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Effects of the Utilization of Non-Reciprocal Trade Preferences Offered by QUAD Countries on Economic Growth in Beneficiary Countries†

By SENA KIMM GNANGNON*

The present article investigates empirically whether non-reciprocal trade preferences (NRTPs) offered by QUAD countries (Canada, the European Union, Japan, and the United States) to developing countries have helped to promote economic growth in the beneficiary countries. Two main blocks of NRTPs are considered here: Generalized System of Preferences (GSP) programs and other trade preferences programs. The analysis used a set of 90 beneficiary countries of NRTPs that are concurrently recipients of development aid over the period of 2002-2018. Using the two-step system generalized method of moments, the analysis indicated that while a higher degree of utilization of each of these two blocks of NRTPs has been associated with a high economic growth rate, development aid enhances this positive effect. This highlights the need for donors to support a development strategy based on the provision of both development aid and NRTPs if they are to help beneficiary countries to promote economic growth. Finally, when the positive economic growth effect of the utilization of NRTPs is higher, the result is a greater country's share of exports (under preferential tariffs) to QUAD countries out of their total merchandise exports.

Key Word: Utilization of Non-reciprocal Trade Preferences, Economic Growth, QUAD Countries, Developing Countries
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I. Introduction

Do non-reciprocal (or unilateral) trade preferences (henceforth, NRTPs) provided by advanced economies to developing countries contribute to spurring economic

* Economist, World Trade Organization (E-mail: senakimm.gnangnon@wto.org)
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growth in the latter? The present paper addresses this question, which has received little attention in the literature.

Among the major policy tools available to wealthier nations to assist developing countries in their effort to promote economic development are what are termed Official Development Assistance (ODA) and non-reciprocal (or unilateral) trade preferences (henceforth, NRTPs). "The provision of development aid[1] aims to promote the economic development and welfare of developing countries" (OECD, 2021), while the offer of NRTPs aims to provide developing countries with opportunities to expand their exports, better integrate into the global trading system, and ultimately to promote development. The present study investigates the effect of NRTPs on beneficiary countries' economic growth performance outcomes and further considers the extent to which development aid affects these outcomes.

The first conference of the United Nations Conference on Trade and Development (UNCTAD) held in 1964 recommended explicitly that developed countries need to supply unilateral trade preferences to developing countries; that is, developed nations should grant trade concessions to developing countries and should not require concessions in return (e.g., Bartels, 2003; Persson, 2015a;[2] 2015b). At the second conference of the UNCTAD held in 1968, members states adopted a resolution (i.e., Resolution 21 (ii)) that called for the establishment of a "generalized, non-reciprocal, non-discriminatory system of preferences[3] (referred to as GSP) in favor of the developing countries, including special measures in favor of the least advanced among the developing countries" (see Grossman and Sykes, 2005). Resolution 21 (ii) further stated that "such preferences had three objectives: to increase the export earnings of developing countries, to promote their industrialization, and to accelerate their rates of economic growth" (Grossman and Sykes, 2005, p.42). The permanent legal basis for granting unilateral trade preferences to developing countries was established in 1979 through what is informally known as the Enabling Clause, also referred to as "Differential and More Favourable Treatment, Reciprocity and Fuller Participation of Developing Countries."

NRTPs are not confined to GSPs, as they also include other non-reciprocal trade preferences authorized through a Waiver under the World Trade Organization (WTO) Agreement[4] (see WTO, 2010). For example, in addition to the GSP schemes that they provide to eligible developing countries (and the least developed countries among them), wealthier countries such as Canada, European Union countries, and the United States also offer special treatments to selected developing countries, including some through a special Waiver (adopted for each preference-granting country) under the WTO Agreement. The United States (US) offers the African

[1]In 1969, the Development Assistance Committee (DAC) adopted the official development assistance (ODA) as the "gold standard" of foreign aid, and since then, it has remained the main source of financing for development aid (e.g., OECD, 2021).

[2]An overview of the legal and historical background of trade preferences can be found in Persson (2015a), and the history of GSPs is provided in Cunha *et al*. (2005).

[3]These types of preferences are commonly referred to as "Generalized System of Preferences (GSP)."

[4]NRTPs are referred to as "preferential trade arrangements" (PTA) in the WTO's jargon. The WTO PTA database contains a wealth of information concerning NRTPs offered by WTO Members, with notifications to the WTO. These include GSP schemes, NRTPs schemes offered through a special Waiver under the WTO Agreement, as well as other PTAs supplied by developing countries to least developed countries (see WTO, 2010). Information on PTAs for which the WTO has been notified can be found in the WTO PTA database online at: http://ptadb.wto.org/default.aspx

Growth and Opportunity Act (AGOA) to eligible countries in Sub-Saharan Africa (SSA). The US also offers the Caribbean Basin Economic Recovery Act to Caribbean countries, and particularly the Hemispheric Opportunity through Partnership Encouragement initiative to Haiti. It also grants special (non-reciprocal) trade preferences to Nepal. The European Union (EU) currently offers non-reciprocal preferential concessions to products originating from the Western Balkans. Canada is currently providing a tariff treatment to products from Commonwealth Caribbean countries.

A large body of the literature[5] has examined whether the first objective of Resolution 21(ii) has been achieved, i.e., whether NRTPs have effectively increased the export earnings of beneficiary countries. The literature in this area has reached mixed conclusions, as some studies have found a positive effect (recent ones include, for example, Hakobyan, 2020; Ito and Aoyagi, 2019; Ornelas and Ritel, 2020) while others have found that the effects are heterogeneous across beneficiary countries, sectors, and products (recent studies include, for example Cipollina *et al*., 2017; Cipollina and Demaria, 2020; Klasen *et al*., 2021; and Tobin and Busch, 2019). At the same time, other works have uncovered a negative effect of NRTPs on the export earnings of beneficiary countries (e.g., Admassu, 2020; Borchert, 2009; Gil-Pareja *et al*., 2019; Herz and Wagner, 2011; Seyoum, 2006; and Zappile, 2011). For example, some of the latter (e.g., Admassu, 2020; Gil-Pareja *et al*., 2019; Herz and Wagner, 2011, and Zappile, 2011) have concluded that developing countries would be better off (in terms of exports) if they opted for reciprocal trade agreements to the detriment of NRTPs. Herz and Wagner (2011) found that GSP schemes that existed for less than ten years have positively influenced beneficiary countries' exports (see also Gil-Pareja *et al*., 2014), while GSP schemes with longer durations (i.e., one or two decades) have exerted a negative effect on the exports of beneficiary countries because, over the long term, the strict or complicated rules of origin exert distortive effects on these countries' exports, causing these countries to export under most-favored-nations tariffs rather than under non-reciprocal GSP programs.

In contrast to the voluminous literature that assesses the effectiveness of NRTPs in terms of increasing the export earnings of beneficiary countries, very few works have investigated whether NRTPs have achieved the second objective of Resolution 21(ii), i.e., promoting the industrialization of beneficiary countries, although the concept of "industrialization" can be interpreted in different ways (see for example the discussion in Persson, 2015a). Some of these works are concerned with the effect of NRTPs on manufacturing exports (e.g., de Melo and Portugal-Pérez, 2008; Gradeva and Martínez-Zarzoso, 2016; Klasen *et al*., 2021), while others examine the effects of NRTPs on export product diversification (e.g., Gamberoni, 2007; Persson and Wilhelmsson, 2016; Yannopoulos, 1986) or on economic complexity (e.g., Gnangnon, 2021). For example, Yannopoulos (1986) has found that unilateral trade preferences offered by the European Community to Mediterranean countries have led to export diversification in these countries. Gamberoni (2007) found for NRTPs offered by the EU (over the period 1994-2005) that while the GSP and the drug regime have led to export product diversification at extensive margins in beneficiary

[5]Discussions of the effects of trade preferences can be found in Hoekman and Özden (2005), Cardamone (2007), Gnangnon and Iyer (2021), Klasen *et al*. (2021) and Ornelas (2016).

countries, this has not been the case for African Caribbean and Pacific (ACP) countries. For the latter group, NRTPs have exerted an anti-export diversification effect. Additionally, for least developed countries that have enjoyed special concessions among beneficiary countries, the effects of NRTPs have been unstable and vary depending on the specifications. Persson and Wilhelmsson (2016) considered all preference schemes implemented by the EU during the period of 1962-2007 and examined how eligibility for a given preference program has affected export product diversification in beneficiary countries. They found empirically that while some trade preferences have resulted in greater export product diversification, no significant export product diversification effects could be found for preferences offered to Mediterranean countries (except, however, for some very earlier versions of these programs). Gnangnon (2021) examined the effects of the utilization of NRTPs (GSP programs and other trade preferences) offered by QUAD countries on the economic complexity level of beneficiary countries. He established empirically, *inter alia*, and in other ways that the utilization of GSP programs (at the expense of the usage of other trade preferences) has been instrumental in achieving greater economic complexity, with this effect being greater for high-income beneficiary countries. In addition, development aid flows are complementary with the utilization of NRTPs in fostering economic complexity in beneficiary countries, especially when beneficiary countries receive high amounts of such aid.

In other work, de Melo and Portugal-Pérez (2008) demonstrated that the more flexible preferential rules of origin under the AGOA preferential regime of the US (compared to those under the EU's EBA initiative and the Cotonou Economic Partnership Agreement) have allowed the top seven African beneficiaries of the AGOA regime to increase the amounts of apparel exported significantly (i.e., the export volume rose by 300%). Gradeva and Martínez-Zarzoso (2016) in an empirical study found no significant effect of the EU's EBA initiative on the manufacturing exports of least developed countries (among ACP beneficiaries), possibly due to the erosion of preferences margins enjoyed by these countries (this erosion was due to MFN[6] trade liberalization). Klasen *et al*. (2021) reported, *inter alia*, that certain individual preferential regimes (among those of developed countries[7]) offered to least developed countries have been associated with an expansion of export agricultural goods and light manufacturing products, including textiles and leather after 1990.

With regard to the third objective of Resolution 21(ii) (i.e., the expectation that NRTPs would accelerate the economic growth rates of beneficiary countries), we are not aware of a study in the empirical literature that has examined whether NRTPs have actually achieved this objective. In fact, while Ornelas (2016) has provided a theoretical discussion of the possible effects of NRTPs on beneficiary countries' economic growth performance outcomes, no empirical work has concentrated on the matter.

The present paper aims to fill this gap in the empirical literature by investigating whether NRTPs provided by QUAD countries have led to higher economic growth

[6]The acronym "MFN" refers to the Most Favored Nations principle of the WTO.

[7]The trade preference regimes offered to LDCs considered in the study by Klasen *et al*. (2021) are those of the EU, USA, Canada, Japan, Australia, New Zealand, Norway, and Turkey.

performances in beneficiary countries. The QUAD countries here include Canada, EU countries, Japan, and the US. It is important to note that in contrast to many previous empirical works that have examined the effects of NRTP eligibility on the export performance of beneficiary countries, the current article investigates the effects of the 'utilization' of these NRTPs (rather than eligibility for them) on beneficiary countries' economic growth performance outcomes. Two main blocks of NRTPs provided by QUAD countries are considered: the Generalized System of Preferences (GSP) programs and the other trade preferences programs.

The focus on QUAD countries (and not on all preference-granting countries, including all wealthier countries that provide NRTPs to developing countries) is explained by the data available to perform the analysis. The latter covers an unbalanced panel dataset of 90 countries over the period of 2002 to 2018. Using primarily the two-step system generalized method of moments (GMM) estimator, it is established that a higher utilization rate of GSP programs, on the one hand, and a higher utilization rate of other trade preference programs, on the other hand, are associated with stronger economic growth performance in beneficiary countries. Moreover, the concomitant utilization of the two blocks of NRTPs contributes to enhancing economic growth in beneficiary countries. On another score, the utilization of both GSP programs and other trade preferences improves economic growth in the context of terms of trade improvements. Moreover, and interestingly, the utilization of NRTPs is positively and significantly associated with economic growth in countries that receive high amounts of development aid. Finally, and not least, countries that export (under preferential tariffs) a high share of their merchandise exports to the QUAD countries experience a positive economic growth effect of the utilization of the unilateral trade preferences that they enjoy.

The rest of the article is organized around five sections. Section II provides a theoretical discussion of the effects of both NRTPs and development aid on economic growth. Section III lays out the model specifications used to examine empirically the effects of the utilization of NRTPs (and development aid) on economic growth and discusses the econometric approach used to perform the empirical analysis. Section IV discusses the empirical outcomes. Section V deepens the analysis, and Section VI concludes the paper.

II. Theoretical Discussion

This section provides a theoretical discussion of the effects of NRTPs on economic growth (sub-section II.A) and of the effects of development aid on economic growth (sub-section II.B).

A. *Effects of non-reciprocal trade preferences on economic growth*

The utilization of NRTP programs can affect economic growth in beneficiary countries through aggregate productivity and firm de-location effects and learning spillover, but also due to the insecurity that may be associated with NRTPs (e.g.,

Grossman and Helpman, 2015; Ornelas, 2016[8]).

The utilization of foreign market access opportunities under NRTPs could promote economic growth in beneficiary countries through its positive effect on aggregate productivity. The theoretical model developed by Melitz (2003) indicates that export expansion due to better access to foreign markets would lead to the expansion of the most efficient firms and better resource allocation in the beneficiary economy. This expansion of the most efficient firms would contribute to enhancing economic growth in the beneficiary country. At the same time, it would also induce a rise in local wages and limit the ability of indigenous firms to take advantage of these foreign market access opportunities, as they could not sustain the payment of higher wages to workers in the domestic market. Attempts by the government to prevent the decline of indigenous firms could limit the expansion of exporting firms in the country receiving the preferences and ultimately hurt economic growth.

The model developed by Melitz and Ottaviano (2008) has shown that better access to foreign markets (e.g., through preferential treatment) facilitates firm entry in the presence of less domestic competition. Additionally, a greater degree of firm entry in the presence of firm heterogeneity would generate higher industry productivity. Ossa (2011) demonstrated that in the context of trade agreements, greater firm entry in the domestic market of the beneficiary country would be beneficial to that country when there are increasing returns to scale and international trade costs. All of these factors would contribute to promoting economic growth in countries that enjoy better access to foreign markets. However, the positive economic growth effect of better access to foreign markets (that works through the improvement in aggregate productivity due to firm entry) could be mitigated by competition over domestic resources if purely domestic firms remain large and protected (Ornelas, 2016).

'Learning spillover' associated with export expansion[9] (arising from better access to foreign markets through NRTPs) can also contribute to promoting economic growth in the beneficiary country. According to Hausmann and Rodrik (2003), preferential market access may spur the exports of beneficiary countries by promoting pioneer firms from which domestic rivals can learn. The export expansion induced by positive spillover from pioneer firms to domestic rivals can promote economic growth. Along the same lines, Albornoz *et al*. (2012) proposed a model to explain why despite substantial entry costs new exporters give up exporting very shortly while other firms greatly increase their foreign sales and expand to new destinations. They posit and provide empirical support for the theoretical hypothesis that while individual export profitability may initially be uncertain, it can become positively correlated over time and across destinations. This leads to what Albornoz *et al*. (2012) refer to as a "sequential exporting," whereby the possibility of profitable

[8]Ornelas (2016) discussed the theoretical channels through which NRTPs can affect the economic growth performance of beneficiary countries.

[9]Many studies have found a positive economic growth effect of export expansion via, for example, the productivity channel (e.g., Al-Yousif, 1997; Awokuse and Christopoulos, 2009; Bernard and Jensen, 1999; Feder, 1983; Hagemejer and Mućk, 2019; Kalaitzi and Cleeve, 2018; Lucas, 1988; Tang *et al*., 2015; Tyler, 1981; Van Biesebroeck, 2005). However, other studies have reported that the types of products exported matter with regard to economic growth, as reliance for example on the exporting of low-value-added products (e.g., primary commodities) is negatively associated with economic growth (e.g., Hausmann *et al*., 2007; Herzer *et al*., 2006; Kim and Lin, 2009). See also Giles and Williams (2001) for a literature review on the relationship between exports and economic growth concerning pre-2000 studies. Wagner (2007) has also provided a literature survey of the relationship between exports and productivity based on firm-level data.

export expansion (at both the intensive and extensive margins) makes initial entry costs worthwhile despite high failure rates. This suggests, in the context of the present study, that the utilization of NRTPs can spur economic growth through export expansion as these trade preferences may allow firms to learn their own capabilities by expanding their exports not only to the market of the preference-granting country but also to other destinations.

Innovation could be another avenue through which better foreign market access (including through NRTPs) could foster economic growth (e.g., Bustos, 2011; De Loecker, 2007; Lileeva and Trefler, 2010; Spulber, 2010). The innovation effect of NRTPs could arise from the fact that NRTPs enlarge the potential export market for firms in the beneficiary country and hence increase their expected return from innovation, ultimately improving their innovation performance. For example, Lileeva and Trefler (2010) found that the size of the export market of a firm is key for their innovation performance and hence for their productivity. In fact, exporting is complementary with innovation when having access to new export opportunities (for example through NRTPs) allows firms (especially low-productivity firms) to innovate and start exporting, meaning that their productivity improves as they export further (for example, see also De Loecker, 2007; Spulber, 2010). On another note, Chui *et al*. (2001) documented theoretically and empirically that developing countries could benefit from north-south trade (as is the case for NRTPs) through the creation of new winners and better skilled workers. Their model was built on four stages of southern development, whereby countries in the south initially specialize in a traditional good and then start copying northern high-tech manufactured goods (second stage), start innovating (third stage), and finally only innovate in the same way as in the north (fourth stage).

Finally, the insecurity associated with NRTPs could hamper economic growth (Ornelas, 2016). As highlighted by Ornelas (2016), the key issue here is whether the S&D treatment (in particular NRTPs) genuinely promotes industries such that it fosters economic growth over the long term. This may be the case because the sectoral and product coverage rates of NRTPs are deemed to promote infant industries and accelerate economic growth in beneficiary countries, as envisaged in UNCTAD Resolution 21 (II)). However, the choices of products and country eligibilities are at the discretion of the preference-granting countries, and it is a priori unclear whether the latter always choose products that would generate learning externalities [10] (Ornelas, 2016). Additionally, there are often certain conditionalities[11] attached to the supply of NRTPs by developed nations (e.g., Silva, 2011; Tobin and Busch, 2019) that could raise questions about the predictability of these preferences (e.g., Zappile, 2011). The uncertainty that could surround these preferences could lead to lower exports and hamper economic growth. For example, Zappile (2011) found no significant effect of AGOA membership and eligibility for AGOA textile benefits on eligible African trade. The author explained this outcome as related to the uncertainty surrounding the expiration of these preferences, the erosion of preferential margins,

[10]Ornelas (2016) has also pointed out that it would be difficult to identify whether the export industries and products covered by the existing NRTP schemes are those that have the potential to generate significant learning spillover.

[11]Such conditionalities include for example intellectual property rights, investors' rights, and labor standards (e.g., Zappile, 2011).

and the inability of African producers to exploit preferences adequately. Hakobyan (2020) noted that the 2011 expiration of the United States' GSP program has had a detrimental impact on developing countries' exports to the USA. On average, further to this expiration, these exports dropped by 3% in 2011. In particular, developing countries' exports of agricultural products as well as of textiles and clothing fell respectively by 5% and 9%. Additionally, exports did not fully recover by 2012, thereby suggesting that the adverse export effect of the 2011 expiration of the US's GSP persisted. Ornelas (2016) has pointed out that flexible criteria for graduation from the list of beneficiaries of NRTPs, as well as occasional overhauls in NRTPs, may not generate dynamic gains given that exports would not expand beyond a certain level. Li (2018) developed and tested empirically a dynamic model of exporting with a view to investigating how productivity on the one hand, and uncertain foreign demand on the other, influence firms' export participation. In this model, firms face uncertainty about their own foreign demand and update their beliefs by relying on individual export transactions according to Bayes' rule. Using data on firm-level production and transaction-level exports to Germany in the Chinese ceramics and glass industry, Li (2018) found empirically that productivity is the main driver of export participation for experienced firms, while demand learning drives export participation for potential entrants.

Overall, the uncertainty (if any at all) arising from NRTPs could lead to a wait-and-see approach by exporting firms in beneficiary countries, cloud an otherwise clear horizon for proper planning, weaken incentives for investment and innovation, and result in lower exports than expected (Ornelas, 2016), that is, lower utilization of NRTPs. In that context, NRTPs would be associated with lower economic growth performance in beneficiary countries.

Considering the foregoing, we postulate that NRTPs could spur economic growth in beneficiary countries through their associated productivity enhancements, improved innovation performance outcomes, and export expansion effects (***hypothesis 1***). However, these economic growth benefits of NRTPs can erode if there is uncertainty surrounding the preferences such that these trade preferences would ultimately lead to lower economic growth (***hypothesis 2***).

B. *Effects of development aid on economic growth*

A voluminous body of literature has explored the effects of development aid on economic growth, though overall the findings have been inconclusive[12]. More generally, development aid is a controversial issue in the field of development economics (Edwards, 2014). Some believe that foreign aid has been ineffective in promoting the development of poor countries and their integration into the global economy (e.g., Easterly, 2014; Moyo, 2010), while others claim that aid should not only increase significantly to reach its intended objective (that is, promoting economic growth and reducing poverty), but the way it is provided should be rethought (e.g., Sachs, 2009; Stiglitz, 2002). Other researchers such as Collier (2007)

[12]We do not intend to present here an extensive literature survey on the economic growth effects of development aid. Such a survey can be found, for example, in Asatullaeva *et al*. (2021), who provide a systematic literature review and content analysis of the top 50 most influential papers on the impact of development aid on economic development in recipient countries.

have argued - in the context of the lack of aid effectiveness in promoting economic development in beneficiary countries - that it would be important for the international community, including industrialized nations, to adopt a bold new plan to help failed states that are home to the poorest billion people on Earth. Such a plan could include, *inter alia*, the offer of preferential trade as well as policies, new laws against corruption, and new international charters (Collier, 2007). Banerjee and Duflo (2011) proposed that the fight against poverty and underdevelopment might require researchers to rely on 'randomized control trials' to devise effective and specific aid programs.

On the empirical front, the large literature survey (based on 97 studies) conducted by Doucouliagos and Paldam (2008; 2009) has led to the conclusion that development aid has a small positive but statistically insignificant effect on economic growth. Bourguignon and Sundberg (2007) contend that the inconclusiveness of empirical studies on the effect of development aid on economic growth can be attributed to the use of aggregate data. They suggested that empirical analyses of the effects of development aid on economic growth should go beyond econometrics and should break down the 'black box' of development aid. In the same vein, Edwards (2014) has put forth there are multiple black boxes, referring to the black box in Bourguignon and Sundberg (2007) and noting that it is in fact highly elastic and changes over time. Therefore, it is important to carry out in detail country-specific analyses to understand why aid works at certain times and not others and why some projects are successful while others fail. In the same vein, Addison and Tarp (2015) emphasized the need for accounting for country-specific situations and problems when studying the effects of development aid on economic growth.

Among recent studies, one by Chauvet and Ehrhart (2018) is worth emphasizing. The authors used firm-level data to investigate the mechanisms through which development aid affects economic growth. They obtained evidence that development aid helps to relax the financing constraints of firms, exerting a positive effect on firms' sales growth. Specifically, this positive effect appears to be stronger for firms that operate in sectors intensive in infrastructure and external finance. Among other recent works, Pham and Pham (2020) have shown that while development aid may promote economic growth in the recipient country, the global dynamics of equilibrium are complex due to non-monotonicity and steady-state multiplicity.

In the present study, one cannot dissociate the effect of the utilization of NRTPs from that of development aid on economic growth, given the debate on whether NRTP regimes are superior, inferior, or complementary to development aid in promoting economic growth in recipient countries (e.g., Adam and O'Connell, 2004; Ornelas, 2016). According to Adam and O'Connell (2004), the two policy instruments are equivalent in a simple neoclassical model with a non-traded good, and a lack of market imperfections. However, Ornelas (2016) has argued that due to the terms of trade effects, the export responses of NRTP beneficiary countries is stronger with tariff preferences than with an equivalent transfer. In the meantime, in their endogenous growth model, Acemoglu and Ventura (2002) found that in a sufficiently open world, countries that accumulate capital more rapidly (and hence enjoy higher economic growth) than average experience declining export prices, a situation that depresses the rate of return on capital and discourages the further accumulation of capital. In other words, Ornelas (2016) argued that export-led

growth in a country would result in lower economic growth in the future due to terms of trade effects. In such a context, NRTPs could generate higher economic growth than development aid because the improvement in terms of trade that could result from these preferences for beneficiaries countries could more than outweigh the negative economic growth effect via the terms of trade (as demonstrated by Acemoglu and Ventura, 2002).

We can also argue that development aid could be complementary to the utilization of NRTPs in promoting economic growth in countries that are both beneficiaries of these trade preferences and aid recipients In fact, in a recent study, Gnangnon and Iyer (2021) found evidence that Aid for Trade (AfT) - part of the overall development aid package devoted to the promotion of the integration of developing countries into the global trading system - contributes to enhancing the utilization of NRTPs. The other part of the overall development (i.e., NonAfT flows) could also contribute to improving the utilization of NRTPs if for example they were instrumental in enhancing human capital and improving institutional quality levels, which are both essential for export expansion, notably under NRTPs regimes. For example, Birchler and Michaelowa (2016) and Dreher *et al*. (2008) reported a positive effect of aid for education on educational outcomes. Kotsadam *et al*. (2018), Pickbourn and Ndikumana (2016) and Yogo and Mallaye (2015) uncovered empirically a positive effect of health aid on health outcomes in recipient countries. Likewise, aid was found to be able to improve the utilization of NRTPs through its positive effect on the quality of institutions and governance in recipient countries (e.g., Freytag and Heckelman, 2012; Jones and Tarp, 2016; Dijkstra, 2018). Gnangnon (2020) obtained empirical evidence that the cumulative amount of total development aid exerts a positive effect on the quality of regulatory policies in recipient countries. Dzhumashev and Hailemariam (2021) have shown empirically that the effects of development aid on economic growth and development work mainly through economic institutions, as aid has been found to exert a significant, positive effect on the quality of economic institutions in recipient countries. Against this backdrop, we can postulate that by enhancing the utilization of NRTPs, development aid could be complementary to the utilization of NRTPs in spurring economic growth in beneficiary countries (***Hypothesis 3***).

III. Empirical Strategy

This section presents the model specifications that would help to examine the effect of the utilization of NRTPs on economic growth (sub-section III.A). It then discusses the econometric method used to perform the empirical analysis (sub-section III.B).

A. *Model specifications*

We investigate the effect of the utilization of NRTPs on economic growth by building upon the standard literature on the macroeconomic determinants of economic growth, in particular the literature on the effects of exports on economic growth (see the studies cited in section 2 - recent studies include for example,

Hagemejer and Mućk, 2019; Jetter, 2017; Kalaitzi and Cleeve, 2018; Tang *et al*., 2015). Hence, the model specifications contain not only the variables capturing the utilization of NRTPs, as well as the development aid variable (which represents the other main way through which developed countries assist developing countries ones), but also the following control variables: trade policy[13] (e.g., Alesina *et al*., 2005; Chang *et al*., 2009; Fukuda, 2019; Grossman and Helpman, 2015; Hsieh *et al*., 2020; Melitz, 2003); terms of trade (e.g., Jawaid and Raza, 2013; Kaneko, 2000; Vianna and Mollick, 2021); economic complexity[14] (e.g., Hausmann and Hidalgo, 2009; 2011; Hidalgo, 2021; Jarreau and Poncet, 2012; Koch, 2021); government consumption (e.g., Lin, 1994; Mo, 2007; Olaoye *et al*., 2020); inflation rate (e.g., Barro, 2013; Christiansen *et al*., 2013; De Gregorio, 1993) and population size (e.g., Becker *et al*., 1999).

The variable capturing FDI inflows (in percentage of GDP) is introduced in the analysis in light of the importance of FDI inflows with regard to utilizing NRTPs (e.g., Yannopoulos, 1987) and given that FDI inflows can exert a significant positive effect on economic growth, (e.g., Baldwin *et al*., 2005; De Gregorio, 2005). The literature on the effect of FDI inflows on economic growth is voluminous but still inconclusive, as this effect may depend on several factors. These include host country characteristics such as the level of human capital (e.g., Borensztein *et al*., 1998; Li and Liu, 2005; Su and Liu, 2016), the depth of financial development (e.g., Alfaro *et al*., 2010; Hermes and Lensink, 2003; Kottaridi and Stengos, 2010; Osei and Kim, 2020), the level of information and communication technology (ICT) (e.g., Asongu and Odhiambo, 2020), the institutional and governance quality (e.g., Azman-Saini *et al*., 2010; Bengoa and Sanchez-Robles, 2003; Hayat, 2017), and how FDI inflows affect domestic investment (e.g., Morrissey and Udomkerdmongkol, 2012; Farla *et al*., 2016). Building on the existing works on this issue, we cannot predict the direction of the effect of FDI inflows on economic growth, and the issue is essentially empirical.

At this stage of the analysis, it is important to note that according to the literature on the determinants of economic growth, human capital[15] and the institutional quality[16] also contribute to the economic growth performance of countries. However, we have not included these two variables in the baseline model (1) because we found a strong correlation between them and other control variables in model (1), specifically economic complexity, development aid and FDI inflows.

We consider the following baseline model specification (1):

[13]The effects of trade policy reform (for example, trade policy liberalization) on economic growth have been the subject of a numerous theoretical and empirical studies that reach inconclusive outcomes (see, for example, Irwin (2019) for a recent survey of this literature).

[14]Economic complexity, which reflects the diversity (i.e., the number of products exported) and the ubiquity (i.e., the number of countries that also export these products) of an economic system, measures the amount of knowledge embedded in a country's productive (including export) structure (Hausmann *et al*., 2014; Hausmann and Hidalgo, 2009). A higher level of economic sophistication exerts a strong positive effect on economic growth.

[15]See for example Lucas (1988), Matousek and Tzeremes (2021), Zhang and Zhuang (2011), and Zhang and Wang (2021).

[16]See for example Aixalá and Fabro (2008), Alesina and La Ferrara (2005), Barro (1996), Corradini (2021), Efendic *et al*. (2011), and Rigobon and Rodrik (2005).

$$
\begin{aligned}
GROWTH_{it} = {} & \alpha_1 GROWTH_{it-1} + \alpha_2 URGSP_{it} + \alpha_3 UROTP_{it} + \alpha_4 ODA_{it} \\
& + \alpha_5 TERMS_{it} + \alpha_6 TP_{it} + \alpha_7 ECI_{it} + \alpha_8 GCONS_{it} + \alpha_9 INFL_{it} \\
& + \alpha_{10} FDI_{it} + \alpha_{11} \log(POP)_{it} + \mu_i + \delta_t + \varepsilon_{it}
\end{aligned} \tag{1}
$$

Here, the subscripts i and t indicate respectively a country and a time-period. The parameters α_1 to α_{11} are to be estimated. μ_i represents the time-invariant specific effects of each country in the panel dataset. The δ_t symbols are time dummies that capture global shocks that influence together all countries' economic growth paths. ε_{it} is a well-behaving error-term. The panel dataset used to estimate model (1) and its different variants described below is unbalanced and contains 90 countries (beneficiaries of both NRTPs and development aid) over the period of 2002-2018. This dataset has been constructed based on data availability. Following studies such as that by Christiansen *et al*. (2013), we use non-overlapping three-year sub-periods of 2000-2002, 2003-2005, 2006-2008, 2009-2011, 2012-2014 and 2015-2018 (the latter sub-period covers four years rather than three). This helps to mitigate the effects of business cycles on the variables at hand. Table A1 presents a description of all variables in model (1) as well as their respective sources. Table A2 reports the standard descriptive statistics related to these variables, and Table A.3 reports the list of countries used in the analysis.

The dependent variable "GROWTH" is the growth rate (annual percentage) of the real GDP per capita (constant prices in 2010 US$). We followed the extant literature by including the one-period lag of this variable as a regressor in model (1). This helps capture the state-dependent feature of the economic growth rate and concurrently helps to address possible omitted-variable bias in the model specifications.

The variable "URGSP" represents the utilization rate (in percentage) of GSP programs provided by QUAD countries to developing countries. It captures the extent to which imports which are eligible for GSP programs are actually imported under these preferences. It is computed here using a formula adopted by both the WTO and the UNCTAD (see WTO, 2016). The formula is as follows:

$$URGSP = 100 * (\text{GSP Received Imports}) / (\text{GSP Covered Imports}),$$

where "GSP Received Imports" refers to the value of imports that received GSP treatment, and "GSP covered imports" indicates the value of imports that are classified in tariff lines that are dutiable and covered by the GSP scheme of the preference-granting country.

The indicator "UROTP" is the utilization rate (in percentage) of the other NRTPs offered by QUAD countries to developing countries. For the US, the other trade preferences cover the African Growth and Opportunity Act (AGOA) and the Caribbean Basin Initiative. In the case of the EU, it includes preferences under the Economic Partnership Agreements entered with selected Africa Sub-Saharan countries. It has been computed as follows:

$$UROTP = 100 * (\text{Other-preferential Imports}) / (\text{Other Preferential Covered Imports}).$$

"Other-Preferential Imports" refers to the value of imports that benefitted from

NRTPs other than GSP programs. "Other-Preferential Covered Imports" refers to the value of imports that are classified in tariff lines that are dutiable and covered by the other preferential schemes.

The variables "ODA", "TERMS", and "TP" are respectively the transformed development aid variable (see Table A1 for more details), the terms of trade, and the trade policy (higher values of the latter indicate greater trade policy liberalization). Similarly, the variables "ECI", "GCONS", and "INFL" are respectively the economic complexity index, the share of government consumption in GDP, and the transformed inflation variable (see Table A1 for more details). Finally, the variables "FDI" and "POP" stand for the FDI-to-GDP ratio and the population size.

B. *Econometric approach*

Regarding the econometric approach, first we estimate model (1) using standard econometric estimators (i.e., the pooled ordinary least squares - POLS - and the within fixed effects estimator - FE) bearing in mind that the estimates obtained and reported in columns [1] and [2] of Table 1 could be biased[17] owing to the endogeneity problems that could plague model (1). These endogeneity concerns can be due to the possible bi-directional causality between the economic growth rate variable and the regressors (except for the population size and terms of trade) included in model (1), but may also stem from the correlation between the one-period lag of the dependent variable and the time-invariant country-specific effects for each country. This is referred to as the Nickell bias (Nickell, 1981).

To handle the endogeneity problems, we follow many previous studies (e.g., Chang *et al*., 2009; Christiansen *et al*., 2013; Eicher and Schreiber, 2010; Feeny *et al*., 2014; Lee and Kim, 2009; Museru *et al*., 2014) and use the two-step system generalized method of moments (GMM) proposed by Arellano and Bover (1995) and Blundell and Bond (1998). This estimator helps to correct for unobserved country heterogeneity, measurement errors, the endogeneity issues raised above, and omitted-variable bias. In the present analysis, omitted-variable bias can arise from the fact that we have not introduced in the baseline model (1) indicators that capture the utilization rates of NRTPs provided by preference-granting countries other than QUAD countries. This possibility exists here simply because data on such indicators is, for the time being, not available.

The two-step system GMM estimator combines a system of equations, an equation in differences and an equation in levels, where lagged first differences are used as instruments for the levels equation, and lagged levels are used as instruments for the first-difference equation. It improves the consistency and efficiency of the estimates compared to the difference GMM estimator[18] proposed by Arellano and Bond (1991), which uses lags of variables as instruments of endogenous variables to address endogeneity concerns. It is important to note that we expect that the

[17]We, nevertheless, report results based on the POLS and FE estimators with a view to comparing them to those obtained by means of the two-step system GMM estimator used (later in the analysis) to address the endogeneity concerns that plague model (1).

[18]The difference GMM estimator wipes out countries' fixed effects and uses lags of variables as instruments of endogenous variables.

TABLE 1— EFFECTS OF THE UTILIZATION OF NON-RECIPROCAL TRADE PREFERENCES ON ECONOMIC GROWTH (ESTIMATORS: POLS, WITHIN FIXED EFFECTS AND TWO-STEP SYSTEM GMM)

Variables	POLS GROWTH (1)	Within Fixed Effects GROWTH (2)	Two-Step System GMM GROWTH (3)
$GROWTH_{t-1}$	0.371***	0.157***	0.241***
	(0.0483)	(0.0518)	(0.0161)
URGSP	0.00944**	0.0105*	0.0114***
	(0.00468)	(0.00623)	(0.00225)
UROTP	-0.00259	0.00927	0.0163***
	(0.00458)	(0.00751)	(0.00224)
ODA	-0.000997	0.00937	-0.00988**
	(0.0141)	(0.0171)	(0.00442)
TERMS	-0.00218	0.0112	0.0133***
	(0.00298)	(0.00827)	(0.00222)
ECI	0.324	0.694	0.714***
	(0.259)	(1.146)	(0.125)
TP	0.0326	0.0172	0.0331***
	(0.0199)	(0.0288)	(0.00944)
GCONS	-0.122***	-0.0927	-0.0903***
	(0.0424)	(0.105)	(0.0235)
INFL	-0.0334***	-0.0508***	-0.0110
	(0.0111)	(0.0159)	(0.0110)
FDI	0.101	0.156*	0.148***
	(0.0642)	(0.0863)	(0.0184)
Log(POP)	0.262**	-3.104	0.845***
	(0.123)	(3.310)	(0.0777)
Observations - Countries	404 - 90	404 - 90	404 - 90
R-squared	0.395		
Within R-squared		0.2975	
AR1 (P-Value)			0.0001
AR2 (P-Value)			0.1989
AR3 (P-Value)			0.1996
OID (P-Value)			0.2474

Note: 1) *p-value<0.1, **p-value<0.05, ***p-value<0.01, 2) Robust standard errors are in parenthesis, as they are clustered at the country level, 3) Time dummies are included in the regressions.

coefficient of the dependent variable obtained by the two-step system GMM estimator to lie between the estimate of this variable generated by the FE estimator and that generated by the POLS estimator (e.g., Bond *et al*., 2001), as the POLS estimator generates an upwardly biased coefficient of the lagged dependent variable, while the FE estimator leads to downward bias of the estimate related to the dependent variable.

We evaluate whether model (1) (or its different variants described below) estimated by the two-step system GMM technique is correctly specified by means of several statistical tests. These include the Arellano-Bond test of the presence of a first-order serial correlation in the first-differenced error term (denoted AR(1)), the Arellano-Bond test of the absence of second-order autocorrelation in the first-differenced error term (denoted AR(2)), and the Sargan-Hansen test of over-identifying restrictions (OID). Although not required, we also carried the Arellano-Bond test of the absence of a third-order serial correlation in the first-differenced error term (denoted as AR(3)). Model (1) and its variants estimated by means of the two-step system GMM estimator will be considered as correctly specified if we

reject the null hypotheses of the absence of a first-order autocorrelation in the first-differenced error term (associated with the AR(1) test) and if we do not reject the absence of a second-order autocorrelation in the first-differenced error term (associated with the AR(1) test) or the null hypothesis of the validity of instruments associated with the OID test of over-identifying restrictions. Accepting the null hypothesis of the absence of a third-order serial correlation in the first-differenced error term for the AR(3) test could provide an indication that model (1) and its variants (described below) are not affected by omitted-variable bias. Finally, following for example Bowsher (2002) and Roodman (2009), we ensure that in the regressions carried out, the number of instruments is lower than the number of countries lest the above-mentioned tests become less powerful. To that effect, the regressions used a maximum of three lags of the dependent variable as instruments and two lags of the endogenous variables as instruments.

The analysis utilized several regressions using the two-step system GMM estimator. In all of these regressions, the variables "URGSP", "UROTP", "ECI", "TP", "GCONS", "ODA", "INFL", "FDI", and the interaction variables were treated as endogenous. The population size and terms of trade variables were considered as exogenous.

First, we estimate model (1), the results of which are reported in column [3] of Table 1.

Second, we estimate the first variant of model (1), in which we interact each of the two variables measuring the utilization of NRTPs with the development aid variable. The results of this estimation are reported in column [1] of Table 2 and can help to examine how the two major policy tools (unilateral trade preferences and development aid) available to donor-countries to assist developing countries interact as they purportedly affect economic growth in recipient countries.

Third, we estimate a second variant of model (1) that allows an investigation of how the two types of NRTPs interact as they purport to affect the economic growth performance in beneficiary countries. The rationale for estimating this variant of model (1) is to examine whether utilizing concurrently both GSP programs and other trade preferences helps to foster economic growth in beneficiary countries, i.e., whether both GSP programs and other trade preferences are complementary or substitutable in promoting economic growth in beneficiary countries. The outcomes of this estimation are presented in column [2] of Table 2.

Fourth and finally, we test whether terms of trade improvements enhance the positive effect of NRTPs on economic growth in beneficiary countries, as theoretically NRTPs provide beneficiary countries with a higher export prices than other exporters (that do not enjoy those preferential regimes) to the preference-granting countries. The increased export prices would lead to an improvement in terms of trade for the beneficiary countries and possibly help foster their economic growth performance. To test this hypothesis empirically, we estimate another specification of model (1), that is, the baseline model (1) in which we introduce the interaction between both variables with regard to measuring the utilization of NRTPs and the terms of trade indicator. We are, nevertheless, aware that the improvement of the indicator of terms of trade may not always reflect the increase in the export prices of the products exported under the NRTP regimes. The outcomes of the estimation of this last specification of model (1) are reported in column [3] of Table 2.

TABLE 2— EFFECTS OF THE UTILIZATION OF NON-RECIPROCAL TRADE PREFERENCES ON ECONOMIC GROWTH (ESTIMATOR: TWO-STEP SYSTEM GMM)

Variables	GROWTH (1)	GROWTH (2)	GROWTH (3)
$GROWTH_{t-1}$	0.219***	0.238***	0.237***
	(0.0130)	(0.0167)	(0.0145)
URGSP	-0.0205**	-0.00948**	-0.0384***
	(0.00917)	(0.00401)	(0.00590)
UROTP	-0.00179	-0.00841*	-0.0479***
	(0.00598)	(0.00468)	(0.00574)
URGSP*ODA	0.00154***		
	(0.000508)		
UROTP*ODA	0.00103***		
	(0.000302)		
URGSP*UROTP		0.000470***	
		(8.10e-05)	
URGSP*TERMS			0.000412***
			(4.29e-05)
UROTP*TERMS			0.000422***
			(3.95e-05)
ODA	-0.0881***	-0.00253	0.0189***
	(0.0267)	(0.00444)	(0.00633)
TERMS	0.0124***	0.0150***	-0.0312***
	(0.000973)	(0.00132)	(0.00318)
ECI	0.648***	0.518***	1.718***
	(0.0838)	(0.109)	(0.0965)
TP	0.0346***	0.0564***	0.0393***
	(0.00739)	(0.0112)	(0.00975)
GCONS	-0.0756***	-0.148***	-0.0807***
	(0.0232)	(0.0293)	(0.0182)
INFL	-0.0110	-0.00851	-0.0309***
	(0.00775)	(0.00692)	(0.00325)
FDI	0.144***	0.158***	0.157***
	(0.0143)	(0.0145)	(0.0122)
Log(POP)	0.546***	1.051***	0.489***
	(0.0898)	(0.0710)	(0.106)
Observations - Countries	404 - 90	404 - 90	404 - 90
AR1 (P-Value)	0.0001	0.0001	0.0001
AR2 (P-Value)	0.1970	0.2425	0.1434
AR3 (P-Value)	0.2020	0.2078	0.2147
OID (P-Value)	0.4268	0.4594	0.6026

Note: 1) *p-value<0.1, **p-value<0.05, ***p-value<0.01, 2) Robust standard errors are in parenthesis, 3) The variables "URGSP", "UROTP", "ECI", "TP", "GCONS", "ODA", "INFL", "FDI", and the interaction variables are treated as endogenous, 4) The variables "POP" and "TERMS" are treated as exogenous. 5) Time dummies are included in the regressions.

IV. Empirical Results

We observe from the three columns of Table 1 that the coefficients of the lagged dependent variable are all significant at the 1% level. This is in line with the voluminous literature on the macroeconomic determinants of economic growth that has found that there exists a state-dependent path of economic growth. In addition, we note, as expected, that the coefficient of the lagged dependent variable obtained in column [3] (i.e., based on the two-step system GMM estimator) is lower than the coefficient of the same variable obtained when using the POLS estimator but higher

than the estimate obtained when using the FE estimator. The same finding applies to estimates of the lagged dependent variable reported in all columns of Table 2 (i.e., these estimates are all significant at the 1% level and can be found between that obtained from the use of the FE estimator and the estimate obtained when using the POLS estimator).

We note from results in columns [1] and [2] of Table 1 that the utilization rate of GSP programs positively influences economic growth at the 5% level for results based on the POLS estimator but only at the 10% level for results based on the FE estimator. Considering the outcome in column [1], we find that a 100-percentage point increase in the utilization rate of GSP programs (i.e., doubling this rate) is associated with a 0.9 percentage point increase in the economic growth rate. At the same time, in both columns [1] and [2], there is no significant effect of the utilization rate of other trade preferences on economic growth at the conventional significance levels.

Regarding the other variables, we find from the results presented in column [1] that the economic growth rate is positively and significantly driven (at least at the 5% level) by lower government consumption, lower inflation rates, and a rise in the population size. Development aid, terms of trade, economic complexity, trade policy liberalization, and FDI inflows exert no significant effects on economic growth at the conventional significance levels. The outcomes reported in column [2] of Table 1 indicate that the inflation variable is negatively and significantly associated with economic growth (at the 1% level), while FDI inflows exert a positive effect on economic growth only at the 10% level. The other variables show no significant coefficients at the conventional significance levels.

As mentioned above, these results could be biased due to the endogeneity concerns highlighted earlier. Therefore, we turn to the estimates based on the two-step system GMM approach, as reported in column [3] of Table 1 and Table 2.

We note from the bottom in column [3] of Table 1 and in all columns of Table 2 that all model specifications are correctly specified as they successfully pass the diagnostic tests described above. In fact, the p-values associated with the AR(1) test are lower than 0.1 (i.e., the 10% level) and the p-values related to the AR(2) and AR(3) tests are greater than 0.1. Moreover, the p-values of the OID test, as expected, exceed 0.1. Taken together, all of these outcomes allow us to conclude that the two-step system GMM approach is appropriate for undertaking the empirical analysis.

The estimates presented in column [3] of Table 1 suggest that both the utilization rate of GSP programs and the utilization rate of other trade preferences programs exert a positive and significant (at the 1% level) effect on economic growth in beneficiary countries. An increase of one percentage point in the utilization rate of GSP programs is associated with a 0.011 percentage point increase in the economic growth rate in the beneficiary countries of these trade preferences. Likewise, a one percentage point increase in the utilization rate of other trade preferences is associated with a 0.016 percentage point increase in the economic growth rate in the beneficiary countries of these trade preferences. Interestingly, the use of other trade preferences has a slightly stronger positive effect on economic growth than the use of GSP programs. Moreover, the magnitude of the effect of the utilization rate of GSP programs on economic growth (which amounts to 0.011) is slightly higher than that (0.009) obtained in column [2] of Table 1 (results based on the POLS estimator).

At the same time, we find, with surprise, that development aid inflows appear to exert a negative and significant effect (at the 1% level) on economic growth. This outcome certainly hides the fact that the effect of development aid on economic growth is dependent on the utilization of NRTPs. Put differently, this result suggests the existence of a joint (complementarity or substitutability) effect of the utilization of NRTPs (including both GSP programs and other trade preferences) on economic growth. We will consider later in the analysis whether there complementarity or substitutability exists between development aid inflows and NRTPs with regard to any influence on the economic growth of the beneficiaries.

The control variables in column [3] of Table 1 display, in general, the expected coefficients. Terms of trade improvements, greater economic complexity, greater trade policy liberalization, higher FDI inflows, and the rise in the population size influence positively and significantly (at the 1% level) economic growth in beneficiary countries. Government consumption influences negatively and significantly (at the 1% level) economic growth, while the inflation rate has no significant effect on economic growth at the conventional significance levels. The findings concerning the control variables in columns [1] to [3] of Table 2 are broadly in line with those in column [3] of Table 1, except for the inflation rate whose coefficient is still yet negative but becomes significant at the 1% level in column [3] of Table 2.

The outcomes displayed in column [1] of Table 2 indicate that the interaction terms related to the variables "URGSP*ODA" and "UROTP*ODA" are positive and statistically significant at the 1% level, while at the same time the coefficients of "URGSP" and "UROTP" variables are respectively negative and significant at the 5% level and negative but not statistically significant at the conventional significance levels. These outcomes suggest firstly that other trade preferences programs and development aid inflows are strongly complementary in fostering economic growth in beneficiary countries, and the greater the development aid flows, the greater is the magnitude of the positive effect of the utilization rate of other trade preferences programs on economic growth performance in beneficiary countries. Secondly, the use of GSP programs and development aid is also strongly complementary in fostering economic growth, notably when the development aid flows exceed a certain amount.[19] For low amounts of development aid, the utilization of GSP programs has a negative effect on economic growth, and for high amounts of development aid, it exerts a positive and significant effect on economic growth; the magnitude of this positive effect rises as development aid inflows increase. Interpreting this differently, the results in column [1] of Table 2 suggest that higher development aid flows induce positive and significant economic growth performance in beneficiary countries whose utilization rate of GSP programs exceeds 85.53% (= 0.0881/0.00103); for these countries, the greater the utilization rate of GSP programs (i.e., for rates higher than 85.53%) is, the higher the magnitude of the positive effect of development aid flows on economic growth becomes. Similarly, aid flows exert a positive and significant effect on economic growth in

[19]It is difficult to compute the amount of total development aid inflows above which the effect of the utilization of GSP programs would influence positively and significantly economic growth due to the method used to transform the aid variable in the analysis here.

beneficiary countries whose utilization rates of other trade preferences exceed 57.21% (= 0.0881/0.00154), and the magnitude of the positive effect of development aid flows on economic growth rises as the utilization rate of other trade preferences improves (as long as the rate is at least 57.2%).

As these findings represent the 'average' of the full sample, a better picture of these impacts can be obtained through a graphical analysis of the marginal impacts of development aid on economic growth for varying rates of the utilization of GSP programs, and of the utilization of other trade preferences. Figures 1 and 2 present, at the 95 percent confidence intervals, respectively, the marginal impact of development aid on economic growth for varying rates of the utilization of GSP programs and the marginal impact of development aid on economic growth for varying rates of the utilization of other trade preferences. The marginal impacts that are statistically significant at the 95 percent confidence intervals are those encompassing only the upper and lower bounds of the confidence interval that are either above or below the zero line. Both figures show that the marginal impacts increase with greater utilization rates of NRTPs. However, Figure 1 indicates that development aid promotes economic growth in countries whose utilization rate of GSP programs exceeds 68.7%. With regard to lower rates, the economic impact of development aid is at best statistically nil. It is, in fact, negative and significant when the utilization rate of GSP programs is lower than 53% and statistically nil when the rate is between 53% and 68.7%. Figure 2 conveys the message that the economic growth impact of development aid is at best statistically nil, including when utilization rates of other preference programs are higher than 73.8%. This impact is negative and significant at utilization rates of other preference programs lower than 73.8%. These pictures are slightly different when we consider, at the 95 percent confidence intervals in both cases the marginal impact of the utilization of GSP programs on economic growth for various amounts of development aid (see Figure 3) and the marginal impact of the utilization of other trade preferences programs on economic growth for various amounts of development aid (see Figure 4). Both figures show that these marginal impacts increase as countries receive greater amounts of development aid, but they are positive and significant only for high

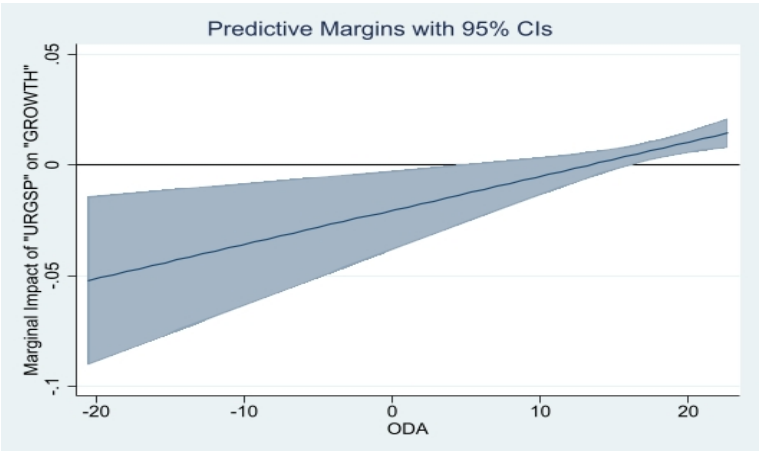

FIGURE 1. MARGINAL IMPACTS OF "URGSP" ON "GROWTH" FOR VARYING AMOUNTS OF "ODA"

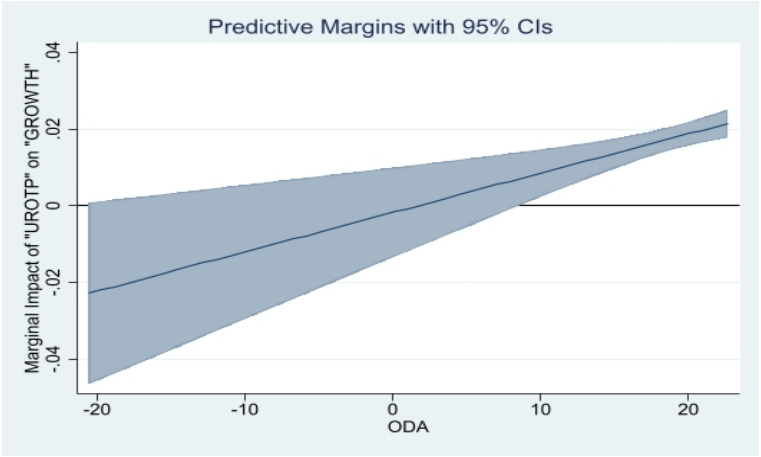

FIGURE 2. MARGINAL IMPACTS OF "UROTP" ON "GROWTH" FOR VARYING AMOUNTS OF "ODA"

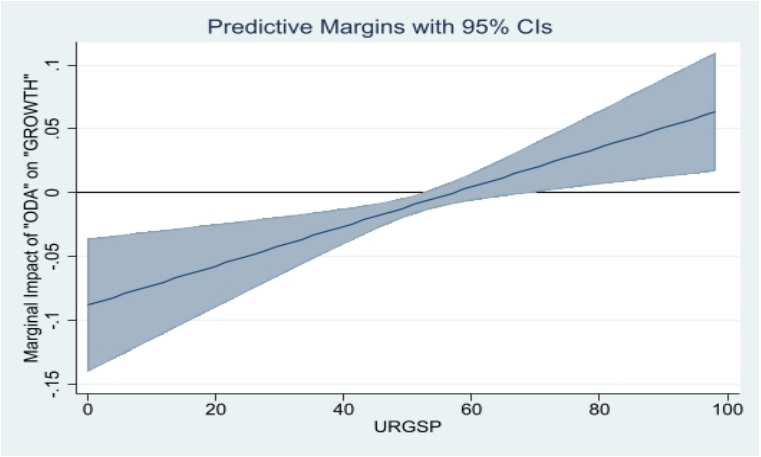

FIGURE 3. MARGINAL IMPACTS OF "ODA" ON "GROWTH" FOR VARYING RATES OF "URGSP"

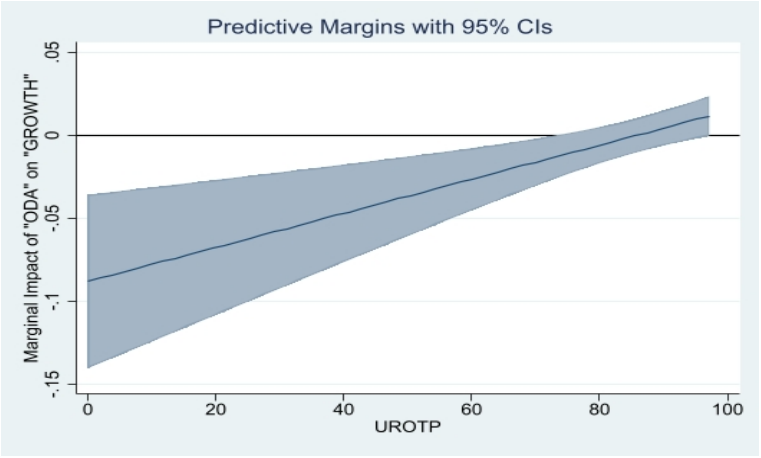

FIGURE 4. MARGINAL IMPACTS OF "ODA" ON "GROWTH" FOR VARYING RATES OF "UROTP"

amounts of development aid. In particular, the utilization rate of GSP programs exerts a positive and significant effect on economic growth for amounts of development aid higher than US$ 16.22 million (otherwise, this effect is either statistically nil or negative, including cases of low amounts of development aid). Likewise, the utilization rate of other trade preference programs positively and significantly influences economic growth only for amounts of development aid higher than US$ 6788.2 (otherwise, this effect is not significant).

In sum, the key message conveyed by these findings is that GSP programs are strongly complementary with development aid flows in fostering economic growth performance in beneficiary countries. Specifically, the effects of GSP programs and other trade preferences on economic growth depend on the amounts of development aid that accrue to countries. These effects increase as the amounts of development aid rise and are particularly positive for relatively high amounts of development aid; the greater the aid amount is, the higher the magnitude of the positive effect of the utilization of GSP programs and other trade preferences programs on economic growth becomes. Interestingly, the minimum amount of development aid (US$ 16.22 million) necessary to ensure that GSP programs would exert a positive effect on economic growth is far higher than the minimum development aid amount (US$ 6788.2) necessary to ensure that other trade preference programs positively and significantly economic growth influence.

We now consider the outcomes in column [2] of Table 2. These outcomes aim to help examine whether GSP programs and other trade preferences offered by QUAD countries are complementary or substitutable with regard to promoting economic growth in beneficiary countries. We find that the interaction term of the variable ["URGSP*UROTP"] is positive and significant at the 1% level, while the coefficients of the variables "URGSP" and "UROTP" are respectively negative and significant at the 5% level and positive and significant at the 10% level. These outcomes suggest strong complementarity between GSP programs and other trade preferences in enhancing economic growth in beneficiary countries. However, at the 5% level, this strong complementarity occurs for any rate of utilization of other trade preferences, becoming higher as the rate increases. Similarly, at the 5% level, GSP programs and other trade preferences are complementary in fostering economic growth in beneficiary countries when the utilization rate of GSP programs is higher than 20.17% (= 0.00948/0.00047), holding the utilization rate of other trade preferences constant. Otherwise (that is, for utilization rates of GSP programs lower than 20.17%), GSP programs and other trade preferences are substitutable with regard to their ability to enhance economic growth in beneficiary countries.

As these outcomes represent "averages" effects across countries in the full sample, we find it useful to examine how the impact of the utilization of GSP programs on economic growth evolves for varying utilization rates of other trade preferences, and inversely, how the utilization of other trade preferences affects economic growth for varying rates of the utilization of GSP programs. Figure 5 presents, at the 95 percent confidence level, the developments of the marginal impact of the utilization of GSP programs on economic growth for varying levels of the utilization of other trade preferences. Figure 5 shows that the marginal impact of the utilization of GSP programs on economic growth takes positive and negative values and increases as the rate of the utilization of other trade preferences improves. However, it is not

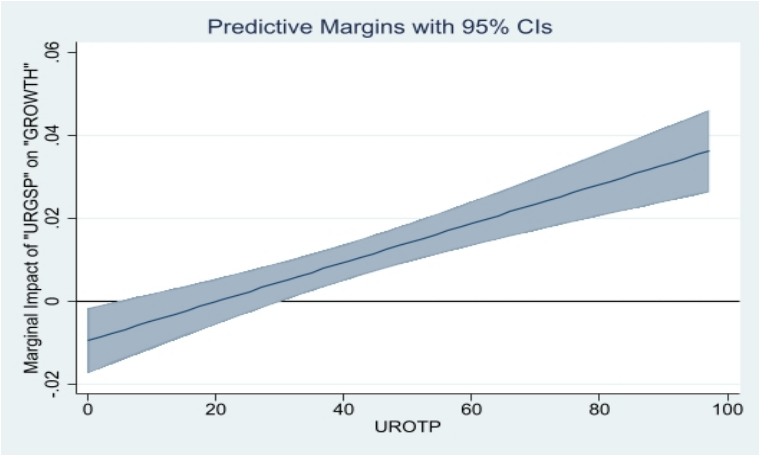

FIGURE 5. MARGINAL IMPACTS OF "URGSP" ON "GROWTH" FOR VARYING LEVELS OF "UROTP"

always statistically significant. It is not statistically significant when the utilization rates of other trade preferences are between 5.83% and 29.14%. This means that countries whose levels of utilization of other trade preferences are between 5.83% and 29.14% experience no significant effect of the utilization of GSP programs on economic growth. For countries with very low levels of utilization of other trade preferences (i.e., those with utilization rates of other trade preferences lower than 5.83%), GSP programs are associated with negative economic growth, and the lower the utilization rates of other trade preferences are, the higher is the magnitude of the negative effect of GSP programs on economic growth. However, countries whose utilization rates of other trade preferences exceed 29.14% experience a positive effect of GSP programs on economic growth, and the magnitude of the positive effect rises as the utilization rate of other trade preferences increases. Overall, the key message conveyed by Figure 5 is that GSP programs and other trade preferences jointly promote economic growth in beneficiary countries when both rise and exceed a certain level.

Figure 6 presents, at the 95 percent confidence level, the developments of the marginal impact of the utilization of other trade preferences on economic growth for varying levels of utilization of GSP programs. This figure confirms the strong complementarity between GSP programs and other trade preferences in enhancing economic growth. In fact, Figure 2 indicates that this marginal impact increases as the degree of utilization of GSP programs rises, but it is only statistically significant when the utilization rate of GSP programs exceeds 29.4%. Otherwise, the utilization of other trade preferences has no significant effect on economic growth. Thus, the utilization of other trade preferences exerts a positive and significant effect on economic growth only when countries also utilize GSP programs at a rate higher than 29.4%. Such countries enjoy a higher magnitude of the positive effect of the utilization of other trade preferences on their economic growth rate as the utilization rate of GSP programs rises.

The outcomes in column [4] of Table 2 aim to examine how the utilization of NRTPs affects the economic growth rate as the terms of trade improve. Estimates in this column suggest negative and significant (at the 1% level) coefficients of the

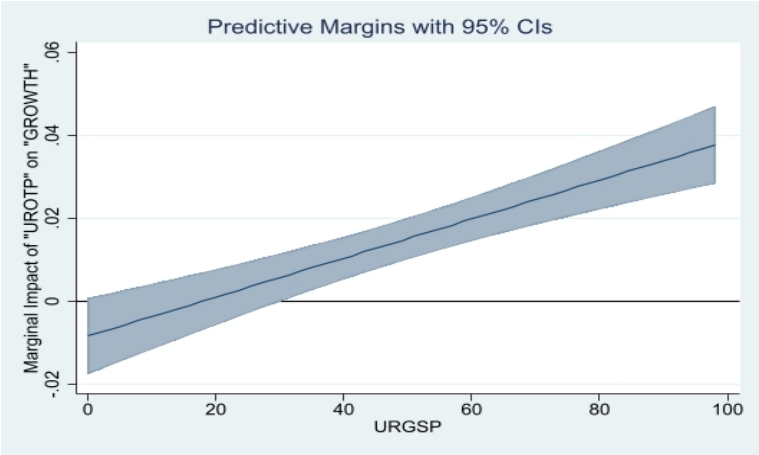

FIGURE 6. MARGINAL IMPACTS OF "UROTP" ON "GROWTH" FOR VARYING LEVELS OF "URGSP"

variables "URGSP" and "UROTP." At the same time, we find that the interaction terms associated with the interaction variables ["URGSP*TERMS"] and ["UROTP*TERMS"] are positive and significant (at the 1% level). Taken together, these outcomes suggest, on the one hand, that at the 1% level, the utilization of GSP programs affects positively and significantly the economic growth rate in beneficiary countries as terms of trade improve, in particular when the terms of trade level is higher than 93.2 (= 0.0384/0.000412). On the other hand, at the 1% level, the utilization of other trade preferences affects positively and significantly the economic growth rate in beneficiary countries as terms of trade improve, notably when the terms of trade level is higher than 116.3 (= 0.0479/0.000412). It is important to note that the values of the variable capturing the terms of trade range are 50.64 and 453.72. To illustrate these impacts further, we display in Figures 7 and 8, at the 95 percent confidence intervals, respectively, the marginal impact of the utilization of GSP programs on economic growth for varying levels of terms of trade improvements, and the marginal impact of the utilization of other trade preference

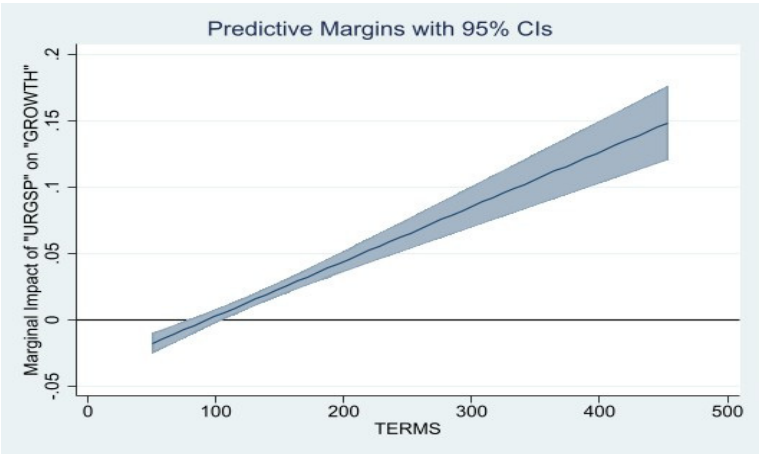

FIGURE 7. MARGINAL IMPACTS OF "URGSP" ON "GROWTH" FOR VARYING LEVELS OF "TERMS"

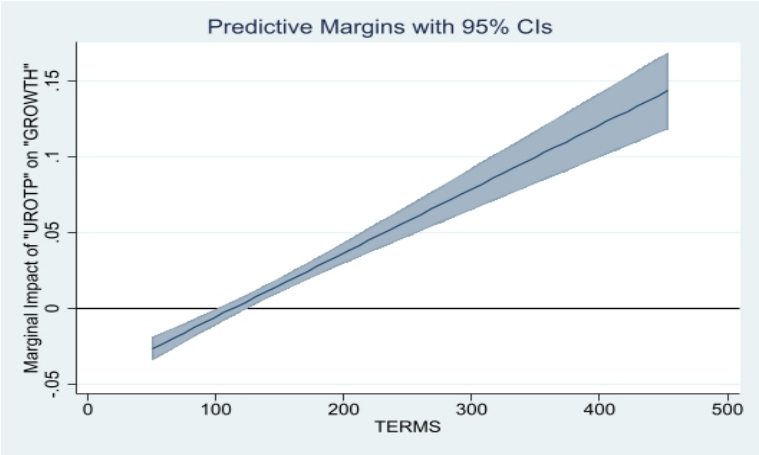

FIGURE 8. MARGINAL IMPACTS OF "UROTP" ON "GROWTH" FOR VARYING LEVELS OF "TERMS"

programs on economic growth for varying levels of terms of trade improvements. Both figures show that the marginal impact of either GSP programs or other trade preferences on economic growth increase as the terms of trade improve, in particular becoming positive for values of terms of trade slightly higher than 100. With greater improvements of the terms of trade, the positive effect of the utilization of both types of NRTPs on economic growth improves.

V. Further Analysis

Thus far, we have found that both GSP programs and other trade preferences promote economic growth in beneficiary countries, in line with the initial objectives of these programs. At the same time, one may question whether the positive effects of these programs do not depend on the share of exports under each of these programs relative to total merchandise exports. The rationale for this question is that economic growth in beneficiary countries may be enhanced further if these countries take advantage of these preferences to the utmost by exporting essentially under trade preferences programs rather than exporting at MFN tariff rates to the preference-granting countries. To address this question, we estimate a specification of model (1) in which we include a multiplicative variable between each indicator of the utilization of NRTPs (each of the indicators "URGSP" and "UROTP") and the variable (denoted as "SHEXPPGC") that represents for a given country and in a given year the share total exports to all preference-granting countries (i.e., QUAD countries) out of total merchandise exports. The outcomes of the estimation of this model specification by means of the two-step system GMM estimator are presented in Table 3. We note at the outset that while the coefficients of the variables "URGSP" and "UROTP" are negative and significant at the 1% level, the interaction terms of the multiplicative variables "(URGSP*SHEXPPGC)" and "(UROTP*SHEXPPGC)" are all positive and significant at the 1% level. Therefore, we deduce that on average over the full sample, the utilization of GSP programs and the utilization of other trade preference programs positively influence economic

TABLE 3— EFFECTS OF THE UTILIZATION OF NON-RECIPROCAL TRADE PREFERENCES ON ECONOMIC GROWTH FOR VARYING SHARES OF MERCHANDISE EXPORTS UNDER NRTPS TO PREFERENCE-GRANTING COUNTRIES' MARKETS (ESTIMATOR: TWO-STEP SYSTEM GMM)

Variables	GROWTH (1)
$GROWTH_{t-1}$	0.257***
	(0.0127)
URGSP	-0.0136***
	(0.00450)
UROTP	-0.0329***
	(0.00345)
URGSP*SHEXPPGC	0.000557***
	(8.52e-05)
UROTP*SHEXPPGC	0.00105***
	(9.20e-05)
SHEXPPGC	-0.0717***
	(0.00651)
ODA	-0.00480
	(0.00684)
TERMS	0.0158***
	(0.00217)
ECI	0.626***
	(0.168)
TP	0.0654***
	(0.0125)
GCONS	-0.0907***
	(0.0232)
INFL	-0.0525***
	(0.00828)
FDI	0.115***
	(0.0173)
Log(POP)	0.710***
	(0.0709)
Observations - Countries	395 - 88
AR1 (P-Value)	0.0001
AR2 (P-Value)	0.2622
AR3 (P-Value)	0.3305
OID (P-Value)	0.6466

Note: 1) *p-value<0.1, **p-value<0.05, ***p-value<0.01, 2) Robust standard errors are in parenthesis, 3) The variables "URGSP", "UROTP", "ECI", "TP", "GCONS", "ODA", "INFL", "FDI", and the interaction variables are treated as endogenous, 4) The variables "POP" and "TERMS" are treated as exogenous, 5) Time dummies are included in the regressions.

growth when the share of total exports to QUAD countries out of all merchandise exports exceeds 24.4% (= 0.0136/0.000557) and 31.3% (= 0.0329/0.00105), respectively. Otherwise, the effect is negative. It is also important to note here that in the full sample, the values of countries' shares of total exports to all preference-granting countries out of all merchandise exports are between 0.007% and 99.32%. Figures 9 and 10 correspondingly display, at the 95 percent confidence level, the marginal impact of the utilization of GSP programs on economic growth for varying shares of total exports to all preference-granting countries relative to total merchandise exports, and the marginal impact of the utilization of other trade preference programs on economic growth for varying shares of total exports to all preference-granting countries out of all merchandise exports. It appears from these two figures that the marginal impacts increase as the share of total exports to all

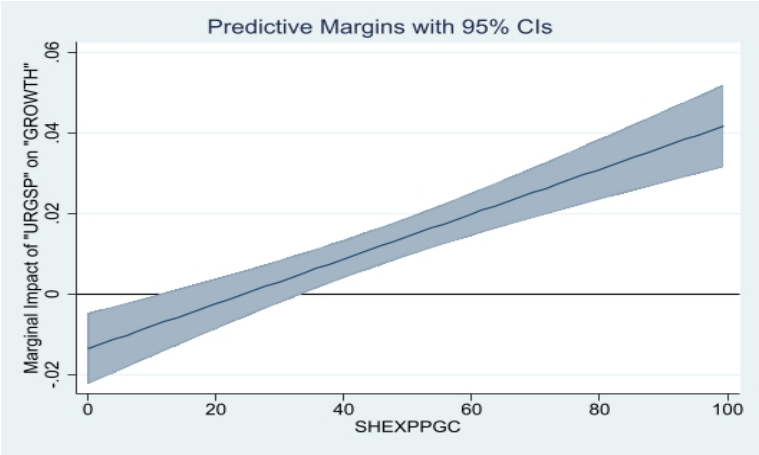

FIGURE 9. MARGINAL IMPACTS OF "URGSP" ON "GROWTH" FOR VARYING VALUES OF "SHEXPPGC"

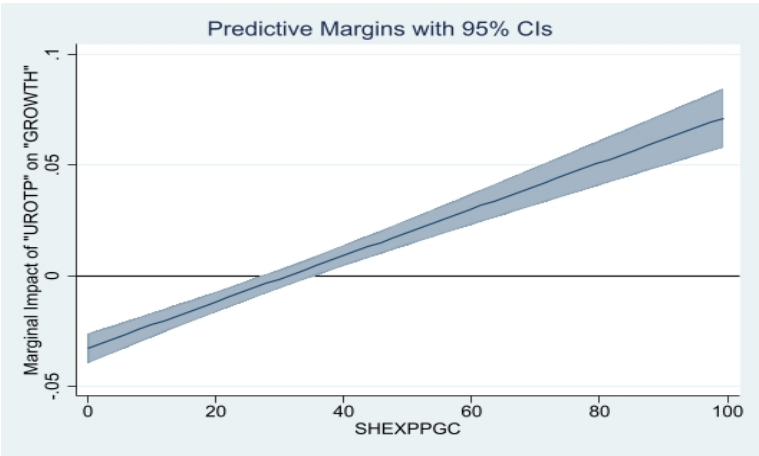

FIGURE 10. MARGINAL IMPACTS OF "UROTP" ON "GROWTH" FOR VARYING VALUES OF "SHEXPPGC"

preference-granting countries relative to total merchandise exports improves. The marginal impact of GSP programs on economic growth is positive when the share of total exports to QUAD countries out of all merchandise exports exceeds 33.8%; otherwise, this impact is at best statistically nil or in worse cases negative, in particular for values of this share lower than 11.9%. On the other side, the marginal impact of GSP programs on economic growth is positive when the share of total exports to QUAD countries out of all merchandise exports exceeds 33.8%; otherwise, this impact is at best statistically nil or negative in worse cases, in particular for values of this share lower than 27.8%.

In a nutshell, the main message that can be derived from Figures 9 and 10 is that both GSP programs and other trade preference programs foster economic growth in countries that export significantly under NRTPs to preference-granting countries, especially when the share of their exports to QUAD countries relative to total merchandise exports exceeds 33.8%.

VI. Conclusion

Among the major policy tools available to wealthier countries to assist developing countries in their efforts to promote development are development aid and non-reciprocal trade preferences. The offer of NRTPs by industrialized nations builds upon Resolution 21(ii) adopted by member states at the second UNCTAD conference held in 1968. This resolution stated, *inter alia*, that the provision of NRTPs, including GSPs in favor of developing countries and the less developed countries among them, should have three goals: to "increase the export earnings of developing countries, promote their industrialization, and accelerate their rates of economic growth."

Many studies have assessed whether NRTPs have in fact effectively increased the export earnings of beneficiary countries, as envisaged in Resolution 21(ii), reaching mixed conclusions. Few other works have explored whether the second goal stated in Resolution 21(ii), i.e., the promotion of industrialization of the beneficiary countries, has been achieved. These works have also obtained mixed empirical evidence. However, less attention has been paid to the issue of whether NRTPs have been effective in promoting economic growth in beneficiary countries.

The present paper aims to fill this void in the empirical literature by using a recent dataset compiled by UNCTAD on the utilization of NRTPs offered by QUAD countries and investigating the effects of the utilization of NRTPs provided by QUAD countries on the economic growth performance outcomes of beneficiary countries. The paper also examines how development aid and the utilization of NRTPs interact as they purportedly influence the economic growth performances of beneficiary countries. This empirical exercise has established several findings. First, both the utilization rate of GSP programs and the utilization rate of other trade preferences promote economic growth in beneficiary countries. Second, GSP programs and other trade preferences jointly foster economic growth in beneficiary countries, notably in cases of high rates of the utilization of GSP programs. Third, GSP programs and development aid flows are complementary in fostering economic growth performance in beneficiary countries, especially in cases of high amounts of development aid. Results have also suggested that when countries experience strong improvements in terms of trade, both GSP programs and other trade preferences influence economic growth positively. Finally, when the positive economic growth effect of the utilization of NRTPs is higher, a country's share of exports (under preferential tariffs) to QUAD countries out of their total merchandise exports is also higher.

From a policy perspective, this analysis suggests that wealthier countries should support the development strategies of developing countries by combining the supply of high amounts of development aid with the offer of generous NRTPs (that would, *inter alia*, cover the export products of interest to beneficiary countries accompanied by lenient preferential rules of origin).

APPENDIX

TABLE A1—DEFINITION AND SOURCE OF VARIABLES

Variables	Definition	Source
GROWTH	Growth rate of the real GDP per capita (constant 2010 US$), annual percentage	World Development Indicators (WDI)
URGSP	This is the indicator of the utilization rate of unilateral trade preferences under the Generalized System of Preferences (GSP) schemes provided by what are termed "Quadrilaterals" (i.e., QUAD countries), specifically Canada, European Union (EU) countries, Japan and the United States of America (USA). It captures the extent to which imports which are eligible for trade preferences are actually imported under these preferences (e.g., WTO, 2016). This indicator has been computed using the following formula adopted both by the WTO (see WTO, 2016) and UNCTAD, URGSP = 100*(GSP Received Imports)/(GSP Covered Imports), where "GSP received imports" refers to the value of imports (by preference-granting countries) that received GSP treatment, and "GSP covered imports" indicates the value of imports (by preference-granting countries), i.e., exports by beneficiary countries that are classified in tariff lines that are dutiable and covered by the GSP scheme of the preference-granting country. Detailed information about the dataset is available on the Internet at https://gsp.unctad.org/about. Values of the indicator "URGSP" are between 0 and 100, with higher values indicating a greater utilization rate of GSP programs.	United Nations Conference on Trade and Development (UNCTAD) Dataset: https://gsp.unctad.org/utilization.
UROTP	This is the indicator of the utilization rate of the other trade preferences than the GSP programs provided by QUAD countries to developing countries, including the least-developed countries among them. This indicator has been calculated using a formula similar to that used to compute the indicator "URGSP." The formula is written as follows, UROTP = 100*(Other-Preferential Imports)/(Other Preferential Covered Imports), where "Other-Preferential Imports" refers to the value of imports (by preference-granting countries) that benefitted from NRTPs other than GSP and under selected Economic Partnership Agreements into which the EU has entered with several African countries. In addition, "Other-Preferential Covered Imports" refers to the value of imports (by preference-granting countries) that are classified in tariff lines that are dutiable and covered by the other-preferential schemes. Detailed information about the dataset is available on the Internet at https://gsp.unctad.org/about. Values of the indicator "UROTP" range from 0 to 100, with higher values indicating a greater utilization rate of other trade preferences programs.	United Nations Conference on Trade and Development (UNCTAD) Dataset: https://gsp.unctad.org/utilization.
SHEXPPGC	This variable represents the share (in percentage) of a country's total exports to all preference-granting countries (i.e., QUAD countries) in a given year relative to this country's total merchandise exports.	Author's calculations based on data on countries' total exports to QUAD countries (in current US dollars) extracted from the UNCTAD dataset: https://gsp.unctad.org/utilization.
ECI	This is the economic complexity index. It reflects the diversity and sophistication of a country's export structure. It has been estimated using data connecting countries to the products they export and applying the methodology in Hausmann *et al*. (2014).	MIT's Observatory of Economic Complexity (https://oec.world/en/rankings/eci/hs6/hs96)
GCONS	This is the measure of the general government final consumption expenditure. It is the ratio (in percentage) of the general government final consumption expenditure to GDP.	Data on general government final consumption expenditures (% GDP) extracted from the WDI

TABLE A1—DEFINITION AND SOURCE OF VARIABLES (CONT'D)

Variables	Definition	Source
ODA	This is the 'transformed' real net disbursements of total Official Development Assistance, expressed in constant prices in 2018 US dollars. Here, "ODA1" represents the real net disbursements of total Official Development Assistance, expressed in constant prices in 2018 US dollars. As this variable displays high skewness, it has been transformed using the following formula (see Yeyati *et al*., 2007; Dabla-Norris *et al*., 2015): $\text{ODA} = sign(ODA1) * \log(1 + \lvert ODA1 \rvert)$, where $\lvert ODA1 \rvert$ refers to the absolute value of the variable "ODA1."	Author's computations based on data extracted from the database of the Organization for Economic Cooperation (OECD)
INFL	The variable "INFL" has been calculated using the following formula (e.g., Yeyati *et al*., 2007): $\text{INFL} = sign(INFLATION) * \log(1 + \lvert INFLATION \rvert)$ (2), where $\lvert INFLATION \rvert$ refers to the absolute value of the annual inflation rate (%), denoted by "INFLATION." The annual inflation rate (%) is based on the Consumer Price Index -CPI- (annual%) where missing values has been replaced with values of the GDP deflator (annual%).	Author's calculations based on data from the WDI
TERMS	This is the indicator of the terms of trade, as measured by the net barter terms of trade index (2000 = 100).	WDI
FDI	The variable represents the net inflows of foreign direct investment (in percentage of GDP).	WDI
TP	This is the indicator of trade policy, as measured by the trade freedom score. The latter is a component of the Economic Freedom Index. It is a composite measure of the absence of tariff and non-tariff barriers that affect the imports and exports of goods and services. The trade freedom score is graded on a scale of 0 to 100, with a rise in its value indicating lower trade barriers, i.e., higher trade liberalization, while a decrease in its value reflects rising trade protectionism.	Heritage Foundation (see Miller *et al*., 2021)
POP	This is the measure of the total population.	WDI

TABLE A2—DESCRIPTIVE STATISTICS FOR THE VARIABLES USED IN THE ANALYSIS

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
GROWTH	404	2.825	3.273	-9.571	27.902
URGSP	404	51.670	32.532	0.000	98.145
UROTP	404	34.279	36.595	0.000	97.130
SHEXPPGC	395	37.779	23.837	0.0072	99.318
ECI	404	-0.422	0.704	-2.352	1.190
TP	404	71.662	10.230	27.400	89.200
GCONS	404	13.386	3.941	3.964	26.254
ODA1	404	743,000,000	873,000,000	-852,000,000	6,880,000,000
INFL	404	7.362	9.568	-3.107	146.285
FDI	404	4.504	4.862	-11.196	42.331
TERMS	404	133.411	47.522	50.636	453.720
POP	404	65,400,000	204,000,000	1031486	1,390,000,000

TABLE A3—LIST OF COUNTRIES CONTAINED IN THE FULL SAMPLE

Albania	Georgia	Nicaragua
Algeria	Ghana	Niger
Angola	Guatemala	Nigeria
Argentina	Guinea	North Macedonia
Armenia	Haiti	Oman
Azerbaijan	Honduras	Pakistan
Bangladesh	India	Panama
Belarus	Indonesia	Paraguay
Benin	Iran, Islamic Rep.	Peru
Bolivia	Jamaica	Philippines
Bosnia and Herzegovina	Jordan	Saudi Arabia
Brazil	Kazakhstan	Senegal
Burkina Faso	Kenya	Sierra Leone
Cambodia	Kyrgyz Republic	Sri Lanka
Cameroon	Lao PDR	Sudan
Chad	Lebanon	Syrian Arab Republic
Chile	Liberia	Tanzania
China	Libya	Thailand
Colombia	Madagascar	Togo
Congo, Rep.	Malawi	Tunisia
Costa Rica	Malaysia	Turkey
Cote d'Ivoire	Mali	Turkmenistan
Croatia	Mauritania	Uganda
Dominican Republic	Mauritius	Ukraine
Ecuador	Mexico	Uruguay
Egypt, Arab Rep.	Moldova	Uzbekistan
El Salvador	Mongolia	Venezuela, RB
Equatorial Guinea	Morocco	Vietnam
Ethiopia	Mozambique	Zambia
Gabon	Myanmar	Zimbabwe

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