

**THE IMPACTS OF TRADE OPENNESS
ON INDUSTRIAL PERFORMANCE
AT REGIONAL AND PROVINCIAL LEVELS IN VIETNAM**

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This paper aims to investigate the impacts of external liberalization on Vietnamese industrial performance at both regional and provincial levels. To this end, the authors review regional and provincial economic and manufacturing 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 industrial performance, economic growth and trade liberalization at both regional and provincial levels. The estimation results suggest that FDI inflows and trade openness play important roles in accelerating industrial performance at both the regional and provincial levels in Vietnam. Regions and provinces with better infrastructure seem to accumulate more benefits from trade liberalization as well as FDI which suggests that provincial authorities should invest in building new and more modern infrastructure and also formulating rules and regulations governing FDI inflows.

Keywords: Industrial Performance, Foreign Direct Investment (FDI), Trade Openness,
Economic Regions

JEL Classification: E1, E6, O4

1. INTRODUCTION

Trade openness and Foreign Direct Investment (FDI) have catalyzed economic growth and industrial performance in developing countries and there has been tons 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 and 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 wage 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 at nation-wide level have been of enduring interest of economists (Dollar, 1992; Odusola and Akinlo, 1995; Tybout, 2000; Adenikinju, 2002; Ahmed, 1999; Anwar and Nguyen, 2010; IMF, 2010; Trinh and Nguyen, 2012). However, empirical studies on the impacts of trade liberalization as well as FDI on industrial performance or manufacturing sector at both regional and provincial levels in Vietnam are still rare due to the lack of manufacturing dataset at local level.

The Vietnamese economic reform (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” and 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 (Le, 2019). Since the Phase 6 of Doi Moi Policy, Vietnam has experienced one of the highest rates of economic growth and development as well as high volumes of external liberalization (Le, 2019). 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 south-east Asia (Le, 2019). The country 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 Highlands¹. However, the volume of FDI inflows into each of these eight regions is different depending on their economic conditions. In this paper, the authors elaborate the correlation of trade openness and industrial performance as well as economic growth by focusing on the regional and provincial levels. To the end, the authors investigate the main drivers of industrial performance as well as economic growth of six economic regions and 68 provinces in Vietnam during the most recent phases of the Doi Moi Policy.

The paper is organized into four sections. The second section reviews regional 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 and industrial performance and factors driving the relation between openness and economic performance at regional and provincial levels as well as hypotheses, data and econometric models. The results of empirical investigation will be analyzed in the fourth section. Conclusions with some recommendations are provided in the fifth section.

¹ Vietnam Briefing, GSO, 2012.

2. LITERATURE REVIEW

2.1. Overview of Regional 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 divide the eight geographical regions into six economic regions. 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 and the second highest average income of VND4,113,000 in 2014 (USD200, see Table A1 in the 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.

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 year². Besides agriculture and forestry, the region also has a power sector with several hydro-electric power plants and coal fired thermal power

² 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.

plants. Tourism is an important source of GDP with few popular tourist destinations such as Sapa (Lao Cai) and Ha 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 A2 in the Appendix) and the lowest average income of VND1,613,000 in 2014 (about USD81, see Table A1 in the 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 A3 in the Appendix)

The General Statistics Office of Vietnam (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 sectors 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 (see Table A3 in the Appendix). However, Central highlands is also the least attractive destination of FDI in the country.

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 low poverty rate and the highest monthly average income in the nation, which was VND4,125,000 in 2014 (about USD202, see Table A1 in the Appendix).

Table 1. Foreign Direct Investment Projects Licensed in 2015 by Region

Region	Number of projects	Total registered capital (Mill. USD)
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

Notes: Total registered capital includes supplementary capital to licensed projects in previous years.

Table 1 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 USD3,656 million in 2015 (see Table 1).

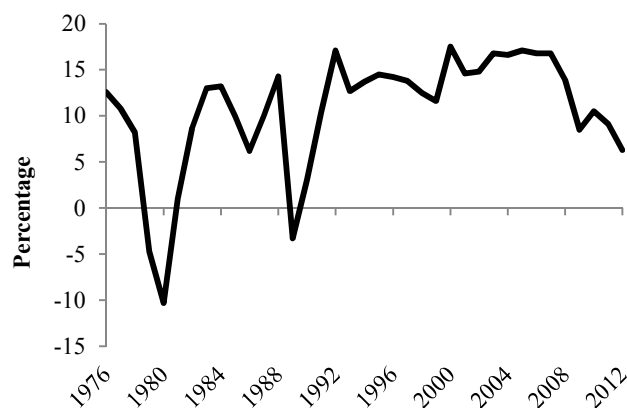
2.2. Regional Industrial Performance in Vietnam

This paper employs Gross Industrial Output which is measured as the sum of an industry's value added and intermediate inputs (GSO, various issues) to investigate the industrial performance in Vietnamese regional and provincial levels. 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 (see Figure 1) (Le, 2019).

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 for the whole country is represented in Figure A1 in the Appendix. As shown in the Figure A1, 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 (Le, 2019).

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.



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 1. Gross Industrial Output Growth Rate of 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 1, 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 approximately USD80.4 billion and USD122 billion respectively. Most of the rest was distributed in the Mekong River Delta (GSO, Statistical Yearbook of Vietnam)

Table 2 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 2. The Share of Gross Industrial Output by State, Non-state and Foreign Invested Companies

Region	1995			2000			2005		
	State	Non-state	FDI	State	Non-state	FDI	State	Non-state	FDI
Red River Delta	26.49	19.60	11.40	26.37	20.71	22.10	28.40	260	23.70
Northern Midlands and Mountain Areas (NM)	6.99	3.19	1.59	6.93	2.94	1.47	6.89	3.67	1.15
Northern Central and Central Coastal Area (NC)	11.63	12.90	2.19	12.62	13.91	3.72	14.11	12.7	4.61
Central Highlands	0.91	2.82	0.34	0.75	2.71	0.24	0.75	1.87	0.23
South-East	42.01	39.13	80.81	41.25	42.40	69.70	39.08	39.11	67.51
Mekong River Delta	11.97	22.40	3.64	12.08	17.40	2.79	10.77	16.71	2.82
Region	2010			2015					
	State	Non-state	FDI	State	Non-state	FDI			
Red River Delta	29.61	27.31	29.8	30.11	29.00	33.00			
Northern Midlands and Mountain Areas (NM)	6.98	4.53	1.24	6.12	4.70	1.31			
Northern Central and Central Coastal Area (NC)	20.34	13.80	4.71	22.21	14.20	5.92			
Central Highlands	0.75	1.97	0.18	0.75	2.11	0.82			
South-East	34.41	33.41	60.20	37.00	24.62	57.00			
Mekong River Delta	7.92	19.11	3.96	4.85	25.41	2.11			

Source: Authors' computation from various issues (1995-2015) of the General Statistics Office of Vietnam, Unit: percent of total gross industrial output of state companies, non-state companies and Foreign Invested companies

3. THEORETICAL FRAMEWORK, DATA AND EMPIRICAL MODEL

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 the growth rates of manufacturing sector or 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. Studies have suggested that trade liberalization, macroeconomic stability, human capital, labor workforce and economic preconditions are among the most important driving factors of manufacturing sector. Hypotheses, data and empirical model are also introduced and analyzed in this section.

3.1. The Determinants of Industrial Performance

3.1.1. Trade Openness

Trade openness plays 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, Udegbumam (2002), Umoru and Eborieme (2013), Adenikinju (2002) found a positive and significant correlation between trade openness and growth rate of industrial sectors in Nigeria. In particular, Adenikinju (2002) 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 and 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 and Tuncer, 1982; Page, 1984; Edwards, 1998; Paus et al., 2003; 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 in developing countries.

3.1.2. Macroeconomic Stability

Macroeconomic stability is one of the most important mechanisms driving economic growth and industrial performance (Chenaf-Nicet and Rougier, 2016). Their study suggested that in order to diversify their risks, firms facing uncertainty in their domestic market may choose to increase their investment abroad by transferring production to more stable host economies. The study finds that the incidence of FDI between two countries increases with source GDP instability and with host GDP stability. Jallab et al (2008) used inflation rate as a proxy for macroeconomic stability discovered that while the growth-effect of FDI does not also depend on degree of openness to trade and income per capita, the positive impact of FDI on economic growth depends on macroeconomic stability. Inflation rate has also been used as an indicator of macroeconomic stability in many studies such as 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 (Cline, 1979; Husain et al., 2005; Dollar and Kraa, 2004). 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. To get better evaluation of the effect of trade openness on manufacturing sector at regional and provincial levels in Vietnam, exchange rate can serve as a proxy of macroeconomic stability in this paper.

3.1.3. 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. Noorbakhsh et al. (2001) suggested that developing countries might enhance their attractiveness as locations for FDI by pursuing policies that raise the level of local skills and build up human resource capabilities. The paper also found that human capital which is one of the most important determinants is a statistically significant determinant of FDI inflows and its importance has become increasingly greater through time. Karimi et al. (2013) employed the Generalized Method of Moments (GMM) for 50 developed and developing countries to show that human capital is important for attracting FDI in developing and developed countries and general

educational attainment of a country is of importance in the FDI context. 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. However, the educational attainment which is measured by the number of people graduate from primary, secondary or high school is often used to evaluate the quality of human capital in each country (Barro and Lee, 2013). In this paper, the number of pupils of general education (Upper secondary – the number of people who graduate from secondary to postsecondary schools) will be used as a proxy for human capital in Vietnam.

3.1.4. Population

The growth of fertility rate and population especially the working-age population is also one of the driving factors of economic growth and industrial performance (Gamble, 2014; APERI, 2014).

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); Barro and Lee (2013) 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.

3.1.5. 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 and Nguyen, 2010). In this paper, the authors employ 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). VCCI is a national organization which assembles and represents

business community, employers and business associations of all economic sectors in Vietnam. 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; transparency of business environment and equitable business information; minimal informal charge³; 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.⁴

3.2. Hypotheses

This paper examines the relationship between trade liberalization which is proxied by FDI inflows and Vietnamese industrial performance at regional and provincial levels. The authors test the following hypotheses:

1) Higher levels of trade openness and FDI lead to greater industrial performance at both regional and provincial levels in Vietnam.

2) The higher degree of macroeconomic stability leads to higher growth rates of GIO or better industrial performance in every economic region and province of Vietnam

3) Industrial output grows faster with a higher level of human capital which is measured by a high level of educational attainment

4) The greater population leads to higher GIO growth rate at both regional and provincial levels.

5) Regions and provinces with better infrastructure and located in the key economic regions (proxied by Provincial Competitive Index - PCI) get relatively more benefits from trade liberalization.

3.3. Data

3.3.1. *The Descriptions of Data*

For the purpose of testing these hypotheses, we make use of a recently released panel dataset which provides annual data of six economic regions and monthly data of 68 provinces in Vietnam for the period 2005-2015. Table 3 presents variables, definitions

³ The informal charges are an obstacle extra fees which may be charged by provincial officials while administering business activities.

⁴ The author summarized from website of Vietnam Chamber of Commerce and Industry (VCCI): <http://eng.pcivietnam.org/gioi-thieu-pci-c2.html>

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, GIO growth rates are from General Statistical Office of Vietnam (GSO). To test the impact of trade liberalization on Vietnamese industrial performance, this paper utilizes the growth rates of Gross Industrial Output (GIO) and Industrial Production Index (IPI). Gross Industrial Output which is measured as the sum of an industry's value added and intermediate inputs is annual while Industrial Production Index is monthly.

3.3.2. *The Analysis of Data*

To ensure the goodness of the estimated models, the author employed few diagnostic tests including Breusch-Pagan Lagrange multiplier (LM) for random effect and the Durbin-Wu-Hausman test for endogeneity. There was evidence of significant differences across regions, therefore ordinary least square (OLS) estimates might be biased and inconsistent.

Table 3. Summary of Variables

Variables	Definitions	Sources
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 30 th , 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

3.4. Empirical Models

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

$$GIO = F(Export, Import, FDI, Pop, EDU, Law, Lib). \quad (1)$$

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:

$$\begin{aligned} \log GIO_{it} = & \beta_1 + \beta_2 \log export_{it} + \beta_3 \log import_{it} + \beta_4 \log Pop_{it} + \beta_5 \log EXR \\ & + \beta_6 Law_{it} + \beta_7 Lib + \gamma_2 E_2 + \dots + \gamma_n E_n + \varepsilon_{it}, \end{aligned} \quad (2)$$

$$\begin{aligned} \log IPI_{it} = & \beta_1 + \beta_2 \log export_{it} + \beta_3 \log import_{it} + \beta_4 \log FDI_{it} + \beta_5 \log Pop_{it} \\ & + \beta_6 \log EXR + \beta_7 Law_{it} + \beta_8 WTO + \gamma_2 E_2 + \dots + \gamma_n E_n + \varepsilon_{it}, \end{aligned} \quad (3)$$

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. The choice of two proxies for industrial performance is dictated by the availability of data. 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 depend on the availability of data).

4. ANALYSIS OF ESTIMATION RESULTS

4.1. The Effects of FDI on Regional Industrial Performance in Vietnam

This section analyzed the correlation of FDI and the growth rate of Gross Industrial Output (GIO) 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 4 reports the relationship between FDI and industrial performance in the six economic regions. The estimation results in Table 4 indicate that the effect of FDI on GIO growth rate 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 positive and strongly significant effects in these

five economic regions are similar to the positive relation between FDI and economic growth at nation-wide level in the studies of Anwar and Nguyen (2010), Trinh and Nguyen (2012). However, there has not been any study investigating the correlation of FDI and the growth rate of manufacturing sector at Vietnamese regional level. Moreover, the impact of FDI on GIO growth rate is negative but not significant in the Central highlands (Region 4). The reason behind this result is that this region might be less attractive for FDI in Vietnam due to poorer economic conditions as well as lack of infrastructure.

Similarly, as expected, the Provincial Competitiveness Index (PCI) has positive and strongly significant effect on manufacturing sector in South-East and Mekong River Delta which suggests that regions with better infrastructure development and economic condition attract more FDI or get more benefits from external liberalization. These results are consistent with other studies of FDI on economic growth in Vietnam and other developing countries (Adenikinju, 2002; Ahmed, 1999; Anwar and Nguyen, 2010; IMF, 2010; Trinh and Nguyen, 2012).

Table 4. The Results of Fixed Effect Model for Six Economic Regions:
Dependent Variable – GIO Growth Rate

Variables	Red River Delta (1)	Northern and Mountain Areas (2)	North and South Central (3)	Central Highlands (4)	South-East (5)	Mekong River Delta (6)
<i>logFDI</i>	0.319*** (0.0431)	0.0427** (0.0203)	0.0796*** (0.0144)	-0.00369 (0.0341)	0.190*** (0.0689)	0.0740*** (0.0262)
<i>PCI</i>	0.00420 (0.00541)	-2.04e-05 (0.00379)	0.00274 (0.00351)	-0.00327 (0.00741)	0.0151** (0.00710)	0.00652* (0.00359)
<i>logEXR</i>	2.519*** (0.371)	3.894*** (0.239)	3.525*** (0.205)	3.207*** (0.418)	2.840*** (0.345)	3.110*** (0.224)
<i>Logpop</i>	1.223*** (0.324)	0.722 (0.746)	2.349*** (0.715)	4.457*** (1.107)	1.273** (0.499)	-0.0174 (0.0657)
<i>logEDU</i>	-0.468 (0.287)	-0.539*** (0.174)	-0.200 (0.153)	-0.286 (0.462)	0.495 (0.342)	-0.452* (0.243)
Constant	-27.57*** (4.259)	-35.51*** (4.005)	-46.82*** (4.638)	-56.63*** (6.466)	-40.81*** (4.858)	-23.20*** (4.103)
Breusch-Pagn Lagrange test (<i>p</i> – value)	0.00	0.00	0.00	0.00	0.00	0.00
Durbin-Wu-Hausman test (<i>p</i> – value)	0.01	0.00	0.01	0.00	0.01	0.00
Pasaran CD test (<i>p</i> – value)	0.00	0.01	0.00	0.00	0.00	0.00
Pagan-Hall test (<i>p</i> – value)	0.00	0.00	0.00	0.00	0.00	0.00
Hausman (<i>p</i> – 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

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

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 GIO or better industrial performance in every economic region of Vietnam. The coefficients are quite high ranging from 2.5 to 3.8. As discussed, (see Section 3.1.2), exchange rate policy plays a vital role in international trade activities and the economic growth of developing countries (Agarwal, 1983). Similarly, this study confirmed that 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.

The working-age population ($\log Pop$) is also positively correlated with GIO growth rate in Red River Delta, North Central area and Central Coastal area, Central Highlands and South-East since which indicates that the greater population leads to higher GIO growth rate. The results are consistent with the postulated hypothesis that the expansion of working-age population creates more labor supply for those four regions. However, the coefficients of the number of pupils graduated from at least a secondary school are negative in five regions (1,2,3,4 and 6) which suggest that the higher number of secondary graduate results in a decrease in the growth rate of GIO. This result is not consistent with the Hypothesis (3) but this is greatly consistent with the characteristics of manufacturing sector in Vietnam which focuses on assembling final products for main foreign companies such as Samsung, Apple. Since the industrial sector in Vietnam mostly employs low-skill workers, the higher number of secondary graduates is the higher number of low-skill workers leaving the manufacturing sectors which leads to a decrease in GIO growth rate.

4.2. Trade Liberalization and Vietnamese Industrial Performance at Provincial Level

This section analyzed the correlation of trade openness and the growth rate of Gross Industrial Output (GIO) of six economic regions in Vietnam. To investigate the relationship between external liberalization and industrial performance at provincial level in Vietnam, the author employs both annual and monthly dataset for robustness check. The choice of two proxies for industrial performance is also dictated by the availability of data. The authors also ran both fixed and random regressions to check for the robustness and reliability of the results. The goodness of both models is reported in previous section (Section 3.3.2.)

Table 5 and Table 6 present the results of fixed and random effect 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 impact of exports on gross industrial output in almost all specifications (see Table 5), while the coefficients of imports are positive but insignificant except for model (8) when random effect model is employed.

A one percent increase in export value leads to an increase of 5 to 10 percent in gross industrial output.

Table 5. The Results of Fixed and Random Effect Models Using Annual Data:
Dependent Variable – GIO Growth Rate

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

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

Table 6. The Results of Fixed and Random Effect Models Using Monthly Data:
Dependent Variable – IPI Growth Rate

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

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

Instead of using gross industrial output as a dependent variable, we utilize the industrial production index as a proxy for industrial performance in Vietnam. Table 6 presents the results of fixed and random effect 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 consistent with the postulated hypothesis, since FDI inflows into manufacturing have been increased since 1995⁵. 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 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 leads to a better industrial performance at the provincial level in Vietnam.

5. CONCLUSION AND RECOMMENDATIONS

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 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.

The author estimated the correlation between the growth rate of industrial sector and trade liberalization at regional and provincial levels in Vietnam by employing both annual and monthly dataset for provincial level and annual dataset for regional level. The proxies for trade openness including export, import volume and FDI as well as two proxies of industrial performance including gross industrial output and industrial production index were employed in both fixed and random effect models. Three interesting-stylized facts emerge from the results. The effect of FDI on the gross industrial output is positive and strongly significant Red River Delta (Region 1), Northern midlands and mountain areas (Region 2), North and Central coastal area

⁵ FDI inflows' trend in Vietnam by GSO, 2013.

(Region 3), South-East (Region 5) and Mekong River Delta (Region 6), while FDI has negative effect on industrial performance in Central Highlands (Region 4), 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 important roles in accelerating industrial performance at both regional and provincial levels in Vietnam. Vietnamese government should enhance FDI and more trading with international markets 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.

APPENDIX

Table A2. Monthly Average Income Per Capita at Current Prices
by Region and Province (Thous.VND)

Year	2010	2012	2014	Year	2010	2012	2014
Whole Country	1387	2000	2637	Hai Duong	1306	2047	2755
Red River Delta	1580	2351	3265	Hai Phong	1694	2526	3923
Ha Noi	2013	2945	4113	Hung Yen	1199	1803	2192
Vinh Phuc	1232	1867	2378	Thai Binh	1129	1729	2469
Bac Ninh	1646	2502	3512	Ha Nam	1150	1754	2198
Quang Ninh	1787	2557	3053	Nam Dinh	1237	1791	2816

Table A3. Monthly Average Income Per Capita at Current Prices
by Region and Province (Thous.VND) (con't)

Year	2010	2012	2014	Year	2010	2012	2014
Ha Giang	610	850	1121	Ninh Thuan	947	1637	2331
Cao Bang	749	1054	1252	Binh Thuan	1160	1747	2395
Ninh Binh	1202	1696	2215	Central Highlands	1088	1643	2008
Northern midlands and mountain areas	905	1258	1613	Kon Tum	947	1294	1587
Bac Kan	776	1142	1216	Gia Lai	1027	1563	1760
Tuyen Quang	887	1162	1571	Dak Lak	1068	1639	1988
Lao Cai	819	1085	1468	Dak Nong	1039	1611	1824
Yen Bai	844	1114	1386	Lam Dong	1257	1848	2499
Thai Nguyen	1149	1747	2238	South East	2304	3173	4125
Lang Son	929	1212	1437	Binh Phuoc	1526	2218	2693
Bac Giang	1103	1568	2174	Tay Ninh	1435	2100	2796
Phu Tho	1126	1579	1954	Binh Duong	2698	3568	3769
Dien Bien	611	819	1200	Dong Nai	1763	2577	3504
Lai Chau	567	758	987	Ba Ria - Vung Tau	1695	2904	3752
Son La	802	1020	1178	Ho Chi Minh city	2737	3653	4840
Hoa Binh	829	1219	1598	Mekong River Delta	1247	1797	2327
Northern Central area and Central coastal area	1018	1505	1982	Long An	1289	1956	2430
Thanh Hoa	840	1207	1635	Tien Giang	1313	1941	2596
Nghe An	920	1367	1583	Ben Tre	1200	1580	2162
Ha Tinh	840	1299	1810	Tra Vinh	1089	1398	2098
Quang Binh	950	1410	1837	Vinh Long	1239	1744	2205
Quang Tri	951	1300	1673	Dong Thap	1138	1666	2134
Thua Thien-Hue	1058	1747	2175	An Giang	1319	1871	2472
Da Nang	1897	2865	3612	Kien Giang	1316	1963	2642
Quang Nam	935	1376	1784	Can Tho	1540	2325	2673
Quang Ngai	909	1300	1619	Hau Giang	1098	1527	2088
Binh Dinh	1150	1719	2346	Soc Trang	1029	1324	1913
Phu Yen	1013	1440	1979	Bac Lieu	1273	2035	2214
Khanh Hoa	1258	1896	2670	Ca Mau	1250	1779	2154

Source: The General Statistics Office of Vietnam, Statistical Years Book, various issues.

Table A2. Poverty Rates by Regions in Vietnam

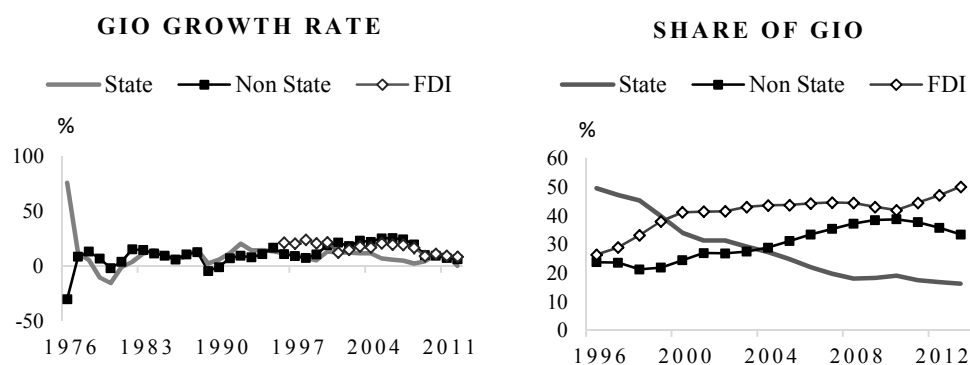
Year	1998	2002	2004	2006	2008	2010	2011	2012	2013	2014	2015
Red River Delta	30.7	21.5	12.7	10	8.6	8.3	7.1	6	4.9	4	3.2
Northern midlands and mountain areas	64.5	47.9	29.4	27.5	25.1	29.4	26.7	23.8	21.9	18.4	16
North Central area and Central coastal area	42.5	35.7	25.3	22.2	19.2	20.4	18.5	16.1	14	11.8	9.8
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: General Statistics Office's Dataset last updated 10/25/2020.

Table A3. Unemployment Rate by Regions in Vietnam

Year	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: General Statistics Office's Dataset last updated 10/25/2020.



Source: Authors' 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.

Figure A1. Gross Industrial Output (GIO) and GIO Growth Rate by Ownership Sectors

REFERENCES

- Adenikinju, A.F. (2002), "Trade Liberalization, Market Structure and Productivity in Nigerian Manufacturing," Interim Report Presented at AERC research.
- Agarwala, R. (1983), "Price Distortion and Growth in Developing Countries," World Bank Staff Working Paper No. 575, Washington, D.C: World Bank.
- Ahmed, N. (1999), *Trade Liberalization in Bangladesh*, Dhaka, University Press Limited.
- Anwar, S. and L. Nguyen (2010), "Foreign Direct Investment and Economic Growth in Vietnam," *Asia Pacific Business Review*, 16(1-2), 183-202.
- Barro, R. (2003), "Determinants of Economic Growth in A Panel of Countries," *Annals of Economics and Finance*, 4, 231-174.
- Barro, R. and J. Lee (2013), "A New Data Set of Educational Attainment in the World, 1950-2010," *Journal of Development Economics*, 104, 184-198.
- Barro, R. and X. Sala-i-Martin (2004), *Economic Growth* (2nd Eds), Cambridge: MIT Press.
- Chenaf-Nicet, D and E. Rougier (2016), "The Effect of Macroeconomic Instability on FDI Flows: A Gravity Estimation of the Impact of Regional Integration in the Case of Euro-Mediterranean Agreements," *International Economics*, 145, 66-91.
- Cline, W.R. (1979), "A Quantitative Assessment of the Policy Alternative," in Cline, W.R (Eds), *Policy Alternatives for a New International Economic Order: An Economic Analysis*, pp. 1-59, Praeger Publishers: New York.
- Dollar, D. and A. Kraay (2004), "Trade, Growth, and Poverty," *Economic Journal*, 114, 22-49.
- Dollar, D. (1992), "Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 LDCs, 1976-85," *Economic Development and Cultural Change*, 40(3), 523-44.
- Dutta, D. and N. Ahmed (2006), "Trade Liberalization and Industrial Growth in Pakistan: A Cointegration Analysis," Working Papers, Department of Economics, University of Sydney, NSW 2006, Australia.
- Edwards, S. (1998), "Openness, Productivity and Growth: What Do We Really Know?" *Economic Journal*, 108, 385-398.
- Friedman, M. (1977), "Inflation and Unemployment," *Journal of Political Economy*, 85, 451-472.
- Gamble, A. (2014), *Crisis Without End: The Unravelling of Western Prosperity*, Basingstoke: Palgrave Macmillan.
- General Statistics Office of Vietnam (GSO), *Statistical Year-Book*, various issues.
- Grossman, G.M and E. Helpman (1991), "Trade, Knowledge Spillovers and Growth," *European Economic Review*, 35(2-3), 517-526.
- Harrylyshyn, O. (1990), "Trade Policy and Productivity Gains in Developing Countries: A Survey of the Literature," *World Bank Research Observe*, 5(1), 1-24.
- Helleiner, G. (1986), "Outward Orientation, Import Instability and African Economic

- Growth: An Empirical Investigation,” in S. Lall and F. Stewart (Eds), *Theory and Reality in Development*, Macmillian, London.
- Husain, A., A. Mody, A. and K. Rogoff (2005), “Exchange Rate Regime Durability and Performance in Developing versus Advance Economies,” *Journal of Monetary Economics*, 52, 35-64.
- IMF (2010), *Global Trade Liberalization and the Developing Countries*.
- Jallab, M., M. Gbakou and R. Sandretto (2008), “Foreign Direct Investment, Macroeconomic Instability and Economic Growth in MENA Countries,” GATE Groupe d’Analyse et de Théorie Économique UMR 5824 du CNRS Working Paper 08-17.
- Karimi, M., Z. Yusop, L. Hook and L. Chin (2013), “Effect of Human Capital on Foreign Direct Investment Inflows,” *Journal of Economic Research*, 18, 1-23
- Krueger, A.O. and B. Tuncer (1982), “An Empirical Test of the Infant Industry Argument,” *American Economic Review*, 72(5), 1142-1152.
- Le, H. (2019), “Economic Reforms, External Liberalization and Macroeconomic Performance in Vietnam,” *International Research Journal of Finance and Economics*, 176, 129-156.
- Lucas, R.E. (1988), “On the Mechanics of Economic Development,” *Journal of Monetary Economics*, 22(1), 3-42.
- Mankiw, N.G., D. Romer and D.N. Weil (1992), “A Contribution to the Empirics of Economic Growth,” *Quarterly Journal of Economics*, CVII (2), 407-437.
- Martin, M and W. Page (1992), “Openness and Economic Performance in Sub-Saharan Africa: Evidence from Time Series, Cross-Country Analysis,” Working Paper 1025, World Bank, Washington D.C.
- Milberg, W. (1999), “Foreign Direct Investment and Development: Balancing Costs and Benefits,” *International Monetary and Financial Issues for the 1990s*, XI, G-24 Research Program.
- Nguyen, C. and K. Zhang (2012), “FDI of Vietnam; Two-Way Linkages between FDI and GDP, Competition among Provinces and Effects of Laws,” *Business*, 4, 157-163.
- Noorbakhsh, F., A. Paloni and A. Youssef (2001), “Human Capital and FDI Inflows in Developing Countries: New Empirical Evidence,” *World Development*, 29(9), 1593-1610.
- Oduola, D. and N. Akinlo (1995), “Trade Liberalization and Industrial Growth in Pakistan: A Cointegration Analysis,” Working Paper, Centre for South Asian Studies, Sydney, Australia.
- Okamoto, R. (1994), “Foreign Trade Regimes and Economic Development,” *World Bank Research Observer*, 2(2).
- Page, J.M. (1984), “Firm Size and Technical Efficiency: Application of Production Frontier to Indian Survey Data,” *Journal of Development Economics*, 16, 129-52.
- Paus, E., N. Reinhardt and M. Robinson (2003), “Trade Liberalization and Productivity Growth in Latin American Manufacturing, 1970-98,” *Policy Reform*, 6(1), 1-15.

- SPERI (2014), "The Relationship between Economic Growth and Population Growth," University of Sheffield, SPERI British Political Economy Brief No.7.
- Rodrik, D. (2015), "Premature Deindustrialization," Working Paper 20935, National Bureau of Economic Research.
- Torres-Reyna, O. (2007), "Panel Data Analysis: Fixed and Random Effects Using Stata," Princeton University.
- Trinh, N. and Q. Nguyen (2015), "The Impact of Foreign Direct Investment on Economic Growth: Evidence from Vietnam," *Developing Country Studies*, 5(20), 1-9.
- Tybout, J. (2000), "Manufacturing Firms in Developing Countries," *Journal of Economic Literature*, 38(1), 11-44.
- Umoru, D. and M. Eborieme (2013), "Trade Liberalization and Industrial Growth in Nigeria," *Journal of Poverty, Investment and Development*, 1, 148-156.
- Undegbunam, R.I. (2002), "Openness, Stock Market Development, and Industrial Growth in Nigeria," *Pakistan Development Review*, 41(1), 69-82.
- Yanikkaya, H. (2003), "Trade Openness and Economic Growth: A Cross Country Empirical Investigation," *Journal of Development Economics*, 72, 57-89.

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