

**Growth Volatility Implications of Trade Openness in
Countries With Low-Diversified Exports in 2001-2019**

A Research Proposal Presented to
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by

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Abstract

Recent economic crises have shown that not only does trade openness induce economic growth, but it can also expose an economy to additional risks related to its dependence on export markets. However, few large-sample studies based on recent data have examined the link between qualitative characteristics of exports and macroeconomic volatility. This paper investigates the implications of the country's export basket characteristics (e.g., economic complexity, the degree of diversification) on the volatility of gross domestic product (GDP) growth rates. Based on a comprehensive sample of 129 countries spanning years 2001-2019, we will use a panel regression to assess whether countries with lower levels of diversification at the extensive and the intensive margin tend to show systematically higher growth volatility. Furthermore, we will obtain findings regarding the impact of the overall export complexity on volatility, which could be later incorporated into more advanced macroeconomic models. Since we will also explore whether certain discretionary trade policy decisions can moderate the exposure to external shocks, our results might be of use to policymakers and independent institutions, which would be able to develop tailored export-supporting strategies.

Keywords: trade policy, export diversification, macroeconomic volatility, export complexity

Introduction

Achieving macroeconomic stability and sustainable growth represents a major challenge for all the countries in the world, the developing and developed ones alike. The former are often characterized by a high frequency and magnitude of output fluctuations (Calderón & Schmidt-Hebbel, 2008), which reduces long-term growth perspectives and contributes to a persistent development gap (Balavac & Pugh, 2016). The latter often face decelerating GDP growth rates and a consequent life satisfaction decrease (Juknys, Liobikienė, & Dagiliūtė, 2018).

Implementing proactive, outward-oriented growth policies has long been considered a universal remedy for both issues, since such policies increase economic efficiency and, consequently, spur long-term growth (Haddad, Lim, & Saborowski, 2010). Traditional trade theories maintain that concentrating a country's exports on a limited number of goods represents a source of gains (Krugman, 1979; Ricardo, 1817), while more recent models see export diversification as a driver of long-term growth (Melitz, 2003). Contemporary empirical studies demonstrate that in some countries an increasing dependence on export earnings might expose an economy to external trade shocks, leading to higher volatility and reduced GDP growth rates (Čede, Chiriacescu, Harasztosi, Lalinsky, & Meriküll, 2016).

Existing literature suggests that the macroeconomic implications of a country's choice regarding its export basket composition, i.e., the degree of diversification by product, partner and complexity, are conditional on the initial level of development, the level of internal market tariff protection and other country-specific factors. However, the research on the relationship between qualitative features of exports and GDP dynamics has been either restricted to a particular economy or a limited subset of countries (Calderón & Schmidt-Hebbel, 2008; Lee & Yu, 2019; McIntyre, Li, Wang, & Yun, 2018), or reliant on a relatively small and outdated dataset (Balavac

& Pugh, 2016; Mania & Rieber, 2019). Thus, there have been no studies to date explaining the heterogeneity of the macroeconomic effects resulting from different export basket characteristics.

This study seeks to gauge the effects of export diversification and export complexity on growth volatility. To this end, this paper will address the following research questions:

- What effects do export diversification and complexity have on the volatility of GDP growth rates?
- Do countries with low diversified exports tend to show increased volatility?
- Can trade policy measures taken by regulatory bodies alleviate the volatility of key macroeconomic indicators?

To examine the nature of the effects under discussion, we will employ a comprehensive dataset with observations for 129 countries between 2001 and 2019. The econometric estimation will be performed using panel regression techniques while controlling for potential heteroskedasticity and endogeneity.

This study may have considerable theoretical and practical implications. First, the findings will provide factual data that might facilitate future academic cross-country comparisons of the effects that qualitative export characteristics have on GDP growth. Furthermore, the results of this study are likely to facilitate the development of more sophisticated macroeconomic models which would explicitly incorporate international trade considerations. Finally, this paper could prove useful for international institutions, policymakers, and government officials with respect to developing sustainable growth strategies for different groups of countries and calibrating their export-supporting policies.

Literature Review

With the sustainability of growth occupying an increasingly important place in public debate, constructing policies that could assure stable long-term growth rates and low levels of macroeconomic volatility becomes critical. Since 1970s major international organizations have been unanimously promoting trade openness as the key factor to foster economic growth, especially in low-income economies (International Monetary Fund, 2014; International Monetary Fund, World Bank, & World Trade Organization, 2018). However, the Great Recession of 2008–2009 demonstrated that a worldwide demand shock could lead to international trade plummeting by as much as 22.3%, which seriously questioned the sustainability of an outward-oriented growth model (International Trade Statistics, 2020). Thus, the link between macroeconomic volatility, which for the purposes of this paper will be narrowed down to the volatility of annual growth rates, and trade policy considerations has to be thoroughly reconsidered to provide better policy recommendations for different country groups.

Traditional international trade theories argue that the specialization in the production of certain goods raises the country's living standards and growth prospects most efficiently by providing domestic firms with an opportunity to serve foreign markets (Krugman, 1979; Ricardo, 2001). Having laid the grounds for the first comprehensive theoretical outlook on international trade, this branch of studies currently serves more as a source of stylized facts in related research than a predictive framework. While Ricardo (2001) and Krugman (1979) differ in their views of what drives international trade, comparative advantage for the former and economies of scale for the latter, both models assert a country's complete specialization in the production of a particular good. Consequently, trade openness is viewed as a simple policy measure that drives economic growth. However, these models fail to account for firm and product heterogeneity as well as the

complex structure of modern imperfectly competitive markets, and thus cannot serve as a reliable benchmark.

Numerous empirical papers have shown that trade openness, despite being beneficial for short-run economic growth, might expose a country to external shocks (Haddad & Shepherd, 2011; Jansen, Lennon, & Piermartini, 2009; Reinhart & Rogoff, 2014). It has been demonstrated that export-oriented sectors tend to be more specialized and that “trade openness is always positively related to volatility” (Di Giovanni & Levchenko, 2009, p.14). Following Lederman and Maloney (2012), one could conclude that this phenomenon might be a possible outcome of an excessive emphasis on the country’s comparative advantage. In this case, a narrow specialization pattern induces additional volatility in the presence of adverse demand-shocks in partner economies. While focusing on assessing the country’s exports only from a quantitative standpoint, this strand of research sheds light on a particularly important risk transfer channel in a globalized world. A natural solution to hedge such volatility risks would be to opt for a more diversified (both product- and partner-wise) export basket composition.

Modern international trade theories which incorporate the assumption of product and firm heterogeneity are unanimous in predicting a positive impact of export diversification on economic growth (Melitz, 2003), while a consensus in regards to growth volatility has not yet been established. Recently, there have been several attempts to incorporate elements of neoinstitutional analysis into such models in order to gain a deeper understanding of the trade’s impact on growth volatility. Levchenko (2007) and Nunn (2007) show that countries with a relatively better institutional environment tend to specialize in more complex, contract-dependent products (i.e., goods produced with the use of varied inputs, which requires building long-term relationships with the owners of the factors of production and, thus, makes an

investment in their production partner-specific). Since the institutional environment is generally better in developed countries, this effectively means that this group of countries would have a diversified and complex export basket. Following a similar logic, Castellares and Salas (2019) develop a framework demonstrating that export earnings of an industry are characterized by a negative elasticity with respect to the income level in a partner country, with the effect becoming stronger in the case of a higher contract-dependency of an industry. These results imply that developed countries might in fact be exposed to a higher volatility of export earnings, which could increase the volatility of their GDP growth. This suggests that while attempting to test any of the volatility-related hypotheses one should consider a possible interaction between trade openness, the level of diversification and the complexity of a country's exports.

Empirical results concerning the impact of export diversification on macroeconomic volatility appear to be quite inconclusive as well (Balavac & Pugh, 2016; Haddad, Lim, Pancaro, & Saborowski, 2013; Haddad & Shepherd, 2011; Mania & Rieber, 2019). While the scholars cited mostly agree on the theoretical grounds that prove the existence of a volatility-attenuating effect of export diversification, the particular conditions which make qualitative composition of the export basket the defining factor still remain unclear. For instance, Haddad and Shepherd (2011) cite technology spillovers and efficiency improvements as major consequences of exporting differentiated products to various markets, which contributes to strengthening the local production in the face of external shocks. Similarly to Haddad et al. (2013), Di Giovanni and Levchenko (2009) introduce the idea of more diversified exports isolating a greater part of the economy from domestically-induced shocks, which is another important channel through which the composition of exports reduces volatility. However, export diversification has been found unimportant in reducing the impact of openness on volatility at medium and high diversification

levels (Balavac & Pugh, 2016). Likewise, Mania and Rieber (2019) argue that “the quality of export diversification must therefore be assessed” (p. 146), meaning that diversification at intensive and extensive margins might affect output volatility differently.

Overall, research examining the openness-volatility relationship in the context of qualitative characteristics of exports either tends to focus on restricted subsets of countries or fails to account for the impact of particular trade policy measures. This justifies the purpose of the current study in which we will attempt to gauge the effects of export diversification and complexity on growth volatility and examine whether certain trade policy measures might alleviate this excess volatility.

Methods

The main hypothesis of this study is that higher levels of export diversification can alleviate the volatility-inducing impact of trade openness on GDP growth rate. To test this hypothesis and quantify the magnitude of the effects under discussion, we will conduct a panel regression analysis.

The variable of interest is the annual GDP growth rate, which will be collected from the World Bank Open Data (2021) database. Among various possible means of calculating volatility, we will use a standard deviation for non-overlapping 3-year periods, a method advocated by numerous authors (Balavac & Pugh, 2016; Cariolle, 2012). This would prevent one-off shocks from influencing the data series for too long, which is a common issue while dealing with variables prone to cyclical fluctuations (Balavac & Pugh, 2016).

The independent variables, apart from a standard set of controls (terms of trade, exchange rate and macroeconomic policy volatility, as well as the level of institutional development), will include trade openness, export diversification and economic complexity. Trade openness,

calculated as a share of foreign trade in GDP, will act as a proxy for exposure to external shocks. As a measure of export diversification, we adopt the Theil index calculated based on annual trade data by International Trade Centre (2021), deviating from a more common approach based on simpler concentration indices such as the Herfindahl-Hirschman index. This choice will help us better understand what kind of diversification, if any, has a moderating impact on volatility. We will also employ data on the Economic Complexity index calculated based on the level of sophistication of the country's export basket, as reported by ATLAS of Economic Complexity (2021). Including a measure of exports complexity and, possibly, its interactions with other variables might provide useful insights to policymakers as regards which industries are to be supported in their foreign trade activities to ensure smaller volatility.

Our sample will include data for 122 countries spanning years 2001-2019, a period marked by an explosive growth of international trade and thus especially worthy of a thorough investigation. The choice of countries for the sample is restricted by data availability for the key variables. Consequently, a downward bias is likely to appear in our estimates of export diversification's impact, since data is non-reliable or non-existent for the least developed countries, which are generally characterized by undiversified exports. However, we believe that this bias will be compensated for by employing a two-step General Method of Moments (GMM) estimation procedure for the regression model. This is a common approach in growth-related research which also ensures handling possible endogeneity issues (Mania & Rieber, 2019).

Expected Outcomes

The current study is likely to have both theoretical and practical implications. To start with, the results will add to the body of research on the links between trade policy and macroeconomic growth concerns. Being one of the few papers that address this question by

employing a large sample of countries for the most recent time period, this study might provide a better understanding of the extent to which growth volatility is influenced by a country's exporting activities. Thus, the study's findings could prove useful in developing more complex macroeconomic models which would incorporate trade policy decisions.

Second, the results may be of use to policymakers in governmental organizations and institutions that support the company's exporting activities. The data gathered in this project will enable them to determine the optimal composition of a country's export basket from the standpoint of macroeconomic stability. Consequently, a better fine-tuning of export-supporting policies may be possible, with them becoming oriented at the types of industries that are likely to have stable export earnings.

The preliminary data analysis suggests that there exists a negative correlation between growth volatility and export diversification. These results seem to be in line with the consensual opinion in trade-related literature which states that more diversified exports reduce exposure to external shocks. However, the strength of the correlation appears to vary substantially for diversification at the extensive and intensive margins. Thus, it is possible that the volatility-attenuating effect of diversification might manifest itself differently for different types of diversification.

The results of this project are to be presented during Project Proposal and thesis defenses in March and June 2021, respectively. Upon conclusive results, the findings could stand for publication in an academic journal or for a presentation on the annual HSE scientific conference.

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