Effect of the Utilisation of Unilateral Trade Preferences on Foreign Direct Investment Flows to Beneficiary Countries

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Abstract

This article explores the effect of non-reciprocal trade preferences (NRTPs) offered by the QUAD countries to developing countries on the foreign direct investment (FDI) flows to these developing countries. The analysis uses an unbalanced panel dataset of 108 beneficiary countries of NRTPs over the period 2002–2019. By means of the two-step system Generalised Method of Moments estimator, it establishes that low utilisation rates of Generalised System of Preference (GSP) programmes are associated with greater FDI flows to less advanced beneficiary countries, including least developed countries (LDCs). However, high utilisation rates of GSP programmes induce greater FDI flows to advanced beneficiary countries, including Non-LDCs. In addition, low (high) utilisation rates of other trade preferences generate higher FDI flows to less advanced beneficiary countries (relatively advanced countries). The analysis also shows that GSP programmes and other trade preferences are strongly complementary in enhancing FDI inflows, especially for high utilisation rates of other trade preferences programmes. The utilisation of each of these two blocks of NRTPs generates greater FDI flows to countries that endeavour to export increasingly complex products, or those with lower dependence on natural resources. Finally, the utilisation of NRTPs generates higher FDI inflows to countries that substantially liberalise their trade regimes.

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Keywords: Utilisation of non-reciprocal trade preferences; Foreign Direct Investment inflows; QUAD countries; Beneficiary countries.

1. Introduction

The importance of foreign direct investment (FDI) inflows (as foreign capital to help fill the gap between savings and investments) for economic development in developing countries, is now well established in the literature (e.g. Gestrin 2014; Alfaro and Chauvin 2020). FDI flows are known to generate potential benefits[2] to host countries, including the facilitation of

technology transfer, the upgrade of skills (human capital), the positive spillovers to local firms and domestic investment, improvements in institutional and governance quality, job creation, and the enhancement of overall productivity, competitiveness and entrepreneurship, and its contribution to eradicating poverty through economic growth and development (e.g. UNCTAD 2002).

A voluminous literature has looked at the macroeconomic determinants of FDI inflows, and among those studies, some[3] have considered the effect of regional trade agreements (i.e. reciprocal trade agreements) on FDI inflows, notably considering the dramatic increase in regional trade agreements in the world in the last couple of decades (e.g. Acharya 2016; Hofmann *et al* 2019). However, scarce attention has been devoted to the effect of non-reciprocal trade preferences (henceforth, NRTPs) offered by wealthier nations to developing countries on the FDI flows to developing countries.

In fact, in parallel to the tremendous development of regional trade agreements (that involve countries of the same development level as well as of different development levels) around the world, wealthier nations also offer NRTPs to developing countries. The rationale for providing these NRTPs is enshrined in UNCTAD[4] Resolution 21 (II) adopted by member states of the UNCTAD at the second UNCTAD conference held in 1968. This Resolution called for the establishment of a 'generalised, non-reciprocal, non-discriminatory system of preferences[5] in favour of the developing countries, including special measures in favour of the least advanced among the developing countries' (see Grossman and Sykes 2005). The Resolution also provided that these preferences should 'increase export earnings for developing countries, promote industrialization and accelerate developing countries' rates of economic growth' (e.g. Bartels 2003, Grossman and Sykes 2005; Persson[6] 2015a). The Enabling Clause, also referred to as 'Differential and More Favourable Treatment, Reciprocity and Fuller Participation of Developing Countries' provides the legal basis for the supply of GSP schemes by wealthier countries to developing countries.

However, NRTPs are not limited to GSP schemes. They also include other non-reciprocal trade concessions provided by wealthier countries to specific developing countries, authorised by a special Waiver under the WTO Agreement[7] (see WTO 2010). For example, while the QUAD[8] countries provide GSP schemes (each country has its own GSP scheme) to developing countries, with specific concessions to least developed countries[9] (LDCs), Canada, the EU and the USA also provide specific trade concessions to selected developing countries.

The current article investigates the effect of the utilisation of NRTPs offered by the QUAD countries on FDI flows to beneficiary countries. As far as we are aware, Yannopoulos (1986, 1987) are among the scare studies that have discussed the effect of NRTPs[10] on FDI flows to beneficiary countries. These two studies have provided a theoretical discussion on the effect of NRTPs on FDI inflows, Yannopoulos (1986) has considered the cases of Tunisia, Morocco, Malta, Portugal as beneficiaries of the European Community's tariff preferences.

Based on a simple factual analysis (and not causal/evidence-based analysis), the author found mixed evidence of the effect of EC tariff preferences on FDI flows to these countries. Yannopoulos (1987) considered Malta, Mauritius, Tunisia, Morocco as beneficiaries of the European Community's tariff preferences and concluded, *inter alia*, that NRTPs can lead to investment creation/diversion effects, particularly when indigenous firms do not have the required informational assets to exploit the export opportunities generated by the NRTPs.

The present analysis focuses on two main blocks of NRTPs offered by the QUAD countries to developing countries, namely the GSP programmes, and other trade preferences (i.e. other NRTPs than the GSPs offered by the QUAD countries to selected developing countries). The focus on QUAD countries (rather than a larger number of wealthier preference-granting countries) is dictated by the availability of data. In fact, the article uses a unique set of data recently developed by UNCTAD on the utilisation of NRTPs by QUAD countries to perform the empirical analysis. To the best of our knowledge, this is the most comprehensive dataset available on the utilisation of NRTPs by beneficiary countries. While the WTO database on preferential trade arrangements also contains information that could allow us to compute data on the utilisation rate of NRTPs provided by developed countries (in the sense of the WTO), the time coverage of this dataset is smaller than the UNCTAD dataset.

The analysis is performed using an unbalanced panel covering 108 beneficiary countries of NRTPs offered by the QUAD countries, over the period 2002-2019. It uses the two-step generalised method of moments estimator to undertake the empirical work, and reveals interesting outcomes. First, the effect of the utilisation of NRTPs on FDI flows to beneficiary countries varies across countries, and depends on the type of NRTP (whether GSP programmes or other trade preferences regimes). Second, GSP programmes and other trade preferences are complementary in attracting FDI flows to beneficiary countries, notably when the utilisation of other trade preferences reaches high rates. Third, the utilisation of each of these two blocks of NRTPs induces greater FDI inflows as countries export increasingly complex/sophisticated products, or as their share of natural resources rents in GDP becomes lower. Fourth and finally, the usage of these two types of NRTPs promotes FDI flows to countries that substantially liberalise their trade regimes.

The rest of the paper is structured as follows. Section 2 presents a theoretical discussion on the effect of the utilisation of NRTPs on FDI flows to beneficiary countries. Section 3 presents the baseline model specification used in the analysis. Section 4 discusses the appropriate empirical method to perform the empirical analysis. Section 5 interprets estimations' results, and Section 6 concludes.

2. Theoretical discussion

Yannopoulos (1986) has argued that beneficiary countries' ownership-specific advantages (in particular low labour costs and other locational advantages)

matter significantly for attracting multinational firms, either from the preference-granting countries or from third countries that have export interests in the markets of preference granting countries. The type of FDI in which the multinational enterprise (MNE) will engage (i.e. either joint ventures, outwards processing, or branch plant development) in a beneficiary country of NRTPs would, in addition to the locational advantages of that country, depend on a variety of other factors. The latter include the preference margin, policies implemented by the government of the beneficiary country, the production capabilities of local firms (in the beneficiary country), the local availability of complementary inputs, the technology of production (i.e. the extent to which unskilled labour-intensive processes can be relocated elsewhere) and the market structure within which any multinational firm operates.

Yannopoulos (1987) has pointed out that two major factors determine the attraction of FDI inflows in a developing country when it becomes eligible and beneficiary of a NRTP. These factors are the type of skills and resources required to produce the additional or new exports induced by the availability of tariff preferences, and the extent to which the export expansion induced by the NRTPs requires a large proportion of inputs sourced from outside the beneficiary country.

Regarding the first factor, if the NRTP covers products concentrated in sectors that require a high level of marketing, management, or technological intensity of production, then the production for export under preferential tariffs would involve the use of specialised informational assets that are transferable through intra-firm mechanisms. In this case, a beneficiary country of this NRTP could attract MNEs, including in the sectors covered by the NRTP. Moreover, a country's comparative advantage can play a role in attracting FDI flows further to this country's eligibility to a NRTP. For example, Qiu (2003) has built on a trade-cum-FDI model that involves two countries (the FDI host country and the FDI source country) and two sectors (auto and textiles) in each country, to examine how comparative advantage in the FDI host country influences FDI flows to the host country. The author has found that the sector of comparative advantage of the host country attracts more FDI inflows than its sector of comparative disadvantage. Specifically, auto firms in the home country have less incentive to engage in FDI than textile firms, in that country. As a result, textile firms in the host country are more attractive to inward FDI.

Similarly, Alfaro and Charlton (2009) have used data on subsidiaries identified as vertical suppliers to their parents (at the two-digit level) and found, *inter alia*, that comparative advantage is a strong driver of vertical FDI, that is, low-skill activities tend to locate in low-skill countries. These findings suggest that as developing countries are often abundant in producing and exporting unskilled/or low-skilled, labour-intensive, or even less technological intensive products such as textile and clothing, they would likely attract more FDI in these sectors insofar as the latter are authorised for export under NRTPs. Thus, a low-income beneficiary country of a NRTP may attract more of FDI inflows if

it produces and exports products that are low-skilled, labour-intensive, or even less intensive in technology, and if those products enjoy a strong preference margin under the NRTP.

At the same time, even though such products use standardised technology, they usually require superior market knowledge and marketing skills when sold in markets (here preference granting – wealthier – countries' markets) where promotional levels, complexity of distribution channels, and other factors create marketing entry barriers, hence trade costs for the beneficiary countries. In these circumstances, there would be a small proportion of domestic specific information required to create efficient local production. Compared to indigenous firms, foreign firms would then be in a competitive advantage position in producing and exporting under the NRTP. Yannopoulos (1987) has postulated that the proportion of FDI flows originating from the preference-granting countries or from the third countries to the beneficiary country would be higher (compared to the situation prevailing before the introduction of the NRTP), the greater is the marking intensity of production in the sectors whose export activities have become profitable due to the NRTP.

Regarding the second factor), the costs of scanning international markets with a view to sourcing inputs are likely to be lower for MNEs than for indigenous firms in the beneficiary countries. It follows, therefore, that beneficiary countries of NRTPs would attract higher FDI inflows when the share of inputs to be purchased from outside the beneficiary country for producing exportable goods under the NRTPs tends to be larger (Yannopoulos 1987).

While the above discussion has provided an insight into the effect of eligibility to a NRTP on FDI flows to the beneficiary country, it does not provide clear guidance on the genuine effect of the effective utilisation of the NRTPs on FDI flows to the beneficiary countries. Nevertheless, building on this discussion, we can postulate that beneficiary countries of NRTPs (for example, low-income countries) that produce low-skilled/or labour-intensive products, would attract higher FDI inflows because such countries do not often have the requisite market knowledge and marketing skills to export their products in the preference granting countries. In this scenario, it could be expected that even a low utilisation rate of NRTPs in less advanced developing countries (e.g. low-income countries) that are abundant in low-skilled workers would experience higher FDI inflows (*Hypothesis 1*).

On the other hand, it is also possible that when the necessary conditions for international production are met in the beneficiary countries of NRTPs then foreign firms, either from the preference granting country or from third countries that have export interests in the market of preference granting countries, would have an incentive to harness the export opportunities offered by the NRTPs. This signifies that beneficiary countries (e.g. relatively advanced countries) that improve their utilisation of NRTPs would likely attract FDI flows (*Hypothesis 2*).

In particular, it could be expected that foreign firms aiming at engaging in FDI may choose to locate their plants in beneficiary countries of NRTPs that

have a certain level of productive structure sophistication, i.e. a certain level of productive knowledge and exclusive capabilities to produce increasing complex products. In the sense of Hausmann and Hidalgo (2009), such beneficiary countries have the advantage of producing high value-added, notably increasingly complex/sophisticated products, which could represent strong locational advantages for attracting FDI flows. In fact, an economy's level of social capital and its institutions' health can reflect the degree of sophistication of its productive structure (and hence, export structure) (Hartmann *et al* 2017). This is because the ability of people to form social and professional networks plays a critical role in the capacity of a country to produce sophisticated products (e.g. Fukuyama 1996; Hausmann 2016).

Sadeghi *et al* (2020) and Gómez-Zaldívar *et al* (2021) have demonstrated empirically[11] that increasingly complex (or sophisticated) economies attract higher FDI inflows. Mayer *et al* (2010) have established that there exists a significant 'home bias' in firms' decisions to engage in manufacturing investment in the host country: firms tend to set up new affiliates closed to existing affiliates within the same industrial group. In this scenario, we expect the countries that produce increasingly complex products would experience a greater utilisation of NRTPs (if those high value-added complex products are covered by the NRTPs[12] that they enjoy). In turn, a higher utilisation rate of NRTPs could help attract greater FDI inflows that aim to exploit the relatively sophisticated productive structure of the beneficiary country so as to export sophisticated goods under the NRTPs[13] concerned (*Hypothesis 3*).

That said, many factors can hinder the utilisation of NRTPs, and deter FDI flows to beneficiary countries. As noted above, being eligible for a NRTP does not necessarily mean utilising this opportunity. For example, developing countries may benefit from several NRTPs that can overlap, including in terms of products, which could lead them to make use of some NRTPs at the expense of others (e.g. Keck and Lendle 2012; Hakobyan 2015; Gnangnon and Iyer 2022;). Additionally, many factors can hinder the utilisation of NRTPs once beneficiary countries become entitled to benefit from these NRTPs. These factors include the preference erosion[14] that stems from both the greater liberalisation[15] of most favoured nation (MFN) tariffs (in particular since the creation of the WTO) and the end of multi-fibre agreement (e.g. Low *et al* 2009; Persson 2015b; Klasen *et al* 2021); domestic economic policies, including trade policies[16] and real exchange rate policies[17]; the limited supply response capacity of beneficiary countries (e.g. Low *et al* 2009; Prowse 2010; Gradeva and Martínez-Zarzoso 2016); inadequate product coverage (e.g. Low *et al* 2009; Persson 2015b); the existence of restrictive rules of origin as well as other compliance costs by the beneficiary countries when claiming a NRTP (e.g. Brenton and Özden 2009; WTO 2019); and the lack of certainty or stability of the improved market access brought about by the NRTP (e.g. Persson 2015b; Hakobyan 2020). For example, concerning the rules of origin, the literature has shown that restrictive 'preferential' rules of origin can constrain the benefits of

tariff preference margins (e.g. Cadot *et al* 2014) by leading to a misallocation of resources (e.g. Falvey and Reed 1998; Mattoo *et al* 2003) and ultimately undermining the utilisation of NRTPs (e.g. Hakobyan 2015; WTO 2019; Sytsma 2021).

The WTO (2019) has explored the rationale for the low rates of preference utilisation for several agricultural exports under many NRTPs, despite the simple feature of agricultural products, and the fact that these products are subject to simple rules of origin. Many factors appear to have a bearing on the NRTPs granted to agricultural products exported by beneficiary countries. These are the choice and design of origin criteria; the difficulties in complying with other origin requirements; and the deliberate choice by trading firms to refrain from claiming duty-free treatment under an NRTP, notably if other NRTPs are available; the existence of a low preferential tariff margin under the NRTP; or insufficient knowledge or lack of knowledge about the existence of trade preferences.

Regarding the uncertainty or instability that could be associated with a NRTPs, Persson (2015b) has argued that the improved access to foreign markets for beneficiary countries of NRTPs may be uncertain or unstable depending on whether the NRTPs are offered on a contractual basis or a unilateral basis by the preference granting country. NRTPs offered on a unilateral basis can be altered or withdrawn at short notice. This signifies that investors would have less incentive to efficiently allocate resources based on the preferential market access. In contrast, a NRTP that arises out of a negotiated agreement between two parties generally offers stable market access for at least a few years. This would reduce the risks for investors to invest in potential export sectors. In a similar spirit, Hakobyan (2020) has shown that the 2011 expiration of the GSP offered by the US on exports from developing countries has had a detrimental impact on developing countries' exports to the US. On average, further to this expiry beneficiary countries' exports fell, on average, by 3 per cent in 2011, and the magnitude of the decline in these exports increased in the tariff rates and in the utilisation rates of the GSP. In particular, developing countries' exports of agricultural products, as well as of textiles and clothing, fell respectively by 5 per cent and 9 per cent. Additionally, the adverse export effect of the 2011 expiration of the US GSP has been persistent over time, as exports did not fully recover by 2012.

Summing-up, these limiting factors of the utilisation of NRTPs could discourage foreign firms from engaging in FDI in the beneficiary countries of those NRTPs. For example, rules of origin discourage efficiency-seeking FDI when they prevent firms from sourcing inputs from the most efficient countries (UNCTAD 2002), and may limit FDI flows from third countries (that is, non-preference granting countries that have export interests in the market of preference granting countries) if there is a strong requirement for inputs to be sourced from preference granting countries (e.g. UNCTAD 2004; Cadot and de Melo 2008; Brenton and Özden 2009). In this scenario, a low utilisation rate of

NRTPs would result in lower FDI inflows (this confirms theoretically *Hypothesis 3* set out above). Overall, the direction of the direct effect of the utilisation rate of NRTPs on FDI inflows is unknown *a priori*, and would be determined in the empirical analysis. We shall test *Hypotheses 1 to 3* in the empirical analysis.

On another note, there may be an indirect effect of the usage on NRTPs on FDI inflows that can also depend on the trade policy implemented by the beneficiary countries. The effect of trade policy on FDI inflows has been the subject of an immense literature. Görg and Labonte (2012) have argued that restrictive trade policies lead to higher costs of import and export of intermediate and final goods for multinational firms' affiliates that are involved in global value chains. These costs, in turn, create uncertainty about trade openness and the institutional environment to potential investors. At the same time, it has been established that restrictive trade policies on output goods tend to attract horizontal FDI flows that seek to access the market of the host country without having to face trade barriers, including tariffs, and bear other trade costs such as transport costs, when exporting overseas. In contrast, trade policy liberalisation is positively associated with vertical FDI inflows (e.g. Markusen and Venables 1999; Asiedu 2006; Park and Park 2015).

Trade policy is a particularly important variable in the present study because trade policy liberalisation allows firms (domestic and foreign) in beneficiary countries of NRTPs to have access to a variety of intermediate inputs (e.g. Collier and Venables 2007; Cadot *et al* 2013). This permits access to external knowledge flows (e.g. Frenken *et al* 2007) and promotes innovation (e.g. Colantone and Crino 2014; Liu and Qiu 2016; Chen *et al* 2017). In turn, access to external knowledge flows and the improvement in innovation performance facilitate the entry into the export market for firms producing in industries (e.g. Bas 2012; Mukherjee and Chanda 2021), and are conducive to the upgrade of export product quality (e.g. Bas and Strauss-Kahn 2015; Feng *et al* 2016). Hence, a reduction in or elimination of trade barriers (including the liberalisation of tariffs) on intermediate inputs would not only increase the utilisation rates of NRTPs, but also induce greater inflows, and ultimately enhance the positive effect of the utilisation of NRTPs on FDI inflows. Summing-up, we not only expect that greater trade policy liberalisation can generate higher FDI inflows, but we also expect the positive effect of the utilisation of NRTPs to be further enhanced as beneficiary countries further liberalise their trade regimes (*Hypothesis 4*). We test this hypothesis as well in the empirical analysis.

3. Model Specification

The voluminous empirical literature on the macroeconomic determinants of FDI inflows has established that an increase in the market size (proxied for example, by the real per capita income) reflects a higher demand for goods and services in the host country, a higher return on the foreign investment and can therefore, drive in FDI flows (e.g. Cheng and Kwan 2000; Asiedu 2002; Moosa and Cardak 2006; Asiedu and Lien 2011). Another indicator of the market size

is the population size, an increase in which is also expected to generate higher FDI inflows (e.g. Chakrabarti 2001). A high endowment in natural resources can also exert a significant positive impact on FDI inflows, including resources seeking FDI inflows (e.g. Asiedu 2006; Anyanwu 2012), but deters FDI flows in the non-extractive industries (including the manufacturing sector) (e.g. Asiedu 2013). On another note, improvements in the institutional and governance quality such as reducing the levels of corruption and enhancing political stability, exert a positive effect on FDI inflows (e.g. Busse and Hefeker 2007; Jiang and Martek 2021;). Kuvvet (2021) has found that FDI can move to countries with high corruption, but where they have established both First Instance Court and Hybrid Court.

The literature on the effect of human capital accumulation on FDI inflows has reached inconclusive outcomes (e.g. Gnangnon 2022). For example, according to Markusen (2001), knowledge capital plays a critical role in attracting FDI flows. Reiter and Steensma (2010) have found that an improvement in human capital results in greater FDI inflows when the level of corruption is low. Moreover, an accumulation of human capital can attract FDI flows when FDI policy restricts the entry of foreign investors in some economic sectors, and discriminates against foreign investors relative to domestic investors. Many other studies have reported a positive effect of the education level, which is one aspect of human capital, on FDI inflows (e.g. Kim and Park 2007; Cleeve *et al* 2015). Other studies have considered the second aspect of human capital, i.e. the health aspect, and reported that a workforce in a good health is likely to be highly productive, and hence attract higher FDI inflows, as multinational firms involved in FDI would enjoy lower production costs and higher profitability (e.g. Asiedu *et al* 2015; Ghosh and Francesco 2015). Economic complexity has been found as an important determinant of FDI inflows (e.g. Sadeghi *et al* 2020; Gómez-Zaldívar *et al* 2021) (see discussion in Section 2).

The literature has also underlined that a country's real exchange rate movements can influence the flows of FDI to that country. According to Trevino *et al* (2008), the absence of a stable, well accepted currency could act as a barrier to FDI inflows, and exchange rate depreciation in the host-country creates both problems and opportunities for MNEs. On the positive side, an overvalued foreign exchange provides MNEs with the opportunity of acquiring host countries' production facilities. On the negative side, exchange rate depreciation requires multinationals to bear the costs associated with the management of risks inherent in a depreciating (devaluing) currency. According to Tolentino (2010), exchange rates can affect FDI through two basic channels: the wealth effect channel and the relative production cost channel. Regarding the wealth effect channel, currency depreciation leads to an improvement in the relative wealth of foreign investors compared to domestic investors. As foreign investors measure capital in foreign currency, an exchange rate depreciation in the host country makes all production inputs, such as labour,

land, machines, and assets in the host country cheaper. This encourages foreign investors to acquire more domestic assets. As for the relative production cost channel, a depreciation of the host country's currency reduces local production, which increases the costs in terms of foreign currency, and consequently raises the profit of export oriented FDI. Hence, higher returns naturally attract further FDI inflows.

According to Kish and Vasconcellos (1993), the relationship between the host-country's exchange rate and FDI inflows may not be as straightforward as described above. As a country's currency strengthens, the future profits to be repatriated from the acquiring firms' subsidiary will have a lower discounted value. This argument is consistent with the one that the nominal return that an asset generates in foreign currency matters more than the price of the asset (McCulloch 1989). From the empirical perspective, Caves (1989), Froot and Stein (1991), Klein and Rosengren (1994), and Gross and Trevino (1996) have provided empirical evidence that the host-country's exchange rate depreciation is positively associated with FDI flows in this country. Trevino (2008) has, however, found no significant effect of currency valuation on FDI flowing to Latin America, while Boateng *et al* (2015) have produced empirical evidence of a positive effect of an appreciation in the Norwegian currency on FDI flows into Norway. Against this background, we can expect that a depreciation of the real exchange rate in the beneficiary country of a NRTP (i.e. the host country of FDI inflows) to exert a positive effect on FDI flows to that country.

Building on the foregoing discussion, including on many of the studies on the macroeconomic determinants of FDI inflows that have relied on dynamic model specifications to perform their empirical analysis (e.g. Busse and Hefeker 2007; Asiedu *et al* 2015; Canh *et al* 2020; Sadeghi *et al* 2020; Gnangnon 2022), we postulate the following baseline model:

$$FDI_{it} = \alpha_0 + \alpha_1 FDI_{it-1} + \alpha_2 URGSP_{it} + \alpha_3 UROTP_{it} + \alpha_4 Log(GDPC)_{it} + \alpha_5 ECI_{it} + \alpha_6 HUM_{it} + \alpha_7 TP_{it} + \alpha_8 Log(REER)_{it} + \alpha_9 INST_{it} + \alpha_{10} RENT_{it} + \alpha_{11} Log(POP)_{it} + \vartheta_i + \gamma_t + \tau_{it} \quad (1)$$

where i and t represent respectively a given beneficiary country of NRTPs, and the time-period. The analysis has used an unbalanced panel dataset that contains 108 beneficiary countries of NRTPs over the period 2002–2019, and which has been built based on data available. Following previous studies, we average data on variables over non-overlapping sub-periods. This helps to avoid modelling cyclical effects of regressors on the dependent variable, but also to mitigate the problem of missing data, and reduce the measurement errors related to variables introduced in model (1). In particular, we have used six non-overlapping sub-periods of 3-years, 2002–2004, 2005–2007, 2008–2010, 2011–2013, 2014–2016 and 2017–2019. α_0 to α_{11} are parameters to be estimated. ϑ_i represent time invariant effects specific to each country; γ_t are time dummies that capture global shocks that had affected FDI inflows to countries, taken together. τ_{it} is an idiosyncratic error-term.

The dependent variable 'FDI' is the transformed indicator of the share (in per cent) of net FDI inflows to GDP. Given the skewed distribution of the indicator of the share (in per cent) of net FDI inflows to GDP (denoted 'FDI1'), it has been transformed as follows (see Yeyati *et al* 2007): FDI = *sign*(FDI1) * log(1 + |FDI1|) (2), where |FDI1| refers to the absolute value of the variable 'FDI1'. The one-period lag of 'FDI' has been introduced in model (1) to capture the state dependence nature of FDI inflows.

The variable "URGSP" is our first regressor of interest in the analysis. It represents the "transformed" indicator of the utilisation rate of unilateral trade preferences under the GSP schemes provided by the QUAD countries (see online Appendix 1 for more details on the indicator of the utilisation rates of GSP programmes). The original indicator of the utilisation rates of the GSP programmes, denoted 'URGSP1' range between 0 and 100, with higher values indicating a greater utilisation rate of GSP programmes. Given its skewed distribution, it has been transformed using the same formula as above: URGSP = *sign*(URGSP1) * log(1 + |URGSP1|) (2), where |URGSP1| refers to the absolute value of the variable 'URGSP1'.

The variable 'UROTP' is our second variable of interest in the analysis. It is the 'transformed' indicator of the utilisation rate of trade preferences other than the GSP programmes provided by the QUAD countries to developing countries (see online Appendix 1 for detailed information. The original indicator of the utilisation rates of the other trade preferences, denoted 'UROTP1' ranges between 0 and 100, with higher values indicating a greater utilisation rate of these other trade preferences. Given its skewed distribution, it has also been transformed in the following way: UROTP = *sign*(UROTP1) * log(1 + |UROTP1|) (2), where |UROTP1| refers to the absolute value of the variable 'UROTP1'.

The variables 'URGSP' and 'UROTP' have been simultaneously introduced in model (1) to account for the fact that many beneficiary countries can enjoy several NRTPs, which in addition overlap, in terms of product coverage (e.g. Keck and Lendle 2012; Hakobyan 2015; Gnangnon and Iyer 2022).

The market size of the beneficiary countries is measured by real per capita income ('GDPC') and population size ('POP'). They have been logged (using natural logarithms) to reduce their skewness. The regressors 'ECI', 'HUM' and 'TP' are respectively the indicators of economic complexity, human capital, and trade policy. The variable 'REER' is the real effective exchange rate computed using 66 trading partners. Higher values of this variable indicate an appreciation of the real effective exchange rate, i.e. an appreciation of the home currency against the basket of currencies of trading partners. We have also applied the natural logarithm to this variable to limit its skewed distribution. Finally, the variables 'INST' and 'RENT' are respectively the indicator of the institutional and governance quality, and the share of natural resource rents in GDP, which is a proxy for countries' dependence on natural resources. It is worth noting that to ease interpretation of empirical results, the variables 'TP' and 'RENT'

whose values range between 0 and 100, have been re-scaled (divided by 100), so that their values now range between 0 and 1.

The definition and source of all variables included in model (1) are presented in online Appendix 1. Online Appendix 2 reports the descriptive statistics on all these variables, and online Appendix 3 shows the list of countries used in the full sample, and in the sub-sample of LDCs that we shall also use later in the analysis. The data analysis on the development of indicators of the utilisation rate of GSP programmes and other preferences and FDI inflows, as well as on the correlation pattern between these indicators, are provided in the working paper version of the current paper (see Gnangnon 2021).

4. Empirical Method

In line with many previous studies cited above on the macroeconomic determinants of FDI inflows (e.g. Busse and Hefeker 2007; Asiedu *et al* 2015; Canh *et al* 2020; Sadeghi *et al* 2020; Gnangnon 2022), we use the two-step system GMM estimator of Arellano and Bover (1995) and Blundell and Bond (1998). This estimator is particularly suitable for dynamic panel datasets with a small time dimension and a large cross-section dimension, which is the case in the present study. The two-step system GMM estimator generates consistent and more efficient estimates than the difference-GMM estimator (of Arellano and Bond 1991) (e.g., Arellano and Bover 1995; Blundell and Bond 1998) (see Gnangnon 2021 for details on the rationale concerning the use of this estimator).

The two-step system GMM estimator helps to address the omitted variable bias. Concerning the latter, the use of the one-period lag of the dependent variable helps to overcome the omission in the baseline model of the utilisation rates of NRTPs offered by wealthier countries other than the QUAD countries (see Gnangnon 2021). In using the two-step system GMM estimator to estimate the baseline model (1) and all its variants described below, we have treated all regressors (apart from population size) as endogenous (given the reverse causality problem), and considered the population size as exogenous. The utilisation of the two-step system GMM estimator involves estimating a system of equations, which comprises an equation in differences and an equation in levels. In this system, the lagged first differences variables are used as instruments for the levels equation, and the lagged levels of variables are used as instruments for the first-difference equation.

The correctness of the different specifications of model (1) estimated is assessed using several diagnostic tests. These are the Arellano-Bond test of the presence of first-order serial correlation in the first-differenced error term (denoted AR(1)); the Arellano-Bond test of absence of second-order autocorrelation in the first-differenced error term (denoted AR(2)); and the Sargan/Hansen test of over-identifying restrictions (OID). The specifications of model (1) are correctly estimated using the two-step system GMM approach if we do not reject the null hypothesis for the AR(1) test[18]; if we do not reject the null hypotheses associated with the AR(2) test[19], as well as the null hypothesis

of the OID test[20] of over-identifying restrictions. Lastly, we ensure that the number of instruments is less than the number of countries, otherwise the diagnostic tests described above may become powerless (e.g. Roodman 2009). In this regard, the estimations of the different specifications of model (1) use a maximum of 3 lags of the dependent variable as instruments, and 2 lags of endogenous variables as instruments.

Finally, it is worth emphasising that the econometric literature (e.g. Bond *et al* 2001) has shown that if model (1) is correctly specified, the two-step system GMM estimator should yield a coefficient of the lagged dependent that lies between the estimate (associated with the lagged dependent variable) obtained from the fixed effects estimator, and the estimate (associated with the lagged dependent variable) obtained from the POLS estimator. For these reasons, we also report the outcomes of the estimation of model (1) using both the POLS and within fixed effects estimators[21]. These outcomes, which would be compared to those of the two-step system GMM estimator, are presented in columns [1] and [2] of Table 1. Column [3] of the same table contains the outcomes arising from the estimation of model (1) using the two-step system GMM estimator.

The other result tables contain estimates obtained by estimating different specifications of model (1) using the two-step system GMM approach. Specifically, we report in column [1] of Table 2 the outcomes that help to examine the effect of the utilisation of each of the two blocks of NRTPs (GSP programmes and other trade preferences) on FDI inflows. These outcomes are uncovered by estimating a first specification of model (1) that includes the interaction between the 'LDC' dummy and the variables capturing the utilisation rate of GSP programmes on the one hand, and the interaction between the same dummy variable and the variable representing the utilisation rate of other trade preferences. The 'LDC' dummy takes the value 1 for LDCs, and 0, otherwise.

Next, we estimate a second specification of model (1) that includes the interaction between real GDP per capita variable and each of the indicators of the utilisation rate of NRTPs (GSP programmes and other trade preferences). The results of this estimation are presented in column [2] of Table 2. These outcomes allow examining how the effect of the utilisation of NRTPs on FDI inflows varies across countries in the full sample. These outcomes could complement the ones obtained as 'averages' over the sub-sample of LDCs and Non-LDCs (see results in column [1] of Table 2).

We move on to examine how both blocks of NRTPs interact in affecting FDI inflows. Ee are seeking to see whether FDI flows to beneficiary countries of NRTPs increase when the countries make simultaneous use of both GSP programmes and other trade preferences, in which case GSP programmes and other trade preferences would be complementary in attracting higher FDI inflows. On the other hand, it is possible that these two blocks of NRTPs are substitutes in in the effects on FDI inflows. In this case, foreign firms will have an incentive to locate their activities in countries that make use of one block of

Table 1: Effect of the Utilisation of NRTPs on FDI inflows

Estimators: POLS, Within Fixed Effects, and Two-Step System GMM

	POLS	*Within Fixed Effects*	*Two-Step System GMM*
Variables	FDI	FDI	FDI
	(1)	(2)	(3)
FDI_{t-1}	0.523***	–0.114	0.0800***
	(0.0584)	(0.110)	(0.0196)
URGSP	0.0252	0.0476***	0.0700***
	(0.0168)	(0.0169)	(0.0125)
UROTP	–0.0118	–0.00334	–0.0337***
	(0.0204)	(0.0136)	(0.0121)
Log(GDPC)	–0.140***	0.294***	–0.494***
	(0.0161)	(0.100)	(0.0383)
ECI	–0.0154	0.105	–0.00237
	(0.0236)	(0.171)	(0.0801)
HUM	0.102**	–0.467***	0.412***
	(0.0419)	(0.146)	(0.0649)
TP	–0.373	0.169	2.647***
	(0.319)	(0.467)	(0.409)
Log(REER)	–0.417***	–0.174*	–0.197**
	(0.121)	(0.0959)	(0.0926)
INST	0.161***	0.0861**	0.295***
	(0.00866)	(0.0391)	(0.0335)
RENT	0.428**	2.532***	2.204***
	(0.201)	(0.349)	(0.279)
Log(POP)	–0.0392**	–0.205	0.00323
	(0.0152)	(0.243)	(0.0237)
Constant	4.468***	4.093	3.179***
	(1.051)	(4.050)	(0.743)
Observations - Countries	493 - 108	493 - 108	493 - 108
R-squared	0.407		
Within R-squared		0.096	
AR1 (P-Value)			0.0357
AR2 (P-Value)			0.3509
AR3 (P-Value)			0.7939
Hansen (P-Value)			0.429

Note: *p-value<0.1; **p-value<0.05; ***p-value<0.01. Robust standard errors are in parentheses. Robust Standard Errors are in parentheses. Time dummies have been included in the regressions. For the regression based on the two-step system GMM estimator, the variables "URGSP", "UROTP", "GDPC", "ECI", "HUM", "REER", "TP", "RENT", "INST" and the interaction variables have been treated as endogenous. The variable "POP" has been treated as exogenous. The regression based on the two-step system GMM estimator has used a maximum of 3 lags of the dependent variable as instruments, and 2 lags of endogenous variables as instruments.

Table 2: Effect of the Utilisation of NRTPs on FDI inflows

Estimator: Two-Step System GMM

Variables	*FDI* (1)	*FDI* (2)
FDI_{t-1}	0.143***	0.0991***
	(0.0132)	(0.0154)
URGSP	0.0444***	–0.268***
	(0.00828)	(0.0470)
UROTP	–0.0244***	–0.602***
	(0.00913)	(0.0551)
URGSP*LDC	–0.0528***	
	(0.0109)	
UROTP*LDC	–0.102***	
	(0.0128)	
URGSP*[Log(GDPC)]		0.0379***
		(0.00526)
UROTP*[Log(GDPC)]		0.0688***
		(0.00642)
Log(GDPC)	–0.543***	–0.777***
	(0.0245)	(0.0294)
ECI	–0.0447	0.0243
	(0.0427)	(0.0505)
HUM	0.458***	0.422***
	(0.0501)	(0.0582)
TP	0.664***	2.009***
	(0.237)	(0.240)
Log(REER)	–0.554***	–0.231***
	(0.0436)	(0.0719)
INST	0.299***	0.358***
	(0.0210)	(0.0183)
RENT	1.797***	2.334***
	(0.150)	(0.178)
Log(POP)	–0.0157	–0.0172
	(0.0163)	(0.0201)
Constant	7.084***	6.576***
	(0.397)	(0.589)
Observations - Countries	493 - 108	493 - 108
AR1 (P-Value)	0.0363	0.0319
AR2 (P-Value)	0.2911	0.2998
AR3 (P-Value)	0.6455	0.6877
Hansen (P-Value)	0.562	0.436

Note: *p-value<0.1; **p-value<0.05; ***p-value<0.01. Robust standard errors are in parentheses. The variables "URGSP", "UROTP", "GDPC", "ECI", "HUM", "REER", "TP", "RENT", "INST" and the interaction variables have been treated as endogenous. The variable "POP" has been treated as exogenous. Time dummies have been included in the regressions. The latter have used a maximum of 3 lags of the dependent variable as instruments, and 2 lags of endogenous variables as instruments.

Table 3: Effect of the Utilisation of NRTPs on FDI inflows

Estimator: Two-Step System GMM

Variables	*FDI (1)*	*FDI (2)*	*FDI (3)*	*FDI (4)*
FDI_{t-1}	0.115***	0.112***	0.120***	0.168***
	(0.0177)	(0.0151)	(0.0135)	(0.0148)
URGSP	0.0382**	0.0433***	0.0855***	–0.329***
	(0.0151)	(0.00621)	(0.00909)	(0.0582)
UROTP	–0.0743***	–0.0151	0.118***	–0.781***
	(0.0195)	(0.00916)	(0.00886)	(0.0614)
URGSP*UROTP	0.0175***			
	(0.00565)			
URGSP*ECI		0.0455***		
		(0.00797)		
UROTP*ECI		0.0387***		
		(0.00900)		
URGSP*RENT			–0.155***	
			(0.0432)	
UROTP*RENT			–0.942***	
			(0.0603)	
URGSP*TP				0.469***
				(0.0783)
UROTP*TP				1.044***
				(0.0822)
Log(GDPC)	–0.575***	–0.411***	–0.552***	–0.430***
	(0.0284)	(0.0223)	(0.0241)	(0.0250)
ECI	0.0706	–0.474***	–0.247***	–0.0803*
	(0.0592)	(0.0571)	(0.0301)	(0.0482)
HUM	0.481***	0.487***	0.731***	0.492***
	(0.0444)	(0.0441)	(0.0436)	(0.0572)
TP	1.841***	1.606***	1.714***	–2.542***
	(0.380)	(0.269)	(0.270)	(0.322)
Log(REER)	–0.232***	–0.233***	–0.216***	–0.342***
	(0.0739)	(0.0871)	(0.0689)	(0.0682)
INST	0.295***	0.346***	0.354***	0.270***
	(0.0208)	(0.0197)	(0.0317)	(0.0179)
RENT	2.189***	1.433***	4.347***	1.530***
	(0.185)	(0.155)	(0.264)	(0.170)
Log(POP)	–0.0325	–0.00864	–0.0532***	–0.0963***
	(0.0211)	(0.0231)	(0.0180)	(0.0124)
Constant	5.075***	3.671***	4.208***	8.677***
	(0.649)	(0.731)	(0.477)	(0.413)
Observations - Countries	493 - 108	493 - 108	493 - 108	493 - 108
AR1 (P-Value)	0.0386	0.0397	0.0376	0.0314
AR2 (P-Value)	0.3139	0.3422	0.2777	0.2278
AR3 (P-Value)	0.7054	0.8778	0.7749	0.7364
Hansen (P-Value)	0.551	0.704	0.458	0.293

Note: *p-value<0.1; **p-value<0.05; ***p-value<0.01. Robust standard errors are in parentheses. The variables "URGSP", "UROTP", "GDPC", "ECI", "HUM", "REER", "TP", "RENT", "INST" and the interaction variables have been treated as endogenous. The variable "POP" has been treated as exogenous. Time dummies have been included in the regressions. The latter have used a maximum of 3 lags of the dependent variable as instruments, and 2 lags of endogenous variables as instruments.

NRTP at the expense of the other. This may be the case if, for example, one block of NRTPs (let us say GSP programmes) offers less generous preferential treatment than the other block of trade preferences (in this case, other trade preferences). For example, for a beneficiary country that enjoys both a GSP regime and other trade preference (e.g. the African Growth and Opportunity Act scheme), rules of origin may be more stringent for utilising GSP programmes than for utilising the other trade preference. In this case, trading firms in the beneficiary country will be inclined to make more use of the other trade preference than the GSP programme, and foreign firms aiming to engage in FDI in the beneficiary country of the NRTPs will also likely wish to harness the opportunities offered by the trade preference other than the ones from the GSP programmes.

To assess whether GSP programmes and other trade preferences are complementary or substitutes in influencing FDI inflows, we estimate a third specification of model (1) that contains the interaction between the variables 'URGSP' and 'UROTP'. The results of the estimation of this specification of model (1) are displayed in column [1] of Table 3. Column [2] of Table 3 contains outcomes that test *Hypothesis 3*, i.e. whether (and if so to what extent) the effects of the utilisation of GSP programmes and the utilisation of other trade preferences on FDI inflows depend respectively on the level of economic complexity (sophistication) of the beneficiary countries of NRTPs. These outcomes are obtained by estimating a fourth specification of model (1) that contains the interaction between each indicator of the utilisation rate of NRTPs and the economic complexity indicator. To check the validity of these outcomes, we estimate a fifth specification of model (1) in which we include the interaction between the variable capturing the countries' dependence in natural resources (i.e., the variable representing the share of natural resource rents in GDP) and each of the indicators of the utilisation of NRTPs.

The outcomes of the estimation of this fifth specification of model (1) are reported in column [3] of Table 3. We expect that these outcomes run in the opposite direction to the ones reported in column [2] of the same table. This is simply because countries with greater economic complexity exhibit less dependence on natural resource extraction (e.g. Nguyen *et al* 2020). Thus, in contrast with what is stated in *Hypothesis 2*, we would expect here that countries that are highly dependent on natural resources would likely experience lower levels of economic complexity, as less knowledge and capabilities would be embedded in their export products, that are likely to be of low value-added. As MNEs would aim to take advantage of NRTPs that have the purpose of expanding the manufacturing base of beneficiary countries, beneficiary countries with high dependence on natural resources would likely experience lower FDI inflows (e.g. Asiedu 2013). Therefore, we expect that the utilisation of NRTPs (either GSP programmes or other trade preferences) would negatively affect FDI inflows as the share of natural resource rents in GDP increases.

Finally, we estimate a sixth specification of model (1) with a view to testing *Hypothesis 4*, whereby the greater the trade policy liberalisation, the higher is the magnitude of the positive effect of the utilisation of NRTPs (GSP programmes or other trade preferences) on FDI inflows. This specification of model (1) contains the interaction between the variable measuring trade policy (i.e., the variable "TP") and each of the indicators of the utilisation of NRTPs. The outcomes of the estimation of this specification of model (1) are provided in column [4] of Table 3.

5. Empirical Results

The estimation outcomes reported in Table 1 suggest that for the results based on the POLS estimator (see column [1]) and the two-step system GMM estimator (see column [3]), the coefficient of the one-period lag of the dependent variable is positive and significant at the 1 per cent level. As expected, this coefficient obtained by means of the POLS estimator (0.52) is far higher than the one obtained when using the two-step system GMM estimator (0.08). Incidentally, the coefficient of the one-period lag of the dependent variable obtained when using the within fixed effects estimator (see column [2]) is negative (-0.11) but not statistically significant at conventional significance levels. This means that it is effectively zero.

Before turning to estimates in Tables 1 to 3, it is worth examining the outcomes of the diagnostic tests that help to assess the correctness of all specifications of model (1) estimated using the two-step system GMM estimator. The outcomes of these diagnostic tests are reported at the bottom of column [3] of Table 1 and at the bottom of all columns of Tables 2 and 3. We find that all specifications of model (1) successfully pass the diagnostic tests. In addition, the coefficients of the one-period lag of the dependent variable in these columns of Tables 1 to 3 are all positive and significant at the 1 per cent level, thereby suggesting that the variable capturing the FDI inflows (as a share of GDP) exhibits a state dependence path, whereby the inward FDI-to-GDP ratio in the period t-1 is positively and significantly associated with the inward FDI-to-GDP ratio in period t. Incidentally, we find, as expected, that the coefficients of the one-period lag of the dependent variable obtained by the use of the two-step system GMM estimator in column [3] of Table 1 as well as in all columns of Table 2 and 3, lie between the coefficient (which amounts to 0) of this variable obtained by means of the within fixed effects estimator (see column [2] of Table 1), and the coefficient (0.52) of the same variable obtained by means of the POLS estimator (see column [1] of Table 1). All these outcomes show that all variants of model (1) estimated by the two-step system GMM estimator, and whose results are reported in column [3] of Table 1, and in Tables 2 and 3, are correctly specified, and that the two-step system GMM estimator is well suited to perform the empirical analysis.

Turning to the estimates of other variables in Table 1, including those of our variables of interest, we note from the results based on the POLS estimator (see

column [1]) that there is no significant effect (at conventional significance levels) of the utilisation rate of NRTPs (both the GSP programmes and other trade preferences) on FDI inflows. However, results in column [2] (the ones based on the within fixed effects estimator) indicate a positive and significant effect (at the 1 per cent level) of the utilisation rate of GSP programmes on FDI inflows. At the same time (still based on results in column [2] of Table 1), we obtain that at the conventional significance levels, there is no significant effect of the utilisation of other trade preferences on FDI inflows.

On the other hand, results based on the two-step system GMM estimator (see column [3] of Table 1) indicate that the utilisation of GSP programmes is positively and significantly associated (at the 1 per cent level) with FDI inflows, while the utilisation of other trade preferences is negatively and significantly associated (at the 1 per cent level) with FDI inflows. These outcomes suggest that foreign firms that engage in FDI in the beneficiary countries of NRTPs tend to locate in countries that make good use of the GSP programmes (confirming *Hypothesis 2*), or in countries that make less use of other trade preferences, i.e. where the utilisation rate of other trade preferences is low (confirming *Hypothesis 1*). In other words, the higher the utilisation rate of GSP programmes, the greater are FDI flows to beneficiary countries; and the lower the utilisation rate of other trade preferences, the higher are the FDI flows to the beneficiary countries.

As also emphasised above, these outcomes may reflect differentiated effects of the utilisation of NRTPs (GSP programmes or other trade preferences) across sub-samples (for example here, LDCs versus Non-LDCs) as well as across countries in the full sample. Results in Table 2 would allow us to verify these hypotheses but, in the meantime, it is useful to consider the magnitude of the effects. We note, based on results in column [3] of Table 1, that a 1 per cent increase in the utilisation rate of GSP programmes is associated with a 0.07 per cent increase in the ratio of FDI inflows to GDP. Likewise, a 1 per cent fall in the utilisation rate of other trade preferences programmes is associated with a 0.034 per cent increase in the ratio of FDI inflows to GDP. It additionally appears that the coefficient of the variable "URGSP" in column [3] of Table 1 is almost the double of the one in column [2] of the same table (i.e., the one based on the within fixed effects estimator).

With respect to estimates associated with control variables, we obtain from the results based on the POLS estimator (see column [1] of Table 1) that at least at the 5 per cent level, real per capita income and population size exert a negative and significant effect on FDI inflows, the development of human capital and real exchange rate depreciation influence positively and significantly FDI inflows. Finally, institutional and governance quality and the dependence on natural resources are positively and significantly associated with higher FDI inflows. The other variables exert no significant effect on FDI inflows at conventional significance levels. Estimates in column [2] of Table 1 indicate that, at least at the 5 per cent level, FDI inflows are positively driven by an

increase in real GDP per capita, a lower human capital development, an improvement in the institutional and governance quality, and a rise in the share of natural resources in GDP. The coefficients of the other variables are not significant at the 5 per cent level. As noted above, estimates in columns [1] and [2] are likely biased as a result of the endogeneity concerns highlighted above. This leads us to consider estimates of control variables obtained by means of the two-step system GMM estimator.

We find from column [3] of Table 1 that, at the 1 per cent level, real per capita income is negatively and significantly associated with FDI inflows. This negative effect may suggest the existence of an interaction effect between each of the indicators of the utilisation rates of NRTPs and real per capita income on FDI inflows. Among other controls, human capital development, trade policy liberalisation, a depreciation of the real exchange rate, an improvement in the institutional and governance quality, and a higher share of natural resource rents in GDP, are all positively and significantly (at least at the 5 per cent level) associated with FDI inflows. Population size and economic complexity exert no significant effect on FDI inflows at conventional significance levels. Similar results are found in Tables 2 and 3.

Outcomes in column [1] of Table 2 show that the coefficients of the interaction variables are negative and significant at the 1 per cent level, thereby suggesting that the utilisation of GSP programmes on the one hand, and the utilisation of other trade preferences on the other hand, exert a higher negative effect on FDI flows to LDCs than on FDI flows to Non-LDCs. The net effects of the utilisation of GSP programmes on FDI flows to LDCs and Non-LDCs amount respectively to -0.008 (= 0.0444 - 0.0528) and 0.044. Hence, lower utilisation rates of GSP programmes increase FDI flows to LDCs (which confirms *Hypothesis 1*), while improvements in the utilisation rate of GSP programmes induce greater FDI flows to Non-LDCs (this confirms *Hypothesis 2*). Likewise, the net effects of the utilisation of other trade preference programmes on FDI flows to LDCs and Non-LDCs amount respectively to -0.126 (= -0.0244 - 0.102) and -0.0244. It, therefore, follows that beneficiary countries of other trade preferences attract higher FDI flows when they make less use of these programmes, and LDCs (among them) experience higher FDI inflows than Non-LDCs.

Turning to column [2] of Table 2, we find that the coefficients of the interaction variables ('URGSP*[Log(GDPC)]') and ('UROTP*[Log(GDPC)]') are positive and significant at the 1 per cent level, while the coefficients of the variables 'URGSP' and 'UROTP' are negative and significant at the 1 per cent level. We conclude that the utilisation of NRTPs (GSP programmes and other trade preferences) exerts a positive effect on FDI inflows as countries' real per capita income rises, and in particular when the real per capita income exceeds a certain level. Specifically, the utilisation of GSP programmes exerts a positive effect on FDI inflows in countries whose real per capita income is higher than US$1177.6 [= exponential (0.268/0.0379)] (i.e. relatively low-income countries), and for these countries, the higher the real per capita income, the higher is the

magnitude of the positive effect of the utilisation rate of GSP programmes on FDI inflows. These findings support *Hypothesis 2,* and additionally align with the earlier findings, whereby FDI flows increase in Non-LDCs when their utilisation rate of GSP programmes rises. In contrast, for countries whose real per capita income is lower than US$1177.6, it is rather a lower utilisation rate of GSP programmes that induces greater FDI inflows. This finding supports *Hypothesis 1,* and is consistent with the earlier finding, whereby a low usage rate of GSP programmes induces greater FDI flows to LDCs.

We also see column [2] of Table 2 that the utilisation of other trade preferences exerts a positive effect on FDI inflows in countries whose real per capita income exceeds US$6310.7 [=exponential (0.602/0.0688)]. Thus, for countries whose real per capita income is lower than US$6310.7, the fall in the utilisation rate of other trade preferences exerts a positive effect on FDI inflows, and the lower the utilisation rate of these trade preferences, the greater are FDI inflows. Conversely, countries whose real per capita income exceeds US$6310.7, experience a positive effect of the utilisation rate of other trade preferences on FDI inflows, and the higher this rate, the greater are the FDI inflows.

We now consider the outcomes in Table 3. The results in column [1] of this table indicate that the interaction term of the variable 'URGSP*UROTP' is positive and significant at the 1 per cent level. At the same time, the coefficient of 'URGSP' is positive and significant at the 5 per cent level, and the coefficient of 'UROTP' is negative and significant at the 1 per cent level. Based on these outcomes, we infer that for a given rate of the utilisation of other trade preferences, GSP programmes and other trade preferences regimes are consistently complementary in positively affecting FDI inflows when the utilisation rate of GSP programmes rises. The degree of this complementarity increases as the utilisation rate of GSP programmes increases. Likewise, holding the utilisation rate of GSP programmes constant, the usage of other trade preferences and GSP programmes are complementary in positively affecting FDI inflows when the utilisation rate of other trade preferences exceeds approximately 69.8 per cent [(= exponential (0.0743/0.0175)], and the greater this rate, the higher is the level of complementarity between these two blocks of NRTPs in driving in FDI flows. Overall, these outcomes suggest that GSP programmes and other trade preferences are strongly complementary in attracting FDI flows to beneficiary countries, notably when the rate of usage of other trade preferences exceeds 69.8 per cent. The degree of this complementarity increases as the utilisation rate of other trade preferences (at least from 69.8 per cent) rises, or/and as the utilisation rate of GSP programmes increases.

We find in column [2] of Table 3 that the coefficient of 'URGSP' is positive and significant at the 1 per cent level, and the coefficient of "UROTP" is not significant at conventional levels. In the meantime, the interaction terms of the variables 'URGSP*ECI' and 'UROTP*ECI' are all positive and significant at the 1 per cent level. The combination of these outcomes indicates that the effect of the utilisation of NRTPs (either GSP programmes or other trade preferences) on

FDI inflows depends on beneficiary countries' level of economic complexity. This effect is positive, and its magnitude rises as the level of economic complexity improves, i.e. as countries export products that are progressively more complex/ sophisticated. These outcomes support *Hypothesis 3* set out in Section 2. In the same spirit, results in column [3] of Table 3 show, as expected, reverse patterns. In particular, while both 'URGSP' and 'UROTP' variables have coefficients that are positive and significant at the 1 per cent level, the interaction terms of the variables 'URGSP*RENT' and 'UROTP*RENT' are all negative and significant at the 1 per cent level.

It therefore ensues that the utilisation of GSP programmes exerts a positive effect on FDI inflows only when the share of natural resource rents in GDP is lower than 0.5516 (i.e. 55.16 per cent) (= 0.0855/0.155); as otherwise, the effect is negative. The lower this share (as far as it is less than 55.16 per cent), the higher is the magnitude of the positive effect of the utilisation of GSP programmes on FDI inflows. The utilisation of other trade preferences influences positively FDI inflows only when the share of natural resource rents in GDP falls below 0.1253 (i.e., 12.53 per cent) (= 0.118/0.942). This effect is negative when this share exceeds 12.53 per cent. The lower this share (as far as it is less than 12.53 per cent), the higher is the magnitude of the positive effect of the utilisation of other trade preferences programmes on FDI inflows.

Turning finally to the estimates in column [4] of Table 3, we observe that the variables 'URGSP*TP' and 'UROTP*TP' have coefficients that are positive and significant at the 1 per cent level, whereas the coefficients of the variables 'URGSP' and 'UROTP' are negative and significant at the 1 per cent level. Taken together, these results suggest that the utilisation of GSP programmes promotes FDI inflows for levels of trade policy liberalization higher than 0.71 (=0.329/0.469). To recall, values of the trade policy indicator 'TP' range between 0.27 and 0.93. We, therefore, deduce that beneficiary countries of GSP programmes that significantly liberalise their trade regimes (i.e. when the value of the indicator of trade policy exceeds 0.71) experience a positive and significant effect of the utilisation of GSP programmes on FDI inflows, and the greater the level of trade policy liberalisation, the higher the volume of FDI inflows.

In contrast, for lower levels of trade policy liberalisation (values of the trade policy indicator comprised between 0.27 and 0.71), the utilisation of GSP programmes discourages FDI inflows, and the lower the degree of trade policy liberalisation, the lower are FDI inflows. The same conclusion applies when considering the extent to which the effect of the utilisation of other trade preferences on FDI inflows depends on the level of trade policy liberalisation. The only exception here is that the level of the indicator of trade policy above which the effect of the utilisation of other trade preferences on FDI inflows becomes positive is 0.75 (= 0.781/1.044). All these findings support *Hypothesis 4*.

6. Conclusions

Unilateral trade preferences represent a major tool used by wealthier countries to assist developing countries in their efforts to better integrate into the global trading system, and ultimately promote development. The few previous studies on the effect of NRTPs on FDI inflows have used descriptive statistics, based on the eligibility for (and not the utilisation of) NRTPs (Yannopoulos 1986, 1987). The novelty of the present work is to rely on the utilisation rate of NRTPs and not the mere eligibility to the preferences), and econometric tools, in particular the GMM approach, to investigate the effect of the utilisation of NRTPs offered by the QUAD countries on FDI flows to beneficiary countries. The analysis has established several outcomes.

First, a low utilisation rate of GSP programmes is associated with higher FDI inflows in less advanced beneficiary countries, including LDCs, while an improvement in the utilisation rate of GSP programmes induces higher FDI flows to relatively advanced beneficiary countries, such as Non-LDCs. Low utilisation rates of other trade preferences exert a higher positive effect on FDI inflows in LDCs than in Non-LDCs. At the same time, when considering how the utilisation rate of other trade preferences affects FDI inflows varies across countries in the full sample, the analysis has shown that a higher rate of utilisation of other trade preferences induces greater FDI inflows for more advanced beneficiary countries, while for relatively less developed beneficiary countries, it is rather a lower utilisation rate of other trade preferences that drives FDI inflows.

Second, GSP programmes and other trade preferences are complementary in enhancing FDI inflows, especially when the utilisation of other trade preferences reaches high rates. The degree of this complementarity increases as the utilisation rate of GSP programmes rises, and/or as the utilisation rate of other trade preferences increases (at least from the rate of 69.8 per cent).

Third, a higher utilisation rate of NRTPs (either GSP programmes or other trade preferences) generates greater FDI flows to beneficiary countries that endeavour to produce increasingly complex/sophisticated products. In the same spirit, a higher utilisation rate of NRTPs results in higher FDI flows to beneficiary countries that experience a fall in the dependence on natural resources.

Fourth, the utilisation of NRTPs (either GSP programmes or other trade preferences) is associated with higher FDI flows to beneficiary countries that significantly liberalise their trade regimes. The present analysis highlights the importance of NRTPs, and notably their utilisation for FDI flows to beneficiary countries. It complements the works of Yannopoulos (1986, 1987) who investigated the effect of NRTPs, but not their utilisation, on FDI inflows.

An avenue for future research could be to investigate the effect of the utilisation of NRTPs provided by all preference-granting countries (including QUAD countries and non-QUAD countries) on FDI inflows when the requisite data would be available.

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Appendix 1: Definition and Source of variables

Variables	*Definition*	*Source*
FDI	This is transformed indicator of foreign direct investment, net inflows (in per cent of GDP). Let us denote 'FDI1' the share (in per cent) of the net inflows foreign direct investment in GDP. Given the skewed distribution of this variable, it has been transformed as follows (see Yeyati *et al* 2007): FDI = *sign*(FDI1) * log(1+|FDI1|) (2), where |FDI1| refers to the absolute value of the variable 'FDI1'.	Author's computation based on data on net inflows of foreign direct investment, net inflows (in per cent of GDP) extracted from the World Development Indicators of the World Bank.
URGSP	This is the "transformed" indicator of the utilisation rate of unilateral trade preferences under the GSP schemes provided by the QUAD countries, namely Canada, the European Union (EU), Japan and the United States of America (USA). It captures the extent to which imports that are eligible for trade preferences are actually imported, under these preferences (e.g. WTO 2016). This indicator has been computed using a formula adopted both by the WTO (see WTO 2016) and the UNCTAD and which goes as follows: URGSP1 = 100*(GSP Received Imports)/(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. Detailed information on the dataset is available at: https://gsp.unctad.org/about Values of the indicator "URGSP1" range between 0 and 100, with higher values indicating a greater utilisation rate of GSP programmes. Given the skewed distribution of this variable 'URGSP1', it has been transformed as followed (e.g. Yeyati *et al* 2007): URGSP = *sign*(URGSP1) * log(1+|URGSP1|) (2), where |URGSP1| refers to the absolute value of the variable 'URGSP1'.	United Nations Conference on Trade and Development Dataset: https://gsp.unctad.org/utilization

UROTP	This is the 'transformed' indicator of the utilisation rate of the other trade preferences than the GSP programmes provided by the QUAD countries to developing countries, including LDCs among them. In particular, this covers preferences granted by the USA under the African Growth and Opportunity Act (AGOA) and the Caribbean Basin Initiative; in the case of the European Union, it includes preferences under the Economic Partnership Agreements (EPAs) entered with selected Sub-Saharan African countries. This indicator has been calculated using a formula similar to the one used to compute the indicator 'USGSP1': UROTP1 = 100*(Other-Preferential Imports)/(Other Preferential Covered Imports), where 'Other-Preferential Imports' refers to the value of imports that benefitted from NRTPs other than GSP and under selected EPAs that the EU has entered into with some African countries. "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. Detailed information on the dataset is available at: https://gsp.unctad.org/about Values of the indicator 'UROTP1' range between 0 and 100, with higher values indicating a greater utilisation rate of other trade preference programmes. Given the skewed distribution of the variable 'UROPT1', it has been transformed as followed (e.g. Yeyati *et al* 2007): UROTP = *sign*(UROTP1) * log(1+|UROTP1|) (2), where |UROTP1| refers to the absolute value of the variable 'UROTP1'.	United Nations Conference on Trade and Development Dataset: https://gsp.unctad.org/utilization
GDP	Gross Domestic Product (constant US$2010).	World Development Indicators
ECI	This is the economic complexity index. It reflects the diversity and sophistication of a country's export structure, and hence indicates the diversity and ubiquity of that country's export structure. It has been estimated- using data connecting countries to the products they export, and applying the methodology in described in Hausmann and Hidalgo (2009). Higher values of this index reflects greater economic complexity.	MIT's Observatory of Economic Complexity (https://oec.world/en/rankings/eci/hs6/hs96)
HUM	This is the indicator of human capital, measured by the number of years of schooling and returns to education in a given country and in a given year t, developed by Feenstra *et al* (2015).	Penn World Tables PWT 10.0 (see Feenstra *et al* 2015)

REER	This is the measure of the real effective exchange rate. It is computed using a nominal effective exchange rate based on 66 trading partners. An increase in the values of this index indicates an appreciation in the real effective exchange rate, i.e. an appreciation of the home currency against the basket of currencies of trading partners.	Bruegel Datasets (see Darvas 2012a, 2012b). The dataset could be found at: http://bruegel.org/publications/datasets/real-effective-exchange-rates-for-178-countries-a-new-database/
TP	This is the indicator of trade policy, measured by the score of the index of freedom to trade internationally. 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 imports and exports of goods and services. The trade freedom score was initially graded on a scale of 0 to 100, with a rise in its value indicating lower trade barriers, i.e. higher trade liberalisation, while a decrease in its value reflects rising trade protectionism. For this analysis, we have re-scaled this variable by dividing it by 100, so that its values range between 0 and 1.	Heritage Foundation (see Miller *et al* 2021)
RENT	Total natural resources rents (in per cent of GDP). This variable has been re-scaled, by dividing it by 100, to facilitate interpretation of estimates.	Author's calculation based on data on the total natural resource rents (in per cent of GDP), collected from the WDI.
POP	This is the measure of the total population	WDI
INST	This is the variable representing the institutional and governance quality in a given country. It has been computed by extracting the first principal component (based on factor analysis) of the following six indicators of institutional quality and governance. These indicators include an index of: political stability and absence of violence/terrorism; regulatory quality; rule of law index; government effectiveness index; voice and accountability; and corruption. Higher values of this index are associated with better governance and institutional quality.	Author's computation based on data on the six indicators' components of institutional quality and governance collected from World Bank Governance Indicators (WGI) developed by Kaufmann *et al* (2010) and recently updated (see data online at: https://info.worldbank.org/governance/wgi/)

Appendix 2: Descriptive statistics on variables used in the analysis

Variable	*Observations*	*Mean*	*Standard deviation*	*Minimum*	*Maximum*
FDI1	493	4.92	8.95	-11.20	137.96
URGSP1	493	46.23	33.20	0.00	97.59
UROTP1	493	32.18	36.55	0.00	97.94
ECI	493	-0.22	0.78	-1.88	1.96
HUM	493	2.33	0.63	1.13	4.16
REER	493	110.01	31.33	59.44	645.31
INST	493	-0.73	1.57	-4.72	4.12
RENT	493	0.08	0.10	0	0.56
TP	493	0.73	0.10	0.27	0.93
GDPC	493	6877.14	9318.80	211.01	58720.86
POP	493	57,000,000	186,000,000	961168	1,390,000,000

Appendix 3: List of countries contained in the full sample

Albania	Greece	Niger**
Algeria	Guatemala	Nigeria
Angola**	Haiti**	Pakistan
Argentina	Honduras	Panama
Armenia	Hong Kong SAR, China	Paraguay
Bahrain	Hungary	Peru
Bangladesh**	India	Philippines
Benin**	Indonesia	Poland
Bolivia	Iran, Islamic Rep.	Portugal
Botswana	Israel	Romania
Brazil	Jamaica	Russian Federation
Bulgaria	Jordan	Rwanda**
Burkina Faso**	Kazakhstan	Saudi Arabia
Burundi**	Kenya	Senegal**
Cambodia**	Korea, Rep.	Sierra Leone**
Cameroon	Kuwait	Singapore
Central African Republic**	Kyrgyz Republic	Slovak Republic
Chile	Lao PDR**	Slovenia
China	Latvia	South Africa
Colombia	Lesotho**	Sri Lanka
Congo, Rep.	Liberia**	Sudan**
Costa Rica	Lithuania	Tajikistan
Cote d'Ivoire	Madagascar**	Tanzania**
Croatia	Malawi**	Thailand
Cyprus	Malaysia	Togo**
Czech Republic	Mali**	Trinidad and Tobago
Dominican Republic	Mauritania**	Tunisia
Ecuador	Mauritius	Turkey
Egypt, Arab Rep.	Mexico	Uganda**
El Salvador	Moldova	Ukraine
Estonia	Mongolia	United Arab Emirates
Eswatini	Morocco	Uruguay
Ethiopia**	Mozambique**	Venezuela, RB
Gabon	Namibia	Vietnam
Gambia**	Nepal**	Yemen, Rep**
Ghana	Nicaragua	Zambia**

Note: **: Least Developed Countries

Endnotes

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2. These benefits accrue to host countries when certain conditions prevail in the host countries. These conditions include, for example, the existence of strong backward and forward linkages of the sector targeted by FDI, initial levels of human capita and institutional quality, and trade policies (e.g. Wako 2021).

3. These works include for example, Baltagi *et al* 2008; Medvedev 2012; Baccini *et al* 2017; Kox and Rojas-Romagosa 2020; and Zahid *et al* 2021.

4. The acronym UNCTAD refers to the United Nations Conference on Trade and Development.

5. These types of preferences are also referred to as 'Generalised System of Preferences (GSP)'.

6. The history of GSPs can be found in Cunha *et al* 2005, and an overview on the legal and historical background of trade preferences can be found in Persson 2015a.

7. The WTO maintains a database that contains a wealth of information on NRTPs (referred to as 'preferential trade arrangements' in WTO jargon). This database is accessible online at: http://ptadb.wto.org/default.aspx

8. QUAD countries, also referred to as the 'Quadrilaterals', are Canada, the European Union (EU), Japan and the United States of America (USA).

9. LDCs represent the poorest and most vulnerable countries (to external and environmental shocks) in the world. This group of countries has been constructed, and updated regularly by the United Nations. Further information on this category of countries can be obtained online at: http://unohrlls.org/about-ldcs/criteria-for-ldcs/

10. The discussion by Yannopoulos (1986, 1987) focused on how benefiting from NRTPs can affect FDI flows to the beneficiary countries. It is worth emphasising that eligibility for (or enjoying) a NRTP offered by a wealthier country, does not necessarily mean that the beneficiary country utilises these preferential concessions.

11. Antonietti and Franco (2021) have, however, found that economic complexity does not (Granger) cause FDI inflows.

12. As the 'industrialisation' of the beneficiary countries of NRTPs is one main goal of these preferential regimes (see the Resolution 21(ii) of the UNCTAD described above), we can expect that the products authorised for exports under NRTPs would, at least, not cover raw materials or very low value-added products if preference granting countries aim genuinely to help beneficiary expand their manufacturing base.

13. It is important to note that FDI inflows can in turn contribute to enhancing economic complexity (i.e. sophistication) of the host country, which is here the beneficiary country of NRTPs (e.g. Eck and Huber 2016; Hausmann 2016; Javorcik *et al* 2018).

14. Preference erosion refers to a reduction in the difference between the preferential tariff rate and the MFN rate, enjoyed by beneficiaries of NRTPs (e.g. Persson 2015b).

15. The most-favoured-nation (MFN) tariff rates have been substantially reduced since the creation of the WTO in 1995. These MFN tariff reductions have resulted in a higher reduction of the preference margins for many products under NRTPs.

16. According to, for example, Collier and Venables (2007), the elimination of trade barriers to all complementary upstream tasks is necessary to promote the export of manufacturing 'tasks' in African country beneficiaries of NRTPs.

17. It is well established in the literature that a competitive and a stable real exchange rate should be part of the policy package needed to ensure production and export diversification, macroeconomic stability, and development (e.g. Freund and Pierola 2012; Guzman *et al* 2018; Goya 2020).

18. The null hypothesis is that there is no first-order serial correlation in the differenced-error term. The p-value associated with the AR(1) test should be lower than 0.10 at the 10 per cent level.

19. The null hypothesis is the absence of second-order autocorrelation in the first-differenced error term. The p-value associated with the AR(2) test should be higher than 0.10 at the 10 per cent level.

20. The null hypothesis is the joint validity of instruments used in the regressions.

21. For the estimations based on the two estimators, we use the Driscoll and Kraay (1998) procedure to correct standard errors of the estimates from the heteroscedasticity, serial correlation, and cross-sectional dependence in the error term.

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