000178)	(0.000125)	(0.000968)	(9.22e-05)
Govshare	0.0106***	0.00570***	0.00607**	-0.00339***	0.00514**	0.00208**	0.00255	-0.00145
	(0.00198)	(0.000552)	(0.00266)	(0.00106)	(0.00259)	(0.00100)	(0.00306)	(0.00110)
Unemrate	-0.00278*	-0.00422***	-0.00147	-0.00123	-0.00440**	-0.000214	-0.000889	-0.00256***
	(0.00159)	(0.000480)	(0.00192)	(0.000975)	(0.00222)	(0.000787)	(0.00359)	(0.000915)
Patent_A	5.26e-07***	-2.00e-08	1.21e-06***	5.03e-08	1.49e-06***	9.18e-09	6.50e-06**	-5.02e-08*
	(1.11e-07)	(2.48e-08)	(2.50e-07)	(3.18e-08)	(3.10e-07)	(2.70e-08)	(3.06e-06)	(2.64e-08)
Logpop16_60	-0.0187**	0.0220***	-0.0235***	0.0194***	-0.0307***	0.0186***	-0.112***	0.0163***
	(0.00739)	(0.00222)	(0.00771)	(0.00352)	(0.00861)	(0.00302)	(0.0305)	(0.00233)
Linear_lamrig	-0.0203*	-0.00252	-0.0454***	0.0230***	-0.0641***	0.00734	0.0885***	-0.00891**
	(0.0122)	(0.00292)	(0.0159)	(0.00556)	(0.0189)	(0.00486)	(0.0228)	(0.00344)
Constant	1.342***	-0.490	6.126***	2.241*	5.265***	0.140	4.066	2.431***
	(0.489)	(0.446)	(0.962)	(1.250)	(0.848)	(0.989)	(3.598)	(0.684)
Observations	268	418	128	181	142	246	80	276
R-squared	0.305	0.558	0.795	0.679	0.704	0.575	0.579	0.544
Country_code	1	2	1	2	1	2	1	2

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.I. 7. Results of OLS Regression for Developing and Developed Countries Panels: laborshare1, laborshare2, laborhshare3, laborshare4 and FO2

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	laborshare1	**laborshare1**	**laborshare2**	**laborshare2**	**laborshare3**	**laborshare3**	**laborshare4**	**laborshare4**
	Developing	**Developed**	**Developing**	**Developed**	**Developing**	**Developed**	**Developing**	**Developed**
FO2	**0.00756*** **	**-0.00779*** **	**0.00825** **	**-0.0121*** **	**-0.00951*** **	**-0.00951*** **	-0.0725	**-0.00984** **
	(0.00251)	(0.00226)	(0.00344)	(0.00310)	(0.00252)	(0.00252)	(0.0534)	(0.00395)
logGDPpcpt	-0.286**	0.170*	-1.107***	-0.421*	0.0224	0.0224	-0.510	-0.343**
	(0.114)	(0.0896)	(0.225)	(0.239)	(0.187)	(0.187)	(0.771)	(0.134)
sqrtlogGDPpcpt	0.0168**	-0.00925**	0.0548***	0.0202*	-0.00258	-0.00258	0.0240	0.0155**
	(0.00668)	(0.00452)	(0.0133)	(0.0118)	(0.00919)	(0.00919)	(0.0450)	(0.00662)
Trade_Openness	-6.55e-05	-0.000186**	-6.38e-05	-0.000292**	-0.000290***	-0.000290***	-0.00330***	0.000165*
	(9.48e-05)	(7.56e-05)	(0.000145)	(0.000145)	(0.000106)	(0.000106)	(0.000958)	(8.82e-05)
Govshare	0.00985***	0.00549***	0.00646**	-0.00378***	0.00173*	0.00173*	0.00418	-0.00109
	(0.00195)	(0.000542)	(0.00265)	(0.00100)	(0.000985)	(0.000985)	(0.00288)	(0.00110)
Unemrate	-0.00209	-0.00419***	-0.00209	-0.00119	-0.000201	-0.000201	-0.00129	-0.00273***
	(0.00164)	(0.000475)	(0.00189)	(0.000946)	(0.000763)	(0.000763)	(0.00341)	(0.000891)
Patent_A	5.08e-07***	-2.44e-08	1.20e-06***	4.56e-08	4.09e-09	4.09e-09	7.76e-06**	-5.40e-08**
	(1.06e-07)	(2.49e-08)	(2.47e-07)	(3.14e-08)	(2.64e-08)	(2.64e-08)	(3.47e-06)	(2.63e-08)
Logpop16_60	-0.0190**	0.0222***	-0.0260***	0.0185***	0.0183***	0.0183***	-0.124***	0.0166***
	(0.00785)	(0.00219)	(0.00778)	(0.00343)	(0.00293)	(0.00293)	(0.0369)	(0.00220)
Linear_lamrig	-0.0233*	-0.00303	-0.0460***	0.0222***	0.00599	0.00599	0.0858***	-0.00994***
	(0.0121)	(0.00290)	(0.0157)	(0.00536)	(0.00470)	(0.00470)	(0.0216)	(0.00342)
Constant	1.572***	-0.378	6.100***	2.756**	0.567	0.567	3.486	2.464***
	(0.487)	(0.444)	(0.951)	(1.210)	(0.957)	(0.957)	(3.338)	(0.674)
Observations	268	418	128	181	246	246	80	276
R-squared	0.284	0.565	0.800	0.696	0.587	0.587	0.584	0.552
Country_code	1	2	1	2	1	2	1	2

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.I. 8. Correlation of Capital Account Openness and Self-employed Income Share

VARIABLES	(1) selfincome	(2) selfincome	(3) selfincome
Kaopen_index	0.00351		
	(0.00217)		
logGDPpcpt	**-0.493*** **	**-0.473*** **	**-0.429*** **
	(0.0440)	(0.0493)	(0.0467)
sqrtlogGDPpcpt	0.0241***	0.0231***	0.0207***
	(0.00228)	(0.00259)	(0.00245)
Trade_Openness	**-0.000400*** **	**-0.000410*** **	**-0.000584*** **
	(8.14e-05)	(8.77e-05)	(0.000101)
Govshare	**-0.00773*** **	**-0.00790*** **	**-0.00770*** **
	(0.00130)	(0.00131)	(0.00129)
Unemrate	**0.00314*** **	**0.00331*** **	**0.00337*** **
	(0.000658)	(0.000664)	(0.000647)
Patent_A	**-3.61e-07** **	**-3.68e-07*** **	**-3.54e-07** **
	(1.40e-07)	(1.41e-07)	(1.38e-07)
Logpop16_60	0.0683	0.0678	0.0601
	(0.0414)	(0.0425)	(0.0410)
Linear_lamrig	**0.0178*** **	**0.0165*** **	**0.0154*** **
	(0.00535)	(0.00532)	(0.00525)
FO1		0.000419	
		(0.000794)	
FO2			**0.00569*** **
			(0.00184)
Constant	2.526***	2.427***	2.260***
	(0.225)	(0.236)	(0.230)
Observations	309	309	309
R-squared	0.542	0.538	0.553
Number of Country_name1	23	23	23

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.I. 9. Correlation of Capital Account Openness and Self-employed Income Share for Developing and Developed Countries

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	selfincome	selfincome	selfincome	selfincome	selfincome	selfincome
	Developing	Developed	Developing	Developed	Developing	Developed
Kaopen_index	0.00438	**-0.0101*** **				
	(0.00379)	(0.00223)				
logGDPpcpt	-0.682***	-0.299***	-0.645***	-0.494***	-0.624***	-0.479***
	(0.127)	(0.0933)	(0.125)	(0.0963)	(0.124)	(0.0937)
sqrtlogGDPpcpt	0.0363***	0.0143***	0.0350***	0.0239***	0.0334***	0.0232***
	(0.00748)	(0.00455)	(0.00734)	(0.00471)	(0.00729)	(0.00458)
Trade_Openness	-0.000314**	-0.000185	-0.000513***	-0.000485***	-0.000691***	-0.000495***
	(0.000130)	(0.000116)	(0.000147)	(0.000102)	(0.000173)	(0.000105)
Govshare	-0.0138***	-0.00302***	-0.0146***	-0.00393***	-0.0137***	-0.00394***
	(0.00299)	(0.00105)	(0.00291)	(0.00110)	(0.00287)	(0.00111)
Unemrate	0.00762***	0.00157***	0.00831***	0.00137***	0.00723***	0.00141***
	(0.00223)	(0.000388)	(0.00214)	(0.000417)	(0.00213)	(0.000414)
Patent_A	-8.35e-07**	-5.47e-07***	-8.77e-07**	-4.59e-07***	-8.47e-07**	-4.55e-07***
	(4.00e-07)	(9.01e-08)	(3.87e-07)	(9.34e-08)	(3.82e-07)	(9.32e-08)
Logpop16_60	0.0288	-0.00668	0.00697	-0.00925	0.0476	-0.0142
	(0.0666)	(0.0395)	(0.0661)	(0.0435)	(0.0641)	(0.0434)
Linear_lamrig	0.0503***	-0.000110	0.0508***	0.00268	0.0471***	0.00267
	(0.0126)	(0.00317)	(0.0123)	(0.00330)	(0.0122)	(0.00331)
FO1			**0.00435****	-0.000264		
			(0.00182)	(0.000505)		
FO2					**0.00972*****	-0.000168
					(0.00324)	(0.00145)
Constant	3.354***	1.739***	3.224***	2.746***	3.054***	2.685***
	(0.528)	(0.488)	(0.521)	(0.489)	(0.521)	(0.480)
Observations	128	181	128	181	128	181
R-squared	0.626	0.674	0.640	0.633	0.650	0.632
Number of Country_name1	11	12	11	12	11	12
Fe	yes	yes	yes	yes	yes	yes
Country_code	1	2	1	2	1	2

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.I. 10. Correlation of Capital Account Openness and Unemployment Rate

VARIABLES	(1) Unemrate	(2) Unemrate	(3) Unemrate	(4) Unemrate
Kaopen_index	**0.402*** **	**0.376***	0.247	**1.064*** **
	(0.117)	(0.201)	(0.182)	(0.147)
logGDPpcpt	2.539*	1.274	2.484	-8.429**
	(1.492)	(4.286)	(3.543)	(4.221)
sqrtlogGDPpcpt	-0.274***	-0.297	-0.351*	0.279
	(0.0788)	(0.218)	(0.183)	(0.216)
Trade_Openness	0.00193	0.00915	0.00852	-0.0199
	(0.00417)	(0.00763)	(0.00688)	(0.0128)
Govshare	**0.760*** **	**0.726*** **	**0.639*** **	**0.603*** **
	(0.0541)	(0.111)	(0.0797)	(0.0672)
Patent_A	7.64e-06***	1.73e-05	1.12e-05***	8.61e-06***
	(2.09e-06)	(1.29e-05)	(3.97e-06)	(2.49e-06)
Logpop16_60	2.701*	-2.490	-0.123	-0.663
	(1.398)	(3.782)	(3.267)	(2.451)
Linear_lamrig	-0.169	0.0564	0.257	0.356
	(0.280)	(0.491)	(0.425)	(0.356)
laborshare1	**-15.06*** **			
	(2.719)			
laborshare2		1.002		
		(3.803)		
laborshare3			1.365	
			(3.196)	
laborshare4				**-8.702*** **
				(3.094)
Constant	-7.635	15.64	3.194	57.53**
	(7.505)	(22.85)	(19.77)	(23.13)
Observations	709	309	388	369
R-squared	0.309	0.373	0.364	0.387
Number of Country_name1	29	23	26	17
Fe	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.II. 1. Monthly Average Income Per Capita at Current Prices by Income Source

Year	2010					2012					2014				
Types	Total	Salary & wage	AFF[25]	Non-AFF	Others	Total	Salary & wage	AFF	Non-AFF	Others	Total	Salary & wage	AFF	Non-AFF	Others
Whole Country	1387	622	279	328	158	2000	923	397	442	238	2637	1253	458	591	335
Red River Delta	1580	798	189	392	201	2351	1216	275	556	304	3265	1733	327	738	467
Ha Noi	2013	1165	109	467	273	2945	1741	169	657	378	4113	2537	226	767	583
Vinh Phuc	1232	519	256	317	140	1867	784	373	517	193	2378	1089	342	645	302
Bac Ninh	1646	560	190	707	189	2502	875	256	1089	281	3512	1178	299	1641	394
Quang Ninh	1787	895	176	533	183	2557	1367	224	626	340	3053	1580	308	795	370
Hai Duong	1306	600	258	286	163	2047	996	377	415	259	2755	1289	433	651	382
Hai Phong	1694	958	115	418	204	2526	1278	197	590	461	3923	2002	314	862	745
Hung Yen	1199	522	261	275	141	1803	785	412	445	161	2192	998	429	492	273
Thai Binh	1129	518	251	216	143	1729	878	368	299	184	2469	1214	384	476	395
Ha Nam	1150	470	264	248	168	1754	710	374	440	230	2198	917	389	544	348
Nam Dinh	1237	477	286	322	153	1791	769	379	423	220	2816	1280	446	718	372
Ninh Binh	1202	498	264	280	160	1696	762	355	289	290	2215	1092	437	386	300
Northern midlands and mountain areas	905	359	314	146	86	1258	536	406	197	119	1613	707	471	283	152
Ha Giang	610	193	317	61	38	850	274	440	76	60	1121	367	507	157	90
Cao Bang	749	312	293	83	61	1054	453	402	112	87	1252	590	403	112	147
Bac Kan	776	266	311	135	65	1142	313	481	290	58	1216	410	500	220	86
Tuyen Quang	887	348	344	125	70	1162	472	410	194	86	1571	683	498	243	147
Lao Cai	819	345	324	105	45	1085	527	311	183	64	1468	644	411	345	68
Yen Bai	844	373	273	119	79	1114	520	326	187	81	1386	590	421	262	113
Thai Nguyen	1149	504	282	253	110	1747	869	397	350	132	2238	1087	473	526	152
Lang Son	929	367	342	169	52	1212	475	468	202	68	1437	635	494	214	94

[25] AFF is agriculture, forestry & fishery

Bac Giang	1103	406	344	196	157	1568	668	473	235	192	2174	995	550	378	251
Phu Tho	1126	519	228	244	135	1579	754	311	294	219	1954	940	389	327	298
Dien Bien	611	196	306	61	48	819	364	323	52	80	1200	450	420	235	95
Lai Chau	567	205	255	59	48	758	237	337	120	64	987	373	390	137	87
Son La	802	224	444	86	48	1020	257	541	108	113	1178	400	565	149	64
Hoa Binh	829	379	286	85	79	1219	570	404	136	110	1598	707	459	279	153
Northern Central area and Central coastal area	1018	442	231	229	116	1505	679	320	343	163	1982	923	379	440	240
Thanh Hoa	840	364	245	151	81	1207	545	294	248	120	1635	831	368	251	185
Nghe An	920	391	246	136	147	1367	564	351	240	212	1583	657	367	307	252
Ha Tinh	840	336	214	147	142	1299	554	364	238	143	1810	831	372	320	287
Quang Binh	950	447	201	168	135	1410	735	268	227	180	1837	939	313	386	199
Quang Tri	951	381	257	232	80	1300	521	390	231	158	1673	732	370	380	191
Thua Thien-Hue	1058	439	174	342	104	1747	834	221	496	196	2175	993	263	672	247
Da Nang	1897	1106	62	507	223	2865	1507	75	904	379	3612	1954	41	1186	431
Quang Nam	935	411	213	205	107	1376	649	288	306	133	1784	885	337	379	183
Quang Ngai	909	350	200	262	97	1300	571	239	356	134	1619	734	295	389	201
Binh Dinh	1150	429	272	329	119	1719	717	414	447	141	2346	1005	531	509	301
Phu Yen	1013	398	302	228	86	1440	650	402	309	79	1979	833	640	362	144
Khanh Hoa	1258	650	217	269	121	1896	961	278	468	189	2670	1452	258	616	344
Ninh Thuan	947	361	228	278	81	1637	722	403	366	146	2331	897	536	677	221
Binh Thuan	1160	430	335	287	108	1747	667	504	431	145	2395	891	736	564	204
Central Highlands	1088	334	470	217	67	1643	497	759	294	94	2008	678	863	350	117
Kon Tum	947	384	307	186	70	1294	604	363	258	69	1587	710	445	294	138
Gia Lai	1027	360	386	229	52	1563	483	659	341	80	1760	661	699	318	82
Dak Lak	1068	312	496	193	67	1639	483	817	241	98	1988	600	937	332	119
Dak Nong	1039	207	652	141	38	1611	372	994	179	66	1824	466	1064	207	87
Lam Dong	1257	372	508	282	95	1848	537	824	367	120	2499	878	982	485	154
South East	2304	n.a.	n.a.	n.a.	n.a.	3173	1709	361	725	377	4125	2247	344	1022	512
Binh Phuoc	1526	514	641	270	101	2218	802	1003	313	100	2693	998	1076	469	150
Tay Ninh	1435	494	516	312	113	2100	886	616	431	167	2796	1155	584	754	303
Binh Duong	2698	1100	710	753	135	3568	1514	1109	774	171	3769	1773	825	937	234
Dong Nai	1763	862	301	398	203	2577	1247	432	635	263	3504	1742	488	882	392
Ba Ria - Vung Tau	1695	875	217	442	161	2904	1580	408	623	293	3752	1647	535	1245	325

Ho Chi Minh city	2737	1613	30	745	348	3653	2205	21	870	557	4840	2925	37	1161	717
Mekong River Delta	1247	n.a.	n.a.	n.a.	n.a.	1797	598	539	402	257	2327	783	674	528	342
Long An	1289	520	369	230	170	1956	813	569	335	239	2430	1035	633	447	315
Tien Giang	1313	440	369	331	172	1941	773	493	404	271	2596	1049	656	560	331
Ben Tre	1200	348	353	318	180	1580	505	522	363	190	2162	705	649	442	366
Tra Vinh	1089	313	373	258	144	1398	433	377	266	322	2098	739	703	361	295
Vinh Long	1239	377	357	319	186	1744	601	446	400	297	2205	802	593	418	392
Dong Thap	1138	382	356	243	158	1666	536	539	377	214	2134	741	661	439	293
An Giang	1319	406	378	417	118	1871	546	498	548	279	2472	738	572	771	391
Kien Giang	1316	441	408	294	173	1963	641	656	396	270	2642	795	828	571	448
Can Tho	1540	642	282	436	180	2325	933	411	620	361	2673	1074	359	895	345
Hau Giang	1098	332	343	259	164	1527	445	483	285	314	2088	482	633	541	432
Soc Trang	1029	289	427	229	84	1324	421	445	317	141	1913	582	648	436	247
Bac Lieu	1273	304	580	227	162	2035	406	992	393	244	2214	515	1093	339	267
Ca Mau	1250	315	531	245	159	1779	502	673	366	238	2154	564	914	388	288

Source: GSO, unit: thousand Vietnamese Dong

Table A.II. 2. Labor Productivity by Industry

Year	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015
TOTAL	21.4	25.3	32	37.9	44	55.2	63.1	68.7	74.7	79.4
Agriculture, forestry and fishing	7.5	9.7	13.6	14.1	16.3	22.3	25.6	26.4	28.6	30.6
Manufacturing	34.2	42.7	50.1	51.3	42	53.2	60.7	65.8	70	71
Construction	26.9	33.6	38.8	42.5	42.7	48.5	53.4	55.6	60.7	66.5
Wholesale and retail trade; repair of motor vehicles and motorcycles	24.3	31.2	40.9	46.7	31.1	40.3	47.4	51.7	58.3	63.4
Transportation and storage	21.7	29.1	35.4	38.8	43.8	55.9	62.2	67	73.2	71.9
Accommodation and food service activities	35.6	41	43.6	42.8	45.5	51.1	55.3	60.7	64.2	63.7
Information and communication	66	76.3	85.9	84.9	77.3	78.4	80.3	82.8	84.9	87
Financial, banking and insurance activities	257.3	84	103.3	435.6	457.8	493	547.7	581.9	588.2	631.1
Real estate activities	3232.2	541	699.8	1769.2	1300	1370.6	1204.8	1263.6	1278.6	1284.7
Professional, scientific and technical activities	82	107.2	117.6	111.2	128.8	160.4	166.5	190.2	204.2	220.7
Administrative and support service activities	32.3	34.7	40.8	41.6	42.5	50.8	51.3	55	56.3	56.6
Activities of Communist Party, socio-political organizations; public administration and defense; compulsory security	13.7	18.8	25	29.5	35.2	45.5	51.9	57.9	62.5	66.9
Education and training	21.4	23	25.6	27	30	38.3	47.6	58	64.9	72.1
Human health and social work activities	35	41.5	51.8	58.3	53.4	55.2	69.2	119.5	134.4	133.8
Arts, entertainment and recreation	76.9	70.2	61.6	61.9	62.8	67.3	73	78.1	80.7	84.6
Other service activities	17.9	25.6	37	51.1	50	59	68.5	76.9	85.6	90

Activities of households as employers; undifferentiated goods and services producing activities of households for own use	7.5	11	15.6	15.8	15	20.5	25.4	28.7	32.9	35.9

Source: Author's computation from GSO's website: https://www.gso.gov.vn/default_en.aspx?tabid=774, last updated: 10/10/2017

Unit: Millions Dong/Person

Table A.III. 1. Monthly Average Income Per Capita at Current Prices by Regions and Province

Year	2010 Thous.VND	2012 Thous.VND	2014 Thous.VND
Whole Country	1387	2000	2637
Red River Delta	**1580**	**2351**	**3265**
Ha Noi	2013	2945	4113
Vinh Phuc	1232	1867	2378
Bac Ninh	1646	2502	3512
Quang Ninh	1787	2557	3053
Hai Duong	1306	2047	2755
Hai Phong	1694	2526	3923
Hung Yen	1199	1803	2192
Thai Binh	1129	1729	2469
Ha Nam	1150	1754	2198
Nam Dinh	1237	1791	2816
Ninh Binh	1202	1696	2215
Northern midlands and mountain areas	**905**	**1258**	**1613**
Ha Giang	610	850	1121
Cao Bang	749	1054	1252
Bac Kan	776	1142	1216
Tuyen Quang	887	1162	1571
Lao Cai	819	1085	1468
Yen Bai	844	1114	1386
Thai Nguyen	1149	1747	2238
Lang Son	929	1212	1437
Bac Giang	1103	1568	2174
Phu Tho	1126	1579	1954
Dien Bien	611	819	1200
Lai Chau	567	758	987
Son La	802	1020	1178
Hoa Binh	829	1219	1598
Northern Central area and Central coastal area	**1018**	**1505**	**1982**
Thanh Hoa	840	1207	1635
Nghe An	920	1367	1583
Ha Tinh	840	1299	1810
Quang Binh	950	1410	1837
Quang Tri	951	1300	1673
Thua Thien-Hue	1058	1747	2175
Da Nang	1897	2865	3612

Quang Nam	935	1376	1784
Quang Ngai	909	1300	1619
Binh Dinh	1150	1719	2346
Phu Yen	1013	1440	1979
Khanh Hoa	1258	1896	2670
Ninh Thuan	947	1637	2331
Binh Thuan	1160	1747	2395
Central Highlands	**1088**	**1643**	**2008**
Kon Tum	947	1294	1587
Gia Lai	1027	1563	1760
Dak Lak	1068	1639	1988
Dak Nong	1039	1611	1824
Lam Dong	1257	1848	2499
South East	**2304**	**3173**	**4125**
Binh Phuoc	1526	2218	2693
Tay Ninh	1435	2100	2796
Binh Duong	2698	3568	3769
Dong Nai	1763	2577	3504
Ba Ria - Vung Tau	1695	2904	3752
Ho Chi Minh city	2737	3653	4840
Mekong River Delta	**1247**	**1797**	**2327**
Long An	1289	1956	2430
Tien Giang	1313	1941	2596
Ben Tre	1200	1580	2162
Tra Vinh	1089	1398	2098
Vinh Long	1239	1744	2205
Dong Thap	1138	1666	2134
An Giang	1319	1871	2472
Kien Giang	1316	1963	2642
Can Tho	1540	2325	2673
Hau Giang	1098	1527	2088
Soc Trang	1029	1324	1913
Bac Lieu	1273	2035	2214
Ca Mau	1250	1779	2154

Source: GSO

Table A.III. 2. Descriptive Statistics for Economic Growth Model

VARIABLES	(1)	(2)	(3)	(4)	(5)
	N	Mean	SD	Min	Max
PCI	641	57.21	5.969	36.39	77.20
logGDP	674	3.238	1.186	0.104	8.341
logEXR	2,852	6.184	4.171	0	9.985
logpop	1,319	7.199	0.918	4.988	11.44
logFDI	674	6.244	2.238	1.386	12.54
logGIO	991	7.455	1.680	2.868	13.73
logEDU	867	10.63	0.862	8.977	14.94

Table A.III. 3. Descriptive Statistics for Industrial Production Model: Annual Data

VARIABLES	(1)	(2)	(3)	(4)	(5)
	N	Mean	SD	Min	Max
EXR	2,944	8,609	7,919	1	21,698
Pop	1,319	3,738	12,818	146.6	92,618
Exgso	467	1,944	11,183	0	132,033
Imgso	466	2,475	12,401	0	132,033
GIO	1,025	16,023	65,357	17.60	920,371
EDU	867	101,275	369,178	7,920	3.075e+06
Law	2,944	0.239	0.427	0	1
Lib	2,944	0.435	0.496	0	1

Table A.III. 4. Descriptive Statistics for Industrial Performance Model: Monthly Data

VARIABLES	(1)	(2)	(3)	(4)	(5)
	N	Mean	SD	Min	Max
Exportusd	654	1,673	1,400	110	8,460
Importusd	639	2,031	1,699	153	8,930
FDIusd	865	1,079	5,004	0	60,271
IPIvnd	1,323	57,107	95,333	277.5	794,202
Exrate	1,323	15,770	1,294	12,292	20,813
Law	1,323	0.322	0.467	0	1
WTO	1,323	0.213	0.410	0	1