TRADE LIBERALIZATION AND ECONOMIC GROWTH: A CROSS-COUNTRY STUDY USING UPDATED SACHS-WARNER INDEX

check for updates

🆔 **Rahnuma Siddika[1]**
🆔 **Sibbir Ahmad[2+]**

[1]Department of Political Science, University of Illinois, Urbana-Champaign, IL, USA.
Email: siddika@illinois.edu
[2]Department of Agriculture, Food, and Resource Economics, Michigan State University, MI, USA.
Email: ahmadsib@msu.edu

(+ Corresponding author)

ABSTRACT

The relationship between trade liberalization and economic growth is a hotly contested issue. Some studies claim a positive impact while others oppose it. This study uses updated data to generate new evidence for the debate. Using a dynamic panel framework and the Sachs-Warner indicator of liberalization, this study finds that trade liberalization does appear to impact growth. The evidence this study generated points to the advocacy for trade liberalization and extending trade volume supporting the view of classical economists. This study revisits the linkage between trade openness and growth through an updated empirical analysis. This paper presents an updated dataset of openness indicators and trade liberalization dates for countries from 1990 to 2010. It finds new evidence on the time paths of economic growth, physical capital investment, and openness around episodes of trade policy liberalization. Using the updated Sachs-Warner index, the study shows that trade liberalization positively affects economic growth.

Contribution/ Originality: This study presents an updated dataset of the Sachs-Warner openness indicator for a wide cross-section of countries from 1990-2010 and generates new evidence for the existing debate on the relationship between trade liberalization and growth.

1. INTRODUCTION

"Liberalize your international trade" has been a ubiquitous policy advice economists give to developing countries over the last two decades. Many benefits are claimed for it, including that it helps to alleviate extreme poverty by stimulating economic growth. Many famous comments from different entities, including churches and NGOs, dispute this assertion; some economists argue about the quality of the evidence in favor of it. Consequently, it has been promoted in academic circles as well as at the policy-making level. However, there is skepticism over the linkage between trade liberalization and economic growth. Nevertheless, the debate is ongoing. Most of the theoretical models predict a positive association between the two.

Many developing countries started withdrawing their trade restrictions in the last three decades. Studies show that by the Sachs and Warner index (Sachs, Warner, Åslund, & Fischer, 1995) about 35% of the world follows open trade policies. In 2000, 73% of the countries in the world, representing 47% of the world population, were open to international trade.

216

One of the most debatable issues among economists is the relationship between trade liberalization and economic growth (Salvatore, 2011). Many studies claim a positive correlation between trade liberalization and economic growth. However, Rodriguez and Rodrik (2000) mentioned that these positive findings of openness are less robust than claimed because of concerns in the measurement process of openness, statistical specifications, the relationship between restricted policies and other policies, and some other types of econometric measurement problems. Since this study doubts trade liberalization's effect on growth, further research is an important issue. While recent research has pointed to serious issues with the Sachs and Warner (SW) classification, their classification of open and closed countries remains widely used in the literature on testing the impact of trade on economic growth, so an update is essential now. We used the updated outcome of the Sachs-Warner classification of openness, which Romain Wacziarg and Karen Horn Welch introduced.

Our study adds value to the existing literature in three ways. Firstly, it uses an update of the SW empirical findings of trade policy on growth. Secondly, it extends SW's empirical results to an outward orientation. The third goal is exploiting the within-country setting liberalization timing. With almost twenty years of data, comparing the performance of countries under a liberalized versus a non-liberalized regime becomes feasible. Thirdly, this paper is to shift focus away from estimating the cross-sectional relationship between openness and growth to present new evidence on the path of the debate of whether trade openness has any impact on growth.

2. BACKGROUND

From the mercantilists' view, most countries in the world were closed. They used to preserve gold inside the border and earn more gold by exporting goods and services. Their view was to export more and import less. But an export by one country is an import for another country. Confronting this view, Smith (1776) came forward and viewed that "free trade will benefit the trader". Smith argued that countries could gain from each producing exclusively the good(s) they are most suited to, trading between each other as required for consumption. Hence, he wanted to indicate that trade liberalization will foster economic growth and help enjoy a higher living standard. He supported his view by introducing the "Absolute Advantage Theory."

Despite the theoretical shortcomings of this theory, English Economist Ricardo (1817) in his "Comparative Advantage Theory," showed that international specialization and free trade benefit a nation. Ricardo expanded it in his book *On the Principles of Political Economy and Taxation*. It makes a case for free trade not based on absolute advantage but a relative advantage. While gains from trade may not be equal to those of a more productive country in every good, they will still be better off economically by doing trade compared to the state of autarky. Since then, many more have been developed. Adam Smith mentioned that increased trading was one reason for the flourishing of Mediterranean cultures, Bengal (East India), and China.

Adam Smith first documented the importance of trade in his *Wealth of Nations* (Smith, 1776). The theoretical shortcoming was addressed by the speculation of comparative advantage by David Ricardo, who expanded thereon in his book *On the Principles of social science and Taxation* (1817). A considerable literature on various macroeconomic aggregates and microeconomic adjustment processes has developed in parallel with the proliferation of trade reform programs. Several significant reviews have been published, including Edwards (1993); Krueger (1997); Rodrik (1997) and Rodriguez and Rodrik (1999). Edwards (1998) which claimed that the positive association between trade and openness is powerful to the measure of openness used. However, Rodriguez and Rodrik (1999) challenged this conclusion. Rodriguez and Rodrik (1999) re-opened the discussion in both developed and developing country settings and argued that although inward-oriented trade policies and growth have some sort of linkage, the evidence linking outward orientation and growth overstates the connection between the two.

There are a lot of empirical studies on trade openness and growth. Empirical evidence on the consequences of economic liberalization on growth has been mixed. Several studies showed that trade openness indirectly affects growth (Krueger, 1978), whereas some studies showed a correlation between trade liberalization and growth

(Dollar & Kraay, 2004; Salinas & Ataman, 2006). However, many other studies found no such linkage between trade and growth e.g. Ahmad & Harnhirun, 1995. On the other hand, some studies, including those of Greenaway, Morgan, and Wright (1998) and Bolaky and Freund (2004), suggest that trade liberalization may have a negative impact on the economic process. Papageorgiou, Michaely, and Choksi (1991) conclude that trade liberalization leads to more exports and Gross Domestic Product (GDP) without high transitional costs of unemployment. Other studies find that liberalization tends to lead to a growth in exports and an improvement in accounting. At the same time, some countries have increased investment following liberalization; others suffer an investment slump, so the impact on growth is also positive or negative. However, there seem to be more positive cases than adverse growth effects (Greenaway, 1998).

Greenaway, Leybourne, and Sapsford (1997) tested the extent of the GDP per capita transition for thirteen countries by employing a smooth transition model and relating these transitions in GDP to liberalization. While all countries displayed a transition within the level or trend, the transition was negative in most cases. However, in some cases, it was positive but generally could not be associated with liberalization episodes. Greenaway, Morgan, and Wright (2002); Greenaway et al. (1998) tested both the short-run and long-run effects of trade openness on the economic process by employing a dynamic panel model during a large sample of nations. Using three optional measures of trade openness, results suggest a J-curve effect; growth falls initially, then following the liberalization it increases. Wacziarg and Welch (2003) worked on updating the Sachs and Warner indicator of trade liberalization. They regress per capita output growth on the country (and time) fixed effects and their binary indicator of trade liberalization. They found a difference in growth between a liberalized and a non-liberalized country to be 1.53 percentage points. Salinas and Ataman (2006) used another indicator and find that trade liberalization boosts economic growth by between one and four percent, dependent on the specification.

Wasti and Zaidi (2020) reviewed the relationship between CO_2 emission, energy consumption, trade liberalization, and economic growth in Kuwait. Using 1971 to 2017 time series data and applying the Autoregressive Distributed Lag model, they found that variables have short-run and long-run relationships. They found that CO_2 emissions and energy consumption affect economic growth, but trade liberalization has an inverse effect on GDP. They also found one-way causality from GDP to CO_2 emissions and energy consumption to trade liberalization. Using a panel dataset of 150 countries from 1995 to 2015, Gnanhnon (2018) showed that multilateral trade liberalization positively impacts economic growth, which is also valid for subsamples of low-income, lower-middle-income, upper-middle-income, and high-income countries. Using the Meltiz trade and endogenous growth model, Naito (2017) also found that unilateral trade liberalization positively affects growth.

Over this ground of mixed outcomes of the relationship between trade liberalization and economic growth in the previous literature, this paper aims to see how trade liberalization affects economic growth using an updated Sachs-Warner index. With the above purposes, the critical questions that guided the research are as follows:

- How does liberalization lead to growth heterogeneity?
- Does trade liberalization contribute to economic growth? If it does, how and by how much? Is the effect significantly strong?
- Is trade liberalization a necessary condition for high growth?
- What are the possible determinants of GDP growth?

This study tried to investigate the answers to the above questions with the empirical application of the popular Solow growth model.

3. CONCEPTUAL FRAMEWORK AND EMPIRICAL STRATEGY

We will concentrate on the three key concepts: 1. Free trade, 2. Benefit and 3. Nation.

3.1. Free Trade

Free trade permits international transactions with no government restrictions such as tariffs, duty, quotas, etc., to realize mutual benefits. Under a trade policy, prices are a mirror image of actual supply and demand and are the only fundamental determinant of resource allocation.

3.2. Trade Liberalization

Trade liberalization represents a rise in openness. It is a multidimensional concept. It implies flexibility of formal trade barriers, i.e., tariffs, quotas, import duties, banned items, sensitive lists and non-tariff barriers, marketing boards, exchange controls, etc. It requires a broader measure than trade models' standard tariffs or quotas.

3.3. Benefit

Ricardo's "benefit" means the welfare gain created by the trade. It also indicates the quality of living. One of the very important determinants of living standard of a country is the GDP. Trade may induce GDP growth and thus may raise the standard of living that will result in a "benefit."

3.4. Nation

Here the term "Nation" has been used to denoting the countries participating in the trade process. Then, it includes all countries linked to world trade; nowadays, all countries are connected in one way or another in this age of globalization.

3.5. Sample Design

All the independent countries in the world are considered as population, and they are 194 in number. So, the 194 independent countries of the world are included in the universe of this study. Countries are treated as sampling units here. Five years' of data for every country from 1990 to 2010 with the years 1990, 1995, 2000, 2005, and 2010 have been considered. Here, 30 countries have been considered as the sample size, and for each country data has been taken at 5-time points. So, altogether there were 150 observations. Thirty countries were chosen for study because experience shows that a sample size greater than or equal to 30 seems to follow the normal distribution assumptions.

Using a stratified random sampling method with the strata by continent, the sample was taken by continent. Six continents worldwide (see below) were treated as six strata. Of 194 countries in the world, 30 countries were chosen for this study applying the following formula-

$$No \ of \ country \ from \ strata \ = \frac{No \ of \ country \ in \ strata \ i \ * \ sample \ size}{Total \ no \ of \ independent \ country}$$

We selected seven out of 44 countries in Asia, eight out of 54 countries in Africa, and seven, four, two and two from Europe, North America, Latin America and Australia respectively. Appendix 1 presents the list of countries in the sample.

3.6. The Variables of Interest

This study tried to observe the effects of related variables on GDP growth. We took the GDP growth rate of different countries at different time points as the dependent variable in the model. The related explanatory variables may be the following: the net trade volume, population growth, size of the effective labor force in the country, remittance, investment and capital stock, household and public expenditure, the openness of the economy, technological advancement, etc.

Liberalization is a dummy variable to capture the effect of liberalization on GDP growth. Sachs and Warner's index was used as a trade openness indicator. The Sachs-Warner openness indicator is a dummy variable equal to 1 if open and 0 otherwise. The value of 1 indicates an open economy, and a value of 0 indicates a closed economy.

3.7. Developing the Sachs-Warner Index as an Indicator of Openness

Sachs-Warner developed an openness index based on five factors related to trade policies. If a country has at least one of the following characteristics, it is considered closed:

1. Average tariff rates (ATR) of 40% or more.
2. Non-tariff barriers covering 40% or more of trade (NTB).
3. A black-market exchange rate that is depreciated by 20% or more relative to the official exchange rate, on average, during the 1990s or 2010s.
4. A state monopoly on major exports.
5. A socialist economic system. The definition of a Socialist state is that employed by Kornai (1992) which was the basis of the Sachs Warner dummy.

These factors have a critical role in tariff and non-tariff barriers in restricting trade. They argued that the existence of a black-market premium on the exchange rate could have effects equivalent to a formal trade restriction.

For example, suppose exporters must purchase foreign inputs using foreign currency obtained on the black market, but remit their foreign exchange receipts from exports to the government at the official rate. In that case, the black market creates a trade restriction because it is taking a premium. Arguing based on Lerner's symmetry between import tariffs and export taxes, SW also included the state monopoly on exports criterion as a trade restriction. Finally, the socialist regime dummy variable was included to account for the trade-limiting aspects of centrally planned economies.

The openness dummy variable (OPEN1990-2010) is constructed in the same way as SW to maintain consistency between their dataset and the recent update. So, an openness dummy is created by using those five criteria.

3.8. Data Collection

Secondary data from the official web pages of the IMF, World Bank, UNDP, WTO, CIA World Fact Books, and previous studies have been used for several years.

3.9. The application of the Solow Growth Model & Parameter of interest

The model is justified based on the popular Solow Growth Model designed by Robert Solow, for which he was rewarded the Nobel Prize in 1987. According to the Solow Growth Model, three main components affect the long-run growth pattern. These are the population, capital stock, and technology. In this study, the ratio of investment to GDP (IGR) for capital and labor force as a share of population for labor has been used.

For the contribution of technological advancement, there were no data available. Therefore, in Solow's basic growth model, this contribution is known as the Solow residual - the residual amount of output that remains after subtracting the contribution of labor and capital from the total output produced. This contribution of technology can be captured by considering the trade volume in the model, which might work as a proxy for technological advancement. Instead, this variable is expected to be highly correlated to the primary dummy variable. This is because a more open economy must have a higher trade volume. So, trade volume must also be used as an explanatory variable in the model. If the model cannot control the trade volume, it will be difficult to observe the effect of trade liberalization on economic growth.

It might seem that volume of total trade and openness of an economy may have a combined effect on economic growth. Thus, these two variables may interactively affect the dependent variable in the model. Therefore, to capture the combined effect, an interaction of these two may appear in the model.

This study was conducted using the random effect model with panel data, where data from countries in the sample were applied. The basic model looks like the following:

$$growth\ rate_{it} = \beta_0 + \delta_0 Lib_{it} + X_{it}\beta + V_{it}$$

Where $V_{it} = \alpha_i + \mu_{it}$ Lib is the liberalization dummy, 1 for Liberalized and 0 otherwise; X_{it} is the vector of other explanatory variables, i.e., investment, labor force, capital stock, net capital inflows, etc. Finally, V_{it} is the composite error term, with α_i being heterogeneity to a specific country i measuring the unobserved fixed effect, and μ_{it} is the error term that shows the impact of other remaining variables on the growth rate.

Here α_i represents some country heterogeneity, including all unobserved time-constant factors that affect GDP growth for each country. This is sometimes called "unobserved heterogeneity." A first difference (FD) or fixed effect (FE) estimation is usually used to eliminate this unobserved effect. It applies when α_i is correlated with some explanatory variables.

But FD or FE becomes ineffective when some explanatory variable in the model remains fixed over time. There is a high possibility of having the exact value of the trade openness indicator while collecting data. Applying random effect (RE) or pooled ordinary least square (OLS) estimation is better in such a case. However, it is neither a simple cross section because additional time points provide more insights, nor is it pooled OLS as the composite errors V_{it} ($V_{it} = \alpha_i + \mu_{it}$) might be serially correlated. So, the model has been estimated using RE. To express the relationship mathematically- $Cov\ (X_{it}, \alpha_i) = 0$ for all Xj.

For the model, $Y_{it} = \beta_0 + \beta_1 X_{it1} + \ldots\ldots\ldots + \beta_k X_{itk} + V_{it}$

The RE transformation will be as follows:

$$Y_{it} - \lambda\bar{Y} = \beta_0(1 - \lambda) + \beta_1(X_{it1} - \lambda\,\bar{X}_{i1}) + \ldots\ldots\ldots + \beta_k(X_{itk} - \lambda\,\bar{X}_{ik}) + (V_{it} - \lambda\bar{V}_i)$$

After transformation, no problem occurred in estimating the above model even though some of the explanatory variables remained constant over time.

If relevant variables are incorporated into the basic model, then the specified model looks like the following:

$$GR_{it} = \beta_0 + \beta_1 IGR_{it} + \beta_2 L_{it} + \beta_3 TV_{it} + \beta_4 Open_{it} + V_{it}$$

$$V_{it} = \alpha_i + \mu_{it}$$

If we introduce the interaction term, then the model takes the form as:

$$GR_{it} = \beta_0 + \beta_1 IGR_{it} + \beta_2 L_{it} + \beta_3 TV_{it} + \beta_4 Open_{it} + \delta_0 Open_{it} * TV_{it} + V_{it}$$

Where $V_{it} = \alpha_i + \mu_{it}$; GR_{it} = GDP growth rate of the country i at time t; $Open_{it}$ = 1 for open or 0 for the closed economy; IGR_{it} = Investment to GDP ratio; L_{it} = LF as a share of the population; TV_{it} = Total merchandise trade volume for country i at time t; V_{it} = The composite error.

All the parameters were expected to leave a positive impact on GDP growth. Here are expected signs of β_4 will be positive since, after liberalization, countries will be specialized in production and consumption. They will produce according to their factor intensities across goods and factor endowments. Moreover, trade brings the opportunity of generating income for the unused factors of production.

4. ANALYSIS & FINDINGS

The collected data random effect method was used to analyze data. The first analysis was for the desired RE analysis without the interaction of trade volume and openness. To justify the rationale of the interaction term and capture the combined effect, it then turned to the same analysis, but including the interaction term. Since the interaction is statistically insignificant after checking the test for exclusion for the interaction, this test shows strong evidence of a joint effect on the dependent variable in the model. So, the existence of the multicollinearity

problem was tested. This test showed the presence of multicollinearity, but in the case of panel data, this is not a severe problem. The presence of endogeneity was also checked.

Table 1. The RE analysis result.

Growth rate	Coefficient	Coefficient (with interaction)
Investment to growth ratio	0.077*	0.079*
	(0.0501)	(0.0504)
Labor force participation as a share of the population	2.467	2.421
	(1.819)	(1.828)
Trade volume	-0.008	0.037
	(0.0075)	(0.065)
Open	1.754**	1.979**
	(0.479)	(0.580)
Open*trade volume	---	-0.044
		(0.064)
Constant	0.889	0.62
	(1.132)	(1.197)

Note: **significant at 5%, *significant at 10%. Values in the parenthesis are standard errors. Number of observations= 150.

Table 1 shows that the investment to GDP ratio (IGR) positively affects GDP growth and is marginally significant. The results show that if IGR increases by one percentage point, the GDP growth rate increases by 0.077 percentage points. The labor force (LF) to population ratio also positively impacts GDP growth, but it is insignificant even at a 10% significance level. The results show that if LF as a share of the population increases by one percentage point, the GDP growth rate rises by 2.47 percentage points. The trade volume has a negative effect on GDP growth although this effect is insignificant even at a 10% level of significance. The results show that a billion dollar rise in trade volume reduces the GDP growth rate by .008 percentage points. An open economy enjoys a relatively higher growth rate than a closed economy, and the magnitude is relatively high. The above scenario shows that an open economy acquires 1.75% higher growth than a closed one. Overall, the coefficient of the determination under this model is relatively low. The results show that the regressors explain only a 20% variation in growth.

If we add the interaction term to capture the combined effect of openness and trade volume on GDP growth, then the regression output table is in the second column. We can conclude like the effects of IGR, Openness, and LF as a share of the population are almost the same though the magnitudes have slightly changed. The effect of trade volume has now turned positive where it was negative in the previous table without the combined impact of trade volume and openness. However, it is still insignificant. The results show that a rise 0f a billion dollar in trade volume induces a GDP growth rate of 0.037 percentage points. The trade volume of an open economy leaves a lower impact on GDP growth than a closed economy. Here, however, the effect of the interaction term is statistically highly insignificant. The overall goodness of fit remains the same.

4.1. Test for Exclusion

Now the question is whether the study should include the interaction term in the model or not. The results of an F test show that even though the interaction is individually statistically insignificant, it has a significant joint effect on our dependent variable. Furthermore, the test shows some multicollinearity among the three above-mentioned explanatory variables. Since we consider panel data, this kind of multicollinearity is not a major issue.

4.2. Test for Endogeneity

In strong endogeneity, Fixed Effect (FE) gives a better result than the Random Effect (RE). However, if there is no endogeneity, then RE is comparatively better. So, if there is strong endogeneity, the results obtained from FE and RE should differ significantly. Hence comparing the two regression outputs, something can be concluded about

the presence of endogeneity. Therefore, we tested the endogeneity, and since the results from FE and RE differed slightly, it suggests slight endogeneity in the data. So, using the RE model is better.

5. RESULTS-BASED POLICY RELEVANCE

Since there is continuing debate among economists about trade liberalization, it is the most crucial issue nowadays to know whether or not it is better for a country. The argument in favor of trade liberalization is that: liberalization stimulates competition, efficiency, specialization, and employment of production factors. These lead to fostering economic growth. On the other side, those against liberalization argue that trade liberalization hampers the growth of infant domestic industries. Hence, they advocate protectionism.

With the successful completion of the study, the outputs comprise the analysis of trade liberalization with all other policies contributing to economic growth. In addition, the result also showed why and how trade liberalization fosters economic growth. The study answers the question of "whether trade liberalization is necessary for higher GDP growth." The findings are also helpful for policymakers and the general public to understand the necessity of trade liberalization. As to the study findings, a liberalized country enjoys higher economic growth than a closed one. So, all countries should come forward to make their countries open if they have no other objectives to achieve. The study also contributes to enriching the current debate. Thus, the study leaves some significant conclusions in establishing a causal relationship between trade liberalization and a country's economic growth.

6. STRENGTH & LIMITATIONS OF THE STUDY

The study is dependent on some well-established and popular theories. Many famous and well-known economists have already done empirical work on this topic. So, it was a good opportunity to compare the study outcomes, which can then be generalized. Since panel data has been used, the possibility of some multicollinearity among the associated explanatory variables leads to a not so a harmful effect in estimating the parameters.

In this study, secondary data relying upon the related sources have been used. Thus, analysis has no control over the data. Furthermore, since the data sets we used were aggregated at the national level, there may be a statistical discrepancy in the process. Besides, trade volume is used as a token to capture technological advancement, but this may not serve efficiently to achieve the desired goal.

7. CONCLUSION

The effect of trade liberalization on the economic growth of a country is a long debatable issue. Studies find free trade had a mixed effect especially for developing countries. So, there is an urge to test the issue to find an evidence-based suggestion. Using the Sachs-Warner liberation index with cross-country panel data this study assessed the impact of trade openness on economic growth. The analysis relied on the updated Sachs-Warner index, which was checked and updated the SW dates of liberalization, relying on quantitative data for 1995-2010. The result suggests that liberalization has a strong positive impact on growth. Furthermore, this paper suggests that liberalization dates can be useful for estimating the country's response to growth. It presents new evidence in the debate that liberalization brings high growth. Over the periods, countries that have liberalized their trade have experienced an average increase in annual growth rates by about two percentage points compared to non-liberalized countries. The policy implication of this study is that adopting trade liberalization would help growth. On the other hand, the protectionist approach may lead to a trade war, destabilizing the cooperation among countries and their development process.

REFERENCES

Ahmad, J., & Harnhirun, S. (1995). Unit roots and cointegration in estimating causality between exports and economic growth: Empirical evidence from the ASEAN countries. *Economics Letters, 49*(3), 329-334.Available at: https://doi.org/10.1016/0165-1765(95)00678-9.

Bolaky, B., & Freund, C. L. (2004). Trade, regulations, and growth (Vol. 3255): World Bank Publications.

Dollar, D., & Kraay, A. (2004). Trade, growth, and poverty. *The Economic Journal, 114*(493), F22-F49.

Edwards, S. (1993). Openness, trade liberalization, and growth in developing countries. *Journal of economic Literature, 31*(3), 1358-1393.

Edwards, S. (1998). Openness, productivity and growth: What do we really know? *The Economic Journal, 108*(447), 383-398.Available at: https://doi.org/10.1111/1468-0297.00293.

Gnanhnon, S. K. (2018). Multilateral trade liberalization and economic growth. *Journal of Economic Integration, 33*(2), 1261-1301.

Greenaway, D., Leybourne, S., & Sapsford, D. (1997). Modeling growth (and liberalization) using smooth transitions analysis. *Economic Inquiry, 35*(4), 798-814.Available at: https://doi.org/10.1111/j.1465-7295.1997.tb01965.x.

Greenaway, D., Morgan, W., & Wright, P. (1998). Trade reform, adjustment and growth: What does the evidence tell us? *The Economic Journal, 108*(450), 1547-1561.

Greenaway, D. (1998). Does trade liberalisation promote economic development? *Scottish Journal of Political Economy, 45*(5), 491-511.Available at: https://doi.org/10.1111/1467-9485.00109.

Greenaway, D., Morgan, W., & Wright, P. (2002). Trade liberalisation and growth in developing countries. *Journal of Development Economics, 67*(1), 229-244.

Kornai, J. (1992). *The socialist system: The political economy of communism*: Princeton University Press.

Krueger, A. O. (1978). *Foreign trade regimes and economic liberalization*. Lexington, MA: Ballinger.

Krueger, A. O. (1997). Trade policy and economic development: How we learn. *American Economic Review, 87*, 1–22.

Naito, T. (2017). An asymmetric Melitz model of trade and growth. *Economics Letters, 158*, 80-83.Available at: https://doi.org/10.1016/j.econlet.2017.06.016.

Papageorgiou, D., Michaely, M., & Choksi, A. M. (1991). Liberalizing foreign trade (Vol. 7): Basil Blackwell Limited.

Ricardo, D. (1817). The works and correspondence of David Ricardo: Principles of political economy and taxation (Vol. 1): Online Library of Liberty.

Rodriguez, F., & Rodrik, D. (1999). Trade policy and economic growth: A skeptic's guide to the cross-national evidence. Working Paper No. 7081 (Washington, DC: National Bureau of Economic Research).

Rodriguez, F., & Rodrik, D. (2000). Trade policy and economic growth: A skeptic's guide to the cross-national evidence. *NBER Macroeconomics Annual, 15*, 261-325.Available at: https://doi.org/10.1086/654419.

Rodrik, D. (1997). Globalization, social conflict and economic growth, 24. Lecture by Raúl Prebisch. Geneva. Revised version (in English) available at http://www.ksg.harvard.edu/rodrik/global.pdf.

Sachs, J. D., Warner, A., Åslund, A., & Fischer, S. (1995). Economic reform and the process of global integration. *Brookings Papers on Economic Activity, 1995*(1), 1-118.

Salinas, G., & Ataman, A. (2006). Growth before and after trade liberalization. World Bank Policy Research Working Paper No. 4062, The World Bank, Washington, DC.

Salvatore, D. (2011). *International economics: Trade and finance* (11th ed.). Singapore: Wiley.

Smith, A. (1776). An inquiry into the nature and causes of the wealth of nations (Vol. 1). London: W. Strahan; and T. Cadell.

Wacziarg, R., & Welch., K. H. (2003). Trade liberalization and growth: New evidence. NBER Working Paper 10152. Cambridge, Mass: National Bureau of Economic Research.

Wasti, S. K. A., & Zaidi, S. W. (2020). An empirical investigation between CO_2 emission, energy consumption, trade liberalization and economic growth: A case of Kuwait. *Journal of Building Engineering, 28*, 101104.Available at: https://doi.org/10.1016/j.jobe.2019.101104.

Appendix 1. Countries in the sample list.

No.	Country
1	Afghanistan
2	Angola
3	Bahrain
4	Colombia
5	Costa Rica
6	Niger
7	Laos
8	Sudan
9	Sri Lanka
10	Djibouti
11	Philippines
12	Algeria
13	Cameroon
14	Haiti
15	Ivory Coast
16	Denmark
17	Belgium
18	Kuwait
19	New Zealand
20	Lithuania
21	Macedonia
22	Fiji
23	Jamaica
24	Romania
25	Iceland
26	Yemen
27	Monaco
28	Cuba
29	Uruguay
30	Luxemburg