

Impact of Accession to WTO on Agriculture Sector in Vietnam

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After much deliberation, Vietnam officially became a member of World Trade Organisation (WTO) in 2006. There is substantial empirical evidence on how accession to WTO can lead to economic development, improvement in trade balances, improvement in poverty levels and the closing of income and wages, and in doing so, reduce inequalities. Given the fact that most of the Vietnamese population lives in rural area (precisely, 78%) and approx. 11 million people are directly or indirectly involved in the agriculture sector. Given that the Vietnamese economy is heavily reliant on the agriculture sector, it is not surprising that the sector contributes significantly to Gross Domestic Product (approx. 21%). However, to the best of the author's knowledge, the literature is largely silent on the impact of accession on agricultural sector. Taking a cue from this missing link in the literature, the primary objective of this paper is to assess the impact of accession to WTO on the agriculture sector. The data is collected from the World Development Indicators (WDI). As the accession to WTO took place in 2006, the paper uses a dummy variable to differentiate pre and post accession. Precisely, the dummy takes the value of "1" from 2006 onwards and "0" before 2006. The data spans from 1997 to 2019. The choice of data is dictated by its availability. The findings from the paper show a positive and significant effect of accession to WTO on the agriculture sector. This is not surprising as accession to WTO can help the agriculture sector gain access to more international markets through adoption of liberalization policies. Key findings are discussed, and the implications are provided in the concluding section of the paper.

Key words: Vietnam, Agriculture sector, World Trade Organisation

1. INTRODUCTION

Vietnam is officially recognized as a socialist republic with considerable country influence in the Southeast Asian region. It has a total of 58 provinces spread across 5 municipalities and a total population of more than 96 million. Vietnam is the fifteenth largest country in the world in terms of population. It shares its borders with Laos, China and Cambodia. The capital city of Vietnam is Hanoi, and its largest city is Ho Chi Minh.

Vietnam is a regional powerhouse and considered to be one of the strongest emerging economies in the Southeast Asian region. It is categorized in the developing bracket and the lower middle-income category. More importantly, Vietnam ranks alarmingly low in the Human Development Index (HDI). Moreover, it is also a part of many global and multilateral organizations such as United Nations (UN), Association of Southeast Asian Nations (ASEAN), Asia-Pacific Economic Cooperation (APEC), Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), Organisation internationale de la Francophonie (OIF), Regional Comprehensive Economic Partnership (RCEP) and the World Trade Organisation (WTO). Vietnam has also held a seat in the United Nations Security Council (UNSC) twice.

Unfortunately, the country is marred by high levels of corruption with bribery being highly rampant. This is one of the major issues currently facing the Vietnamese government, economy and people. Historical surveys find poor level of transparency while taking bribes by government officers, medical practitioners and civil officers is found to be rampant across the country. Nevertheless, reforms undertaken over the past several decades have resulted in reduced corruption and most of their success can be attributed to the effective implementation of anticorruption measures by civil servants. Although there are visible signs of improvement in corruption levels, they still remain high. The effectiveness of anticorruption measures is examined over the period of two years, that is, from 2015 to 2017, and thereafter the plan was re-enacted for the anticorruption drive for the next five years, that is, from 2021 to 2025. The Vietnamese economy has witnessed rapid economic expansion over the past several decades. The story of Vietnam's rapid development is nothing short of spectacular, especially over the past 30 years. These high numbers in most economic indicators were the result of series of economic reforms that were initiated under the banner of Doi Moi reforms. These reforms were initiated in 1986. The Doi Moi reforms led to unprecedented

economic growth level and left a positive mark on most other economic indicators such as employment level, trade balance and the level of inflation. More specifically, reforms implemented under the banner of Doi Moi transformed one of the poorest nations in the world into a lower middle-class category. More importantly, poverty level has also been seen decreasing sharply following the implementation of these economic reforms. The latest growth trend indicates that the Vietnamese economy grew by close to 3 times from 2002 to 2018. During the same period, the poverty level reduced from 70 to as low as six percent. Most of the people under the poverty line are the ethnic people. More precisely, 86 percent of the people below the poverty line are the ethnic Vietnamese.

As a matter of fact, the Vietnamese economy is deeply integrated with the world economy and hence been adversely affected by the Covid-19 pandemic. However, it is important to note that the country has proved to be remarkably resilient. In fact, the Gross Domestic Product (GDP) of Vietnam grew by close to 3% since the onset of the pandemic. Nevertheless, like other countries, especially the developing ones, the pandemic has had a severe effect on the economy. The country witnessed a massive drop in household income in January 2021 when compared to January 2020. In fact, these statistics are worrisome as the percentage of people reporting lower household income is as high as 45%. However, the impressive resilience is ensuring the smooth recovery, and the annual economic growth is expected to bounce back to pre-pandemic levels by the first quarter of 2022. In fact, as per World Bank estimates, the Vietnamese economy is expected to grow annually at the rate of 6.5% in 2022. These growth estimates are based on successful implementation of pandemic measures that have been highly effective in controlling the spread of the disease. Moreover, the economy also witnessed a demand surge in the domestic market and an improvement in the performance of export manufacturing firms.

The transformations seen under Deng Xiaoping since the beginning of Doi Moi (the economic transformation) in Vietnam have produced positive results in the form of improving the level of economic development, boosting trade by increasing exports, bringing in foreign direct investments as well as portfolio investments. Moreover, in macroeconomic terms, there has been a marked decrease in unemployment rates, improvements in the level of poverty, and a reduction in income inequality. However, one of the major challenges currently faced by the Vietnamese economy is ensuring sustainability of economic growth for the future. The sustainable economic growth is very important for a Vietnamese economy in order to ensure wealth equality which will also contribute to a more political stable Vietnam.

As part of its continued economic reform, Vietnam decided to join World Trade Organisation (WTO). After much deliberation, Vietnam formally joined the WTO in 2007. The decision to join the organisation was a strategic move undertaken with a view to attract foreign investments in form of direct as well as portfolio investments. Being part of WTO resulted in the Vietnamese economy open up

for the leading international market. The main effect of this accession is the development of the domestic market through import of technologies and the establishment of multinational firms which can open more avenues for economic growth channels Vietnam.

As mentioned above, Vietnam decided to join WTO in 2007 and Vietnam's participation was meant to bring about trade openness. The accession was widely applauded as a strategic move to liberalize trade in the country. This is expected to happen through a gradual improvement in access to different markets and hence positively affect trade and economic growth. Accession to WTO is expected to benefit the country as per the Heckscher-Ohlin model of comparative benefits. Based on this theoretical model, developed by Bertil Ohlin and Eli Heckscher, the WTO accession provides advantage to the unskilled labors in Vietnam (due to lower wages) while also contributing to the level of economic activity in the country. In turn, this is expected to lower the wage gaps, alleviate poverty and reduce income inequality (Winters et al., 2004).

As accession to WTO is expected to improve trade through better access to international markets, the objective of this paper is look into as to how the WTO accession is expected to impact the agriculture sector.

Most of the extant literature examines the impact of the participation in WTO on trade liberalization, Foreign Direct Investments (FDI), portfolio investments, economic growth, employment level, poverty level and income inequality from the lens of development. Given the fact that the Vietnamese economy is heavily dependent on contribution from agriculture sector, it is surprising to see limited literature on the impact of WTO accession on the agriculture sector in Vietnam even 15 years following the country's accession.

Given the significant gap in the literature noted earlier, the primary aim of this paper is to examine the unexplored link between WTO accession and the agriculture sector.

However, to the best of the authors' knowledge, the literature is largely silent on the effects of accessing to WTO on the local agricultural sector. In light of this missing link in the literature, this paper seeks to assess the impact of accession to WTO on the agriculture sector in Vietnam. The data is collected from the World Development Indicators (WDI). As the accession to WTO took place in 2006, the paper uses a dummy variable to differentiate pre- and post-accession. The dummy takes the value of "1" from 2006 onwards and "0" before 2006. The data is collected from 1970 onwards and the total sample period is of 50 years which span from 1997 to 2019. The choice of data is dictated by the availability. The findings from the paper show a positive and significant effect of accession to WTO on the agriculture sector. This is not surprising as accession to WTO has helped the agriculture sector access more international markets with the adoption of liberalization policies. These study findings are discussed and implications for future research are provided in the paper. The paper also provides a clear direction for future researchers to follow in light of the limitations of the current research study.

The paper adds to the existing body of literature in at least

two ways. First, the paper provides a significant contribution to the extant literature by extending the existing work on accession to WTO and its link with the macroeconomic indicators by specifically looking into the impact of WTO membership on the agriculture sector.

Second, the paper adds to the literature on developing countries by providing the implications of a developing country or an emerging economy joining an international trade organization with a particular focus on its effect on the agriculture sector.

Finally, the paper also contributes to our understanding of the Vietnamese economy and its response to the accession to WTO which is, so far, limited to key macroeconomic indicators.

The following section (Section 2) provides a brief overview of the existing literature on the accession to WTO and its effect on various sectors/variables. The following section (Section 3) discusses the data collection process and the research methodology used during the study. In Section 4, the paper highlights the results and discusses implications for future research on the subject. Finally, in Section 6, the paper provides conclusion based on the study findings.

2. LITERATURE REVIEW

2.1 Empirical Evidence on WTO Accession

The hypothesis posited by analysts points to liberalization being the key factor in determining the level of economic development of a country. These evidences have some solid empirical and theoretical backing. For instance, the empirical work of [McMillan et al. \(2011\)](#) and [Duong \(2016\)](#) points to the positive association between trade liberalization and economic development. This liberalization could be the result of accession to international trade agreements like WTO. However, there is very limited evidence to show the direct association between such trade agreements and economic growth ([Goldberg et al., 2016](#)).

In contrast to the evidences provided in favor of trade agreements like WTO, there is a strand of literature that argues that internally drafted policies and procedures are effective in terms of transforming state entities. For instance, SEZ (Special Economic Zones) are found to be crucial in pushing growth and providing competitive edge, especially for the agriculture and the manufacturing sectors. There are solid empirical evidences provided in favor of domestic policy-led transformations as compared to international trade reforms (see for instance the work of [Autor et al., 2013](#); [Cuong, 2013](#); [Song et al., 2011](#)).

Existing empirical evidence indicates that a decrease in domestic tariff supposedly has a significant impact on the manufacturing industry ([Manova et al., 2017](#)). However, these empirical evidences have mostly focused on the manufacturing sector and there is hardly any evidence available outside the manufacturing sector ([Erten et al., 2021](#)).

As the productivity in the agricultural sector is significantly lower compared to the non-agricultural sector, the substitution effects have several key implications ([Gollin et al., 2013](#)). The analysis of trade

openness reforms, via accession to WTO, in the context of the agricultural sector in Vietnam will open a new debate.

2.2 Modelling Used in the Literature

The CGE models commonly referred to as Computable General Equilibrium models are preferred while assessing the effect of trade agreements on the macroeconomic performance of a country. The standard version of CGE is generally dependent on the description of a few household samples categorized by various factors and on the basis of their distinct behavior. The heterogeneous household population is therefore connected in an unsatisfactory and scarce method. This approach can be attributed to the fact that the inequality modelling is carried out on the basis of the sampled data. There are various situations in which observed data on inequality decomposes as the observed data on inequality has demonstrated that with inequality of in-group sample is way more crucial than the between group equality ([Cogneau et al., 2003](#); [Vo et al., 2021](#)). Similarly, the same pattern also holds for changes or variations in inequality. This explains why the traditional macro models do not appear to be satisfactory in tackling distributional challenges.

A number of distinct approaches are used in the literature to assess the macroeconomic performance rely on the full samples of households or individuals. These recent approaches are developed to overcome the above-stated issues ([Cogneau et al., 2003](#)). These methods differ in the ways they tackle micro activities and the integration level of micro and macro narratives ([Abbott et al., 2009](#); [Bourguignon et al., 2005](#)).

The applied CGE modelling depends on the “Social accounting matrix” or SAM as the initial data. The approach of SAM offers almost all the comprehensive explanation. Base on the issue at hand, the different accounts could be determined at all stages of data aggregation.

A close scrutiny of SAM approach indicates that the sub matrix of indicators to be reliant on the value addition of several factors. As some of the parameters obtained by the SAM approach are unrealistic as well as regular. These issues are very problematic in a sense that shocks are triggered by reordering critical aspects. As the distributional query is the main objective of almost all the studies, the SAM structure is generally corrected by the construction of more realistic sub matrices.

3. DATA AND METHODOLOGY

3.1 Data

As information used in this study pertains to macroeconomic variables, the data is collected from the World Development Indicators (WDI) from 1997 to 2019. The level of development in the agriculture sector is measured by the agriculture value add as a percentage of Gross Domestic Product (GDP). This variable is denoted as Agriculture Development in the paper (AD). The other control variable used in the paper is Gross Domestic Product (GDP) calculated at the base year of 2010. This variable is denoted in the paper as Economic Development (ED). Moreover, Foreign Direct Investments is also used a

control variable. This variable is measured as Foreign direct investment (inflows) as a percentage of GDP, and is denoted in the paper as FDI. The choice of sample period is dictated by the availability of the data, especially Agriculture Development (AD) as it is only available from 1997 onwards. The paper also uses a dummy variable to differentiate pre- and post-accession periods. The dummy takes the value of “1” for the year starting 2007 and “0” otherwise.

3.2 Methodology

Given the nature of the data series used in this study, the author employs the time series modelling. Although there are various time series approaches used in past studies, for this paper, we use the methodological approach of Autoregressive Distributed Lag (ARDL). This method was developed by [M Hashem Pesaran et al. \(1997\)](#) and the [M. Hashem Pesaran et al. \(2001\)](#). There are several advantages of using ARDL over the other methods commonly used for cointegration. First, the ARDL is designed to take care of variables irrespective of whether they are integrated of order “1” or integrated of order “0”. The integration order of “1” and “0” is denoted by I(1) and I(0) respectively. In the literature, the paper refers to them as I(1) or I(0) with the value in the parenthesis signifying the order of integration. Being able to handle series of I(1) and I(0) variables provide a great advantage over the cointegration method proposed by [Engle et al. \(1987\)](#). The cointegration approach of [Engle et al. \(1987\)](#) is incapable of handling the series with a mix of I(1) and I(0) ([M Hashem Pesaran et al., 1997](#)). Their approach can only handle the variable with the integration order of “1”. Additionally, the approach of [Engle et al. \(1987\)](#) is found to be inadequate for series with multiple variables. Therefore, in case of multivariate series, it is recommended to use the method proposed by [Søren Johansen \(1988\)](#) and [Soren Johansen et al. \(1990\)](#).

The approach proposed by [Søren Johansen \(1988\)](#) and [Soren Johansen et al. \(1990\)](#) is found to produce efficient results as compared to the methodological approach of [Engle et al. \(1987\)](#). Finally, the method proposed by [Engle et al. \(1987\)](#), [Søren Johansen \(1988\)](#) and [Soren Johansen et al. \(1990\)](#) is best suited for long time series data. Therefore, the approach of ARDL is superior as compared to [Engle et al. \(1987\)](#), [Søren Johansen \(1988\)](#) and [Soren Johansen et al. \(1990\)](#) for following two reasons. First, ARDL can handle a series of variables irrespective of whether they are I(1) or I(0). However, it is important to note that the ARDL is inadequate in a case where the series has I(2) variables. Second, and more importantly, the approach of ARDL can be used even for smaller time series data. Even in case of smaller time series data, they can produce coefficients that are not only consistent but also efficient. ([Ghatak et al., 2001](#)). Finally, the ARDL approach can also tackle the issue of non-stationarity in the series as opposed to other commonly used methods ([Laurenceson et al., 2003](#)).

The ARDL approach is easy to implement and has following key steps. In the first step, the variables are required to be tested for the stationarity. This is done

through the unit root testing of the variables. The unit root tests that is used in the paper are that proposed by [Dickey et al. \(1979\)](#), [Dickey et al. \(1979\)](#) and the [Phillips et al. \(1988\)](#). These tests are commonly referred to as DF, ADF and PP unit root tests.

Once the integration of variables has been identified, the next step is to test for cointegration. In case of at least one cointegration, it can be argued that the variables are associated in the long run.

To test for the integration of variables, the unit root tests are conducted. The following equation is estimated for unit root and the ARDL estimation:

$$AD_t = \alpha + \beta ED_t + \gamma FDI_t + \varepsilon_t \tag{1}$$

In the equation (1), AD is the Agriculture Development in Vietnam at time ‘t’. ED is the GDP of Vietnam at time ‘t’. FDI is the Foreign direct investment (FDI) in terms of inflows in Vietnam at time ‘t’. β and the γ are the coefficients of GDP and the FDI inflows respectively. In the ARDL, estimation is further augmented to add dummy variable. The dummy variable is used to differentiate pre and post-accession period. The dummy takes the value of “1” for the year starting 2007 and “0” otherwise.

The process of ARDL approach follows three key steps. The first step involves cointegration tests. These tests are helpful in determining the presence of a long-term relationship among the variables under study. The cointegration test is conducted using the bound testing approach of [M Hashem Pesaran et al. \(1997\)](#) and the [M. Hashem Pesaran et al. \(2001\)](#).

Equation 1 can be transformed into the ARDL equation as follows:

$$AD_t = \alpha + \sum_{i=1}^n \beta ED_{t-i} + \sum_{i=1}^n \gamma FDI_{t-i} + \sum_{i=1}^n \phi \Delta ED_{t-i} + \sum_{i=1}^n \lambda \Delta FDI_{t-i} + \varepsilon_t \tag{2}$$

The above equation Equation 2) is employed to test the presence of a long-term relationship or the cointegration among the variables. The null hypothesis of no cointegration in Equation 2 is $\beta = \lambda = 0$.

The hypothesis of no cointegration is tested by comparing the estimated F-statistics with the [M Hashem Pesaran et al. \(1997\)](#) and [M. Hashem Pesaran et al. \(2001\)](#) critical values. The significant F-statistics will imply cointegration.

$$AD_t = \alpha + \sum_{i=1}^n \beta ED_{t-i} + \sum_{i=1}^n \gamma FDI_{t-i} + \varepsilon_t \tag{3}$$

The presence of cointegration is followed by the estimation of long run coefficients. In the above equation (Equation 4), significant coefficient values of β and λ can reveal the magnitude and the sign of the relationship among the variables.

$$AD_t = \alpha + \sum_{i=1}^n \phi \Delta ED_{t-i} + \sum_{i=1}^n \lambda \Delta FDI_{t-i} + ECT_{t-1} + \varepsilon_t \tag{4}$$

The final step in the ARDL approach is the estimation of error correction term. In the above equation (Equation 4), ECT represents the error correction term. The parameters ϕ and the λ are coefficients that indicate the short-run relationship. The significance of these parameters is that it implies that the ED as well as the FDI impacts the AD in the short run as well.

Additionally, the coefficient of ECT term tells the time taken for the equation to return to a state of equilibrium. Econometrically speaking, the coefficient term of ECT takes the value between “0” and “1”.

4. RESULTS AND DISCUSSION

The results of the unit root test proposed by [Dickey et al. \(1979\)](#) and the [Phillips et al. \(1988\)](#) is provided in [Table 1](#) below.

Table 1: Stationarity Tests (Unit Root Tests)

| Variables | ADF | | PP | |
|-----------|--------|------------------|--------|------------------|
| | Level | First Difference | Level | First Difference |
| AD | 1.9835 | -7.9918** | 1.9981 | 6.1198*** |
| GDP | 1.8817 | 8.4832*** | 0.7991 | 9.8987*** |
| FDI | 1.4537 | 5.7761*** | 0.4644 | 5.9169*** |

*(10%), **(5%) and ***(1%) significance level

The reported unit root tests (presented in [Table 1](#)) indicate that all the variables are integrated of order “1”, that is, I(1).

Table 2: Cointegration Test

| Cointegration tests | F-statistics | t-statistics | p-values |
|---------------------|--------------|--------------|----------|
| F (AD GDP D FDI) | 11.9199*** | -9.1198 | 0.000 |

*(10%), **(5%) and ***(1%) significance level

The [Table 2](#) depicts the cointegration results. The significant F-statistics indicate towards at least one cointegration among the variables. The second step in the time-series estimation is the test of cointegration among the variables. More precisely, the results point to the presence of a long-term relationship between the focal variables. The dummy variable is also used in the test.

The next step in the ARDL method is to assess the coefficients of long run relationship. The estimated coefficients from ARDL method are presented below in [Table 3](#). The results indicate a positive effect of banking development and energy consumption on economic growth. These results are in line with the findings presented in the extant literature. For instance, the positive impact of energy consumption on economic growth can be attributed to the growth led hypothesis ([Aslan et al. 2014](#); [Ozturk et al. 2010](#)). The growth hypothesis argues that a higher level of energy consumption leads to more economic output, and hence, economic growth.

All the variables are significant and more importantly, positive. For instance, the coefficient of GDP is positive and significant indicating that an improvement in the economic activity leads to more development in the agriculture sector.

Table 3: Obtained Coefficients

| Variables | Coefficients | Standard errors | p-values |
|-----------|--------------|-----------------|----------|
| GDP | 0.6611** | 0.1164 | 0.013 |
| FDI | 0.1187* | 0.3276 | 0.010 |
| D | 0.6708*** | 0.2987 | 0.000 |
| Constant | 0.9981* | 0.7627 | 0.061 |

*(10%), **(5%) and ***(1%) significance level. “D” in the above table denotes dummy variable. The dependent variable is Agriculture development (AD).

Moreover, the coefficient of FDI is also found to be positive and significant. This implies that the FDI inflows are good for the agriculture sector as they bring in innovation and technological development in the industry, which in turn, positively affects the agriculture sector. Finally, “D” which is a dummy variable signifying the post-accession period. A positive and significant dummy variable indicates that accession to WTO was a good decision for the agriculture sector. In other words, the decision to join WTO has proven to be a strategic move for the local agriculture sector in Vietnam.

The impact of accession to WTO on the agriculture sector has been a promising development for the Vietnamese economy. The main channel through which WTO leaves a significantly positive effect is through the policy changes suggested by the WTO. This is understandable as accession to the organization requires changes in the existing policies as a prerequisite to membership. These policies have allowed several agricultural firms to expand and improve their existing capabilities. These policies have also enabled these firms to drastically improve the production and processing capabilities which has helped them to not only export but also export good quality products. Moreover, policy changes have also led to the adoption of policies and procedures at par with international standards. The adoption of these policies and procedures gives much needed confidence to the agricultural enterprises in the Vietnam to compete with the international practices, especially in terms of the business practices they have adopted. The adoption of international business practices also meant that the products exported were of high quality. For instance, soon after accession to WTO, Vietnamese agricultural firms started to export rice of premium quality to Japan. This was a great achievement considering that the Japanese market is difficult to get into. accession of WTO meant that the policies and the procedures adopted by the Vietnamese agricultural firms also complied with the regulations of US and the European markets. Not just this, TO accession also meant that Vietnam now can export agricultural products to most of the countries in the world. This has created more opportunities for the Vietnamese agricultural firms and they have grown and expanded rapidly following

accession to WTO.

The agricultural products were at the bottom of the tariff list and numerous non-tariff blockades were lifted. The low tariff meant that there was an opportunity to charge higher margins for agricultural products. This helped to increase prices of exporting commodities. This is precisely what has happened in 2007 as the agricultural firms during that time has exported all the agricultural commodities at a higher price. The period saw the price of Vietnamese rice witness an all-time high and even exceeded the price of rice from all over the world including, Thai rice. More recently, a Vietnamese produced rice saw the price of 350 USD per ton which is higher than the most expensive Thai rice by 8 USD per ton. Coffee and rubber producers also witnessed an increase in prices being exported at a price of 1690 USD per ton and 2400 USD per ton, respectively. Moreover, accession to WTO also meant more openness for the Vietnamese economy. The economic dynamics also forced the change to focus on the industries that belong to a highly competitive sector, especially those in the agriculture industry. The available resources were efficiently utilized for producing high quality produce which was then exported to markets globally with the incentives of less or even zero trade complications. This also created several employment opportunities, especially in the agriculture sector. Usually, the policy changes following the decision of joining trade or any such organizations is expected to have a lagged effect. In other words, the policy changes take some time to have an impact on the economy or the specific sectors that it is targeting. However, in case of Vietnam, = accession to WTO yielded immediate results in terms of job creation, better economic performance, improved firm performance of agricultural sector etc.

However, it bears to note that the trade move did not yield positive results overnight for the local agriculture sector in Vietnam. For instance, the agriculture sector remained under immense pressure after accession to WTO due to the sudden restructuring of policies and procedures to adhere with. Most of the agriculture firms were not capable enough to integrate those policies into their business practices. The agriculture industry is expected to face these challenges in the future as well. This can be partly attributed to higher level of access to overseas agricultural produce as a result of lifting of trade restrictions. Moreover, the removal of trade restrictions has also led to higher prices of raw materials. Additionally, the agricultural sector in Vietnam is yet to develop a proper infrastructure that can effectively serve the industry. This lack of infrastructure in the agricultural sector presents a number of challenges for firms in the agriculture industry, especially in terms of improving their competitiveness. This has led to many firms in the agriculture sector losing out to multinational firms and not being able to compete with them especially due to pricing issues. For instance, the cost of producing agricultural products in Vietnam is way more as compared to their key competitors such as China and Thailand. Subsequently, the agricultural products produced in Vietnam also became way less competitive globally as well as domestically. Furthermore,

the sluggish response from the administrative authorities to introduce policies in a timely manner also meant that the Foreign Direct Investments (FDIs) are delayed. Although other sectors of the economy also suffered from the lack of FDIs, the agriculture sector suffered the most. For instance, during the five-year period from 2006 to 2010, there were close to 100 key projects looking for FDIs but out of these national projects, only one was related to the agriculture. The slow policy response meant that the Vietnamese economy did not receive investments from countries with very sophisticated agriculture sectors such as Australia, Canada and the United States. The drafted policies were miserably lagging behind the conditions set by the WTO with regards to integration development. The earlier policies with regards to the agriculture sector were principally targeted at fulfilling domestic demands and the exports were only considered once the domestic demands were met. However, after accession to WTO, the focus has turned to more sustainable and productive approaches. Hence, it became necessary to ensure that the farmers knew about the relevant guidelines and had access to all the necessary information with regards to integration policies. This required an active effort from the Vietnamese government to educate farmers about all that they need to know to prepare themselves for the new normal in the country. The lack of utilization of subsidies also added to the woes of the agricultural sector post-accession. For instance, Vietnam only used one-third of the total subsidy of USD 1.2 million and this negatively affected the agriculture sector. Generally, the agriculture sector gained from the decision of Vietnam's accession to WTO but it was not without its challenges.

Proposed solutions for the agricultural industry seek to take advantage as well as overcome the challenges of being a WTO member/ Government in individual countries design policies with a view to take full advantage of WTO membership. However, there are a number of conditions that need to be in place before these advantages can be exploited. The following conditions and solutions need to be implemented in an effective manner in the coming years. This includes restructuring the agricultural industry with a focus on highly competitive commodities. The agricultural industry has recently been restructured with some initial successes. However, there are still many existing problems including the low quality of restructuring work and the inability of new structures to cope with the dynamics of the market-oriented economy. In addition, there has been weak coordination between agricultural restructuring and policy-making, investment, and research and development. In the integration process, it is crucial for Vietnam to identify and develop key economic sectors as well as industries which have comparative advantages. In the coming years, the agricultural industry needs to be restructured to focus on the following industries: • Rice industry: focusing on investment and improvement of productivity and quality to guarantee food security and export. • Cattle, poultry, and fishery industries: focusing on implementation of strategies to ensure sustainable development of these industries. • Forestry: balancing between the areas of

protection forests and production forests (which contribute through direct economic benefits to local residents. 7 • Rural industries: building small industrial zones in areas which have traditional villages and strong rural industries development. Maintain subsidy policies and strengthen 'green box' policies under WTO regulations, 'green box' policies are allowed to be implemented. In Vietnam, about 84.5 per cent fund of such subsidised policies are used for building agricultural infrastructure, developing extension services, subsidising disaster areas, and maintaining food security. Approximately 10.7 per cent of this fund is used for subsidising the sugar and dairy industries, reducing interests on loan for the poor, and restructuring the agricultural industry. There is only about one to three per cent of such funds which is used for research. There are about 78 per cent of rural households still rely on agricultural production as their main source of income. Subsidised policies can be implemented to withdraw resources out of the agricultural sector in order to change the economic structure. Even though these subsidies are not prohibited under WTO regulations, they have not been implemented in Vietnam. The Vietnamese government can also pay farmers to help them with production losses and damages. This payment can be directly given to farmers under schemes such as income insurance and tax exempt.

5. CONCLUSION

The Vietnamese economy has witnessed rampant demographic and socio-economic change over the past several decades. The total population in Vietnam has crossed the 96 million marks, making it the 14th most populated country in the world. The population numbers have gone up from 60 million to 96 million in 2019. Based on the latest census (2019), more than 50% of the population is under 35 and life expectancy in the report is reported to be 75 years. Life expectancy is the highest in the region of Southeast Asia but the worrying part is that the average age is increasing. Moreover, the population in the middle-income bracket is projected to go up from 13% to 26% by the year 2026.

The Vietnamese economy has shown remarkable growth and improvement in the past three decades, especially in terms of providing basic necessities to its people. Moreover, access to infrastructure to people has also been seen to significantly improve during this period. The country has seen the most improvement in terms of access to electricity. For instance, access to electricity has gone up from just 14% back in 1993 to close to 99% in 2017. Moreover, the country has also managed to provide its resident better access to life amenities. For instance, clean water access, especially in rural areas has improved from 18% to 72% in 2017. The number has gone up to 96% for urban regions. However, there is a worrying pattern when it comes to investment. For instance, Vietnam is currently witnessing the lowest investment in the ASEAN region.

The literature so far has tested the link between accession to WTO and various macroeconomic indicators. Most of the extant literature examines the impact of participation in WTO on trade liberalization, Foreign Direct Investments (FDI), portfolio investments, economic growth,

employment level, poverty level and income inequality. Given the fact that the Vietnamese economy is heavily dependent on the contribution from agriculture sector, it is surprising to see no literature on the impact of WTO accession on the agriculture sector in Vietnam even after more than 15 years of accession.

As accession to WTO is expected to facilitate trade relations by providing better access to international markets, the objective of this paper is to investigate into how WTO accession is expected to impact the agriculture sector in particular. More precisely, the main aim of this paper is to examine the unexplored link between WTO accession and the agriculture sector.

This paper attempts to explore Vietnam's participation in WTO with regards to agriculture sector as opposed to past studies in existing literature that have limited their examination to economic and trade-related performance. The present study allows us to examine the WTO accession from the perspective of the agriculture sector as these policies can take a long time to take effects.

Over the recent past, empirical evidences have demonstrated that participation in trade agreements such as ASEAN, APEC, CPTPP, OIF, RCEP, WTO etc., have been extremely positive for most of the macroeconomic indicators of Vietnam. However, most of these studies have somehow tended to ignore the effect of these trade agreements, especially WTO, on the Vietnamese agriculture sector.

With regards to accession to WTO, the assurances given by the Vietnamese authorities have more substantial consequences as compared to other trade agreements. Accession affects all the economic sectors and hence, it is difficult to understand as to why there is no research on the topic so far. Moreover, given the significance of the agriculture sector to the Vietnamese economy, it becomes much harder to digest the unavailability of any existing evidence on accession to WTO and its effect on the Vietnamese agriculture sector.

Taking a cue from this missing link in the literature and as mentioned above, the main objective of this paper is to assess the impact of accession to WTO on the local agriculture sector. The data is collected from the World Development Indicators (WDI). As accession to WTO took place in 2006, the paper uses a dummy variable to differentiate pre and post-accession periods. This dummy variable takes the value of "1" from 2006 onwards and "0" before 2006. The data is collected from 1970 onwards. The total sample period is 50 years, spanning from 1997 to 2019. The choice of data is dictated by availability. The findings from the paper demonstrate a positive and significant effect of an accession to WTO on the agriculture sector. This is not surprising as accession to WTO helped the agriculture sector to access more international markets through the adoption of trade liberalization policies.

Undoubtedly, accession to WTO proved to be a game changer for the agriculture sector in the Vietnamese economy. The TO accession has led to policy changes suggested by the WTO. These changes have made the agriculture sector more competitive through knowledge

and the technology transfer. The improved technology led to the better-quality produce that have helped agricultural firms in the Vietnam to sell the produce at a premium price. The accession has given the necessary confidence to the agriculture in a sense that they were able to compete with the international players. One of the major achievements post WTO accessions is the export of rice of Japan. This was an incredible achievement considering Japan is tough market to enter. The accession also meant that now the Vietnamese firms have the access to US, European and other developed markets due to their compliance to international standards. Overall, the accession has brought many positives for the agriculture sector in Vietnam.

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