An Impact Evaluation of Duty Free Quota Free Market Access for the Least Developed Countries (1998-2010)

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Abstract

Duty-Free and Quota-Free (DFQF) market access has been championed as a potential mechanism to reduce poverty through better trade opportunities for the Least Developed Countries (LDCs) since the turn of the millennium. Meanwhile, the empirical evidence to date has been mixed across different jurisdictions, with comparison made difficult due to different methodological assumptions and estimation strategies. To address this concern, this paper uses a set of consistent identification strategies for the DFQF schemes of Japan, the European Union, Norway, New Zealand and Canada. Using a difference-in-differences and triple differences strategy, it finds that whether or not the DFQF scheme had a positive impact on export growth from the LDCs depends on the dimension of variation considered. Comparing treated products to control products for the LDCs, only the Canadian and Norwegian programmes were effective in inducing export growth. However, when an additional difference at the country level is considered, only the Japanese and the European programmes had positive and statistically significant impacts.

KEYWORDS: Trade preferences, Difference-in-differences, Trade barriers, Least developing countries, International development

"Though each was partly in the right,
And all were in the wrong." – John Godfrey Saxe

1 Introduction

Since the 2001 Doha Ministerial Declaration that mandated strengthening of Special and Differential Treatment provisions in the WTO Agreement, developing countries have been pushing for deepening and widening of non-reciprocal trade preferences in existing and new markets. Yet empirical evaluations of the existing programmes have been mixed to date. Further, recent theoretical developments have advanced a more nuanced understanding of the potential impact of tariff reductions on exports from developing countries – beyond the textbook narrative that a decrease in tariffs should lead to an outward shift of the import demand curve and increase beneficiaries' exports (Krugman & Obstfeld 2003). Instead, accounting for intra and inter-country firm-level productivity differences in determining trade elasticities (Melitz 2003; Helpman et al. 2008), the supply response of exporting firms is better understood as a function of the firm's productivity. Stated differently, only firms that are productive enough are able to respond to reductions in tariffs in export markets. It has also been observed that other factors such as rules of origin requirements, one form of non-tariff barriers, discourages the use of trade preferences (Keck & Low 2006; Kowalski 2009).

To complicate the matter, the existing body of work codifies trade preferences differently (e.g. binary trade indicator at the country or product level; preference margin relative to Most-Favoured Nation tariff rates); and uses different estimation techniques, to which the results are sensitive (Head & Mayer 2013). In this light, this paper attempts to apply a same set of identification strategies to the evaluation of a number of recent Duty-Free and Quota-Free (DFQF) schemes for the Least Developed Countries (LDCs) adopted by several

developed countries: Given the constraints of tariff and trade data, this study examines the DFQF schemes of Japan, EU15, Norway, New Zealand and Canada.[1] Using bilateral trade data from 1998 to 2010, disaggregated at the product level, a difference-in-differences approach is used to estimate the causal effect of the DFQF schemes on export growth of treated products relative to control products under the identification assumption that both groups of products had parallel export trends.

This paper finds that under the DFQF programmes of Japan and the EU, the treated products relative to the control products experienced a statistically significant decrease in export values under a difference-in-differences specification. However, when considering another layer of difference at the country level, positive effects were found as the relative decrease in the export value of the treated products for the LDCs was smaller in magnitude than for other developing countries, due to the general decrease in the import of the treated products by the destination markets. The Canadian and Norwegian programmes had the opposite effects: whereas the DFQF schemes had a positive and statistically significant effect on the treated products under the difference-in-differences specification, the triple difference model suggests that Canada's Market Access Initiative did not have a statistically significant effect for the treated products for the LDCs relative to non-LDC developing countries; whereas the Norwegian programme had a statistically negative effect on the export value of the treated products from the LDCs relative to other developing countries. The DFQF scheme of New Zealand had no statistically significant effect on the treated products from the LDCs under the difference-in-differences specification.

Through such findings, this paper raises methodological questions around the identification strategies, including the treatment of zero-trade flows, as well as the coding of the control products in the presence of multiple trade preference schemes. Despite its limitations, this paper takes the first step in identifying the effect of various DFQF access schemes using

[1]The US GSP for LDCs began in 1997 while the CEPII trade data used here is available from 1998 to 2010. For Iceland and Australia, the World Bank's WITS database does not have the necessary tariff data.

consistent empirical strategies, assumptions and codification of trade preferences. Furthermore, it aspires to make a contribution to the international development literature that has long been grappling with the balance between trade and aid (Thirlwall 1976; Friedman 1995; Stiglitz & Charlton 2006).

The rest of the paper is organized as follows. Section 2 provides a brief background to the DFQF programmes, complemented by a review of the relevant empirical literature. Section 3 and 4 introduces the data and presents descriptive statistics and the empirical strategy. Section 5 presents the main results with sensitivity and robustness checks. Section 6 concludes with policy implications.

2 Background and Literature Review

The idea of trade preferences for developing countries underlying the Generalized System of Preferences (GSP) was formally introduced at the first meeting of the United Nations Conference on Trade and Development (UNCTAD) in 1964 by Paul Prebisch. After the adoption of a resolution in 1968, the GATT approved a waiver to Article I of the general agreement to put GSP in practice. That is, it became legally possible to grant discriminatory access to developing countries without violating the GATT's non-discrimination principle (through the 1979 Enabling Clause).[2] A more recent development is Duty-Free and Quota-Free (DFQF) market access, which differs from the previous GSP schemes on two fronts: first, DFQF access completely eliminates any quantitative trade barriers for the LDCs instead of only providing lower tariff rates relative to the Most Favoured Nation (MFN) rates; second, DFQF programmes provide more certainty as they are not subject to periodic reviews. At the launch of the Doha Round in 2001, WTO members committed themselves to the objective

[2]Currently, there are 13 national GSP schemes around the world, granted by the following countries: Australia, Belarus, Bulgaria, Canada, Estonia, the European Union, Japan, New Zealand, Norway, the Russian Federation, Switzerland, Turkey and the US.

of providing DFQF market access to LDCs. Following this, the WTO Ministerial in Hong Kong in 2005 agreed that developed countries would provide DFQF access for the LDCs covering at least 97 percent of products as part of the Doha Development Round.

Despite the stalemate at the Doha Round, a number of developed countries have implemented DFQF access prior to and after the launch of the Doha Round (Table 1A). As seen in Table 1A, DFQF schemes differ mainly in terms of product coverage, with other differences including the rules of origin requirements, safeguard provisions for domestic producers, and rules for graduation for the LDCs. A number of developing countries (e.g. China, India and Turkey) have also implemented DFQF programmes for the LDCs.

The empirical literature has mainly relied on two methodological approaches to estimate the effect of trade preferences: gravity model (log-linear or the Poisson maximum likelihood estimation) and triple-differences-in-differences (Table 1B).

Rose (2004) is considered as the seminal paper, where the author uses a log-linear gravity model and estimates the effect of the GSP by including a binary variable that switches on for exporter-importer pairs for which the exporter i is a beneficiary of the importer j. The basic intuition for the gravity model relies on the assumption that conditional on real GDP, distance between the two countries and a vector of controls (e.g. time fixed effects, colonial links, common languages), the coefficient on the indicator variable for GSP estimates the average effect of GSP schemes across different countries. In estimating such a model, the author finds that GSP schemes are associated with a 100% increase in trade.

As Ornelas (2016) notes, however, there are two main limitations of the gravity equation of Rose (2004). First, it did not account for zero-trade flows, which is problematic as neglecting zero trade observations can lead to potential bias through sample selection (Head and Mayer 2013). To address this issue, alternative methods such as Tobit-like methods, Poisson PML (Pseudo Maximum Likelihood), Gamma PML and Multinomial PML have been discussed.

Herz and Wagner (2009) apply a Poisson PML technique to a standard gravity model for bilateral trade flows between 194 countries from 1953-2006 to estimate the general impact of GSP programmes. They conclude that there is only a short run trade promotion effect, with the long term effect being negative as it discourages market liberalization in developing countries (the authors found that GSP schemes are associated with 3% lower exports on average for developing countries). Meanwhile, Poisson PML has its own limitation as unobserved variables cannot be included in the gravity equation (Thelle et al. 2015). Gil-Pareja et al. (2014) use a log-linear gravity model for a sample of 177 countries covering 1960 to 2008. The authors find positive and statistically significant average effects of trade preferences. They further show that the result is qualitatively similar under the Heckman and Poisson PML models.[3]

The second limitation concerns heterogeneity of different GSP programmes as the effect of GSP is estimated through cross-country variation. Notable papers that address this gap include Frazer and Van Biesebroeck (2010), where the authors study the US AGOA scheme using bilateral trade data spanning 1998-2006, disaggregated at the product level. This allowed them to identify the impact of the policy using a triple differences-in-differences approach, whereby the difference in export growth of the treated products under the US AGOA and the control products before and after for the LDCs is compared to non-LDCs. This in theory allows them to address non-random awarding of market access beneficiaries and products. The authors find that on average the policy increased African LDC exports to the US by 13%. [4]

Using the same approach to examine the EU's Everything But Arms (EBA), Van Biesebroeck and co-authors use three different measures for trade preferences: tariff margins (difference

[3]Other evaluations of trade preferences for developing countries using gravity models include Klasen et al. (2016); Sapir (1981); Langhammer (1983); Nilsson (2002); Aiello & Cardamone (2011); Sapir & Lundberg (1984); and Lederman & Ozden (2007)

[4]Collier & Venables (2007) use a quadruple differences approach to control for exporter supply shocks and time-invariant differences to identify the effects of trade preferences under the U.S AGOA from time-series variation in exporters' sales to the U.S. relative to the EU.

between MFN and preferential schemes for developing countries); preference ratios; and existence of trade preference using a binary variable (Thelle et al. 2015). Across these different preference measures, the authors find positive and statistically significant effects of the EU EBA, covering the time period 1995 to 2012 for EU15. Similarly, Ito (2013) evaluates the impact of DQFQ access under Japan's special GSP programme using Frazer and Van Biesebroeck's method and finds a statistically insignificant effect of the policy on the export growth of the treated products between 1996 to 2011, concluding that removal of tariff barriers is not a sufficient condition to increase exports as there are other limiting factors such as trade infrastructure, non-tariff barriers and cultural differences.

3 Data and Descriptive Statistics

Treated Countries

There were 49 LDCs (Table 1C), designated by the United Nations based on per capita gross national income (GNI), over the period considered. Currently, GNI below $1,035 is used as the threshold to identify the eligible countries for LDC designation.

Myanmar, however, was ineligible for the Norwegian GSP for LDCs until 2012; the EU EBA until 2013; and Canada's Market Access Initiative until 2015. Additionally, Cape Verde graduated from LDC status in 2008. However, Cape Verde remained eligible for the Canadian and the European DFQF access until 2010. Cape Verde was taken off of the LDC beneficiary list under the Japanese Special GSP in 2008. For the Norwegian DFQF access, in addition to the LDCs, low-income countries with a population of less than 75 million are also granted DFQF access; yet many LDCs and other developing countries do not receive DFQF access for not having complied with formalities such as official notifications.

Given these complications, as well as to facilitate comparison across the DFQF access

schemes for the same group of treated countries, this paper considers countries with LDC designation – that is, based on eligibility – as treated at the country level. Consequently, this paper seeks to estimate the intention-to-treat effect across the DFQF schemes.

Tariff Data and Treated Products

The tariff data are from the World Bank's World Integrated Trade Solutions (WITS) TRAINS database that digitizes national tariff publications and converts specific tariffs into 'ad valorem equivalents', or tax levied as a fraction of the value being imported. The tariff rates are provided at the HS 6-digit level. To identify the treated products, the LDC tariff in the year prior to the treatment and the year of treatment (e.g. 2000 and 2002 for the EU) were used. The products for which the tariff was non-zero in 2000 and zero in 2002 were coded as treated products. For the DFQF scheme of Japan, which involved phasing-in of treated products, the years 2000 and 2007 were used as the two years to identify the treated products.

The Norwegian DFQF scheme differs from the rest in the way that the control products are identified: Preferential tariffs for the LDCs existed prior to the implementation of the respective DFQF schemes in Japan, the EU, New Zealand and Canada; in Norway, however, preferential tariffs for the LDCs were first introduced in 2002. Consequently, the treated products were identified as the products that had non-zero tariff under Norway's MFN schedule in 2000 and zero tariff in 2003.

The number of tariff lines for the treated, control and ineligible products for each country are provided from Table 2A to 6A. The number of treated products (at the HS 6-digit) range from 266 products in New Zealand to 1,986 products in EU15.[5] The average ad valorem tariff rates for the treated products in the year prior to the DFQF access range from 5.86%

[5]EU15 refers to Belgium, France, Germany, Italy, Luxembourg, Netherlands, Denmark, Ireland, United Kingdom, Greece, Portugal, Spain, Austria, Finland, and Sweden. The next rounds of accession occurred in May 2004, January 2007 and July 2013.

in Japan to 31.75% in Norway. Table 2B to 6B break down the composition of the treated products by HS sections. While there is considerable variation in the distribution of the treated products, the textiles section (HS chapter 50 to 63) contains the highest proportion of treated products across all the DFQF schemes under consideration. All the tariff data were concorded to the 1996 Harmonized System (HS) codes for merging with trade data.[6]

Trade Data

The trade data are from BACI, a database developed by CEPII, where the original data from the United Nations COMTRADE are adjusted for the discrepancies between the exporting and importing countries' reports. The dataset provides information about the value of trade (in thousands of US dollars) and quantity (in tons); and individual observations are identified by the exporting country (i), the importing country (j), product category (at the 6-digit level using the 1996 HS classification), and year. As the dataset only reports positive trade flows, zero trade flows were coded manually. Figure 1 to 5 show the evolution of average value of imports from the LDCs by treated and control products for all the five developed countries.

4 Identification Strategy

Baseline specification

This paper separately estimates the impact of the DFQF schemes on the change in export value from LDCs to each of the five developed countries over 1998 to 2010. It starts by restricting the sample of exporters to the LDCs, estimating the following baseline model for each of the five importers:

$$ln(Import)_{cpt} = \alpha + \beta(Treatedproducts_p * Treatedyears_t) + \delta 1 Treatedproducts_p + \delta 2 Treatedyears_t + \gamma Ineligible_p + \varepsilon_{cpt} \quad (1)$$

[6]The Harmonized System of tariff nomenclature is an internationally standardized system developed, maintained and updated by the World Customs Organization.

where the dependent variable refers to the importing country's value of imports (in thousand USD) of product p from country c during year t in natural logarithm. To account for zero trade flows, a small amount (1 dollar) is added before taking the logarithm. The variable *Treatedproducts* is a time-invariant dummy that takes on a value of 1 if the product (defined at the 6-digit HS level) is declared eligible for DFQF access, and 0 otherwise. Similarly, *Treatedyears* is a dummy that switches on for the years including and following the treatment year (2001 for Japan and the EU; 2002 for New Zealand; 2003 for Canada and Norway). The coefficient on the interaction term represents the policy's effect on the LDCs' exports to each of the five developed countries (or the average intention-to-treat effect on treated products for the LDCs).

Identification relies on the parallel trends assumption, which requires that absent the policy, the export trends for treated and non-treated products would have been the same. It must be further assumed that there are no time-varying shocks that affect export value/volume differently for the treated and control products in the years after the policy implementation. This assumption could be violated if the LDCs attracted foreign investments in particular sectors due to other development initiatives, as this might affect the treated and control groups differently.

Sensitivity and Robustness Check

To partly relax the common trends assumption, a fixed-effects model will be also estimated:

$$ln(Import)_{cpt} = \alpha + \beta(Treatedproducts_p * Treatedyears_t) + \delta_t + \delta_{cp} + \varepsilon_{cpt} \qquad (2)$$

Here, the coefficient of interest, β, is a 'within' estimator that only accounts for the variation over time, due to the policy, for each country-product pair. δ_{cp} represents country-product pair fixed effects; δ_t represents time-fixed effects. The key identification assumption here is that the counterfactual outcomes in the absence of treatment are independent of treatment,

conditional on country-product fixed effects and time fixed effects. Again, the sample will be restricted to the eligible LDCs.

If non-LDC developing countries are included in the sample of exporters,[7] a third dimension of variation (at the country level) can be exploited to run the following triple-differences-in-differences model:

$$\begin{aligned} ln(Import)_{cpt} =& \alpha + \beta(Treatedproducts_p * Treatedyears_t * Treatedcountries_c) + \\ & \gamma 1(Treatedproducts_p * Treatedyears_t) + \gamma 2(Treatedyears_t * Treatedcountries_c) + \\ & \gamma 3(Treatedproducts_p * Treatedcountries_c) + \lambda 1(Treatedproducts_p) + \\ & \lambda 2(Treatedyears_t) + \lambda 3(Treatedcountries_c) + \delta Ineligible_p + \varepsilon_{cpt} \end{aligned} \tag{3}$$

This model can be used to verify if the differential increase in the export of treated products relative to control products between the LDCs and non-LDCs is statistically significant.

All the standard errors are clustered at the exporter country level to account for potential correlations within and across different product groups for each exporting country.

5 Results

Japan

The Japanese GSP scheme has been subject to decennial reviews (from August 1971 to March 1981; from April 1981 to March 1991; from April 1991 to March 2001; from April 2001 to March 2011; and from April 2011 to March 2021). The Special GSP for LDCs (a DFQF scheme) was implemented following the end of the third decennial review period. While 2001 is considered as the year of treatment, there are additional complications as the Japanese

[7]Non-LDC developing countries consist of Lower-Middle income countries, as identified by the World Bank, which include 38 countries (e.g. Bolivia, India, Viet Nam) that earn between $1,006 and $3,975 GNI per capita.

scheme involved phasing in, where the tariffs on the eligible products were gradually reduced from 2001 to 2007. For this reason, different windows of time have been considered. In the first set of regressions, the full period (1998-2010) was kept; and in an additional regression only the years from 1998 to 2000 were considered as the pre-treatment period and 2007 to 2010 as the post-treatment period.

In the baseline regression (Table 7, Column (1)), the coefficient on the interaction term is negative (-0.019) and statistically significant at the 2% level, indicating that after treatment the treated products (the products for which tariffs have been phased down to 0 from 2001 to 2007) on average had a 1.9% decrease in the export value from the LDCs. Limiting the time period considered by leaving a gap in the middle to account for the phase-in, the coefficient on the interaction term increases in magnitude (-0.027) and remains statistically significant at the 2% level (Table 7, Column (5)). Including a combination of country and time fixed effects, country-specific time trends, as well as chapter fixed effects in Column (2) to (4) tends to decrease the magnitude of the coefficient of interest, but the effect remains statistically significant.

It seems plausible to argue that the parallel trend assumption holds based on the average Japanese import values for treated and control products pre-2001 as shown in Figure 1. Concerning the product composition, it is interesting to note that the treated products include a considerable proportion of agricultural and livestock products as well as textiles products, the product groups in which the LDCs are assumed to have comparative advantage; meanwhile, the reduction of tariffs for products in these groups have not resulted in a significant increase in exports of these products on average. It may be conjectured that the Japanese scheme may be managing to strategically exclude the core agro-products for which there is significant domestic demand; or more stringent requirements for meeting the rules of origin could be depressing or discouraging the utilization of the trade preferences.

Finding a statistically significant effect, sensitivity and robustness checks were conducted.

The estimated coefficient for the country-product pair fixed-effects model in Column (6) of Table 7 is smaller in magnitude in absolute value relative to Column (1), yet is still negative in sign and statistically significant at the 2% level.

Column (7) and (8) of Table 7 show the difference-in-differences estimates for treated products relative to control products for LDCs (-0.019) and Lower-Middle income countries (-0.056), respectively. The difference between these two coefficients approximately amounts to the coefficient on the triple interaction term in Column (9), which is positive and statistically significant (0.03). This suggests that the Japanese DFQF scheme is associated with a decrease in the export value of the treated products relative to the control products for the LDCs; however, the treated products in general saw a decrease in export values for other developing countries. Since the decrease in the export value was relatively larger for non-LDC developing countries, the triple-differences model finds a positive and statistically significant effect of the policy. Limiting the period considered (1998-2000 and 2007-2010) results in qualitatively identical conclusions with an increase in the magnitude of the coefficient on the triple interaction term (results not shown).

EU15

Currently the EU's DFQF scheme applies to all of the EU28 members, however only the EU15 has been granting it access since 2001. Consequently, this study considers only the impact of the EU's Everything But Arms (EBA) for EU15. The regression results suggest that when considering the full time period (1998-2010), the treated products, relative to the control products, on average are associated with a 2.8% to 3.5% decrease in import values following the EBA, with the results statistically significant at the 5% or 10% level as shown in Column (1) to (4) of Table 8. When the time window is restricted to 1998-2003,[8] the coefficient of interest retains the negative sign, yet becomes statistically insignificant (Column (5) of Table 8). The country-product fixed effects model results in the same findings (Column (6) and

[8]This window of time was chosen to account for the 2004 enlargement of the EU.

(7) of Table 8, where the latter is for the shorter window of time).

This result is curious, as Figure 2 seems to suggest that the treated products experienced a discernible increase in import values from 2001 to 2003 relative to the control products. After eliminating the zero trade flows, which account for 94.8% of the observations, the coefficient of interest in the baseline regression turns positive in sign (results not shown). However, this does not qualitatively alter the conclusion that the EBA had a null impact on the treated products as the estimates are statistically insignificant.

Using the full period, it was verified that a similar story as in the case of Japan may be told. The triple differences model does seem to show a positive and statistically significant effect of the EU's EBA: the coefficient on the triple interaction term is positive (0.04) and statistically significant at the 10% level (Column (10) of Table 8). While this result is in line with Thelle et al. (2015), the previous double difference results suggest that a more nuanced interpretation is required as the positive effect of the EU's EBA under a triple differences model seems to be due to the general but differential decrease in EU15's import of treated product from developing countries.

Norway

The regression results in Column (1) to (4) of Table 9 suggest that the Norwegian DFQF programme is associated with approximately a 2% increase in import value of the treated products, statistically significant at the 10% level.

However, Figure 3 raises a concern as the export value of the control products from the LDCs has been volatile over the period considered; and hence it is difficult to assert that the parallel trends assumption holds. Under the fixed-effects model, this assumption may be somewhat relaxed; and Column (6) of Table 9 still shows a positive (0.018) and statistically significant effect of the Norway's DFQF scheme.

Finally, checking robustness with the triple differences model, the coefficient on the triple interaction term (Table (9), Column (9)) is negative and statistically significant. This suggests that the positive effect of the policy identified under the difference-in-differences specification is likely due to a general surge in Norwegian imports of the treated products for all developing countries.

New Zealand

In the case of New Zealand, the parallel trend assumption is better satisfied than for Norway given the similarity in the level of average import values of the control and treated products in 1998 and 1999 from the LDCs (Figure 4). While it can be seen that the treated products begin to increase in value pre-2001, it may be argued that the beginning of the surge may be in the anticipation of the DFQF scheme, in which case the coefficients here would be underestimates of the programme's effect.

Over the entire period, the treated products are associated with approximately a 5.5% increase in imports. However, these results are not statistically significant across various specifications (Column (1) to (4) of Table (10)). Restricting the period to before the global financial crisis (1998-2006),[9] the coefficient of interest decreases in magnitude to the 2.5% range and remains statistically insignificant (Column (5) of Table 10). The country-product fixed effects model again shows a statistically insignificant effect (Column (6)). The triple differences model was not estimated for New Zealand as the coefficient of interest is not significant under all of the specifications.

Canada

Canada's 2003 Market Access Initiative shows a statistically significant (at the 10% level) coefficient on the interaction term (Column (1)), which indicates that on average the initiative is associated with a 12% increase in the export value of treated products for the

[9]This restriction was made to account for the exponential increase in the import of the treated products starting around 2007.

LDCs. Controlling for different combinations of country fixed effects, time fixed effects, and country-specific time trends (Column (2) to (4)), the point estimate becomes remains similar. Column (5) checks for sensitivity through estimation of a country-product pair fixed effects model. The estimated coefficient is slightly smaller in magnitude. The triple difference estimate in Column (8) suggests, however, that the Initiative did not have a significant effect, as increased imports of the treated products were observed across developing countries.

6 Discussion and Conclusion

This paper has shown that some DFQF access schemes may have been more effective than others. However, the findings are sensitive to model specification, requiring a careful understanding of the econometric model and a nuanced interpretation. While the DFQF programmes of Japan and the EU had a negative impact on the treated products under the difference-in-differences specification; differencing one more time using the country dimension delivered a completely different conclusion. This was because the treated products for LDCs saw a relatively smaller decrease in export values compared to other developing countries. In contrast, the Canadian and Norwegian DFQF programmes had positive and statistically significant effects on the treated products under the difference-in-differences model. However, under the triple difference model, the Canadian programme did not have a significant effect on the treated products, most of which are textiles products, for the LDCs compared to other developing countries. Further, the Norwegian programme was estimated to have dampened the LDCs' exports of the treated products relative to other developing countries. The DFQF scheme of New Zealand had no statistically significant effect on the treated products from the LDCs under the difference-in-differences specification.

While this study represents a meaningful exercise in providing a comparison of different market access programmes using a set of consistent estimation techniques, it raised a num-

ber of methodological questions. Foremost, in this paper, zero trade values were manually constructed, as the BACI database reports only positive trade flows, and a small amount ($1 USD) was added before taking the natural logarithm of the import values. While considered as a standard approach in dealing with zero trade flows (Thelle et al. 2015), this approach seemed to deliver a curious result for the EU. That is, the treated products graphically experienced a higher growth in export value than the control products; yet the coefficient on the double interaction term was negative in sign. When the zero trade values are eliminated, the sign of the coefficient switched. This exercise suggests that simply including zero trade flows in this way may introduce a type of bias, for which further research is required to systematically understand how zero trade flows affect the estimates.

Second, the parallel trends assumption seemed to hold for some countries, such as Japan and Canada, while it seemed to be problematic for Norway. Consequently, the positive and statistically significant effects under the difference-in-differences model for Norway may be subject to bias. This shows how satisfying key assumptions can become a significant limitation and prompts further research to experiment with other identification strategies (e.g. variations of a regression discontinuity design) for this branch of the literature.

Finally, there are concerns regarding the control products. Except for the Norwegian scheme, the DFQF schemes consisted of expansion of previous programmes. The control products in this study were defined as the products that received zero-tariff treatment prior to the policy shocks. However, in most cases the control products had already received preferential treatment in previous revisions of the respective GSP programmes, or were eligible for MFN treatment. Given that the supply response from program beneficiaries can be expected to take time, it is uncertain as to whether or not the increase in export of the control products is also due to preferential treatment.

Notwithstanding these methodological considerations, this study concludes that the empirical evidence on non-preferential trade agreements remains mixed amongst the countries that

first implemented DFQF market access. Previous research has already suggested that some programmes may be more effective due to more relaxed of rules of origin requirements that accompanied the tariff cuts (Weston 2003; Gallezot & Bureau 2006). Other contributing factors may include the particular composition of the treated products, as well as how different preferential schemes within and across countries may work together. Further, trade and legal assistance provided in some countries to the LDCs may have better facilitated the utilization of the trade preferences. Future lines of research should endeavour to understand why some programmes were more effective than others.

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Figures and Tables

Table 1A: DFQF Access for LDCs (under GSP Schemes) of Developed Economies (current as of 2014/15)

Year	Country	Duty-free coverage	Ineligible products (number of tariff lines)	Major exclusions
1 March 1997	**Switzerland**	Almost 100%	0	Agricultural products enter at 55-100% reduction on normal rate, and non-agricultural products enter duty-free with the exception of HS chapters 35 and 38
30 May 1997 – 31 July 2013	**United States**	GSP for LDCs cover the "standard" (approximately 4,650 duty-free tariff items) available for all GSP beneficiaries, with additional approximately 1,770 tariff items for LDCs	1864	Excluded dairy products, sugar, cocoa, articles of leather, cotton, articles of apparel and clothing, other textiles and textile articles, footwear, watches
29 January 2001	**Japan**	97.9% (all the eligible products were phased in by 2007/2008)	197	Exclude rice, sugar, fishery products, articles of leather, Some exceptions from HS chapters from 01- 04 and 07-24 for agricultural goods; 03, 16, 25, 27, 29, 35, 42, 43, 44, 50, 64, 72, 75, 76, 90 and 91 for non-agricultural goods
5 March 2001	**European Union**	99.0%	91	Exclude arms and ammunitions; and bananas, sugar and rice were subject to transition periods between 2006 and 2009
1 July 2001	**New Zealand**	100%	0	n/a
29 January 2002	**Iceland**	91.8%	707	Meat and dairy products, eggs, vegetables and plants, cereals and starch, other food preparations; HS chapters 4, 15, 18, 19,21, 22. Non-agricultural products: HS 3502, 3828, 16 except 1603 and 1605

2002 (1 July 2002)	**Norway**	Almost 100%	0	Exclude flour, grains, and feeding stuffs which are subject to a special safeguard mechanism
1 January 2003	**Canada**	98.6%	105	Dairy, eggs and poultry
1 July 2003	**Australia**	100%	0	n/a
2012	**Russian Federation**	38.1%	6885	Exclude a wide range of tariff lines including petroleum products, copper, iron ores, articles of leather, articles of apparel and clothing

Source: Compiled from WTO and UNCTAD

Table 1B: Summary of Empirical GSP Literature

Method\Unit of analysis	**Multiple countries**	**Single country**
Gravity-based	Rose (2004) Herz & Wagner (2011) Gil-Pareja et al. (2014) Klasen et al. (2016)	**EU GSP** Sapir (1981) Langhammer (1983) Nilsson (2002) **US GSP** Sapir (1984) Lederman & Ozden (2007)
Difference-in-differences type	n/a	**US AGOA** Collier & Venables (2007) Frazer & Van Biesebroeck (2010) **EU EBA, GSP, GSP+** Thelle et al. (2015) **Japan Special GSP** Ito (2013)

Table 1C: List of the Least Developed Countries (1998-2010)

A total of 49 countries had LDC designation from 1998 to 2010: 34 from Sub-Saharan Africa; 9 from Asia; 6 from Oceania; and Haiti.

Africa		Asia	Oceania & Haiti
Angola	Lesotho	Afghanistan	Haiti
Benin	Liberia	Bangladesh	Kiribati
Burkina Faso	Madagascar	Bhutan	Maldives
Burundi	Malawi	Cambodia	Western Samoa
Cape Verde*	Mali	Laos	Solomon Islands
Central African Republic	Mauritania	Maldives	Tuvalu
Chad	Mozambique	Myanmar	Vanuatu
Comoros	Niger	Nepal	
Democratic Republic of Congo	Rwanda	Yemen	
Djibouti	Sao Tomé and Principe		
Equatorial Guinea	Senegal		
Eritrea	Sierra Leone		
Ethiopia	Somalia		
Gambia	Sudan		
Guinea	Tanzania		
Guinea-Bissau	Togo		
	Uganda		
	Zambia		

*Cape Verde graduated from LDC status in 2008.

Table 2A: Descriptive Statistics: Average Tariff Rates of Japanese Special GSP

	Mean (%)	S.D.	Min (%)	Max (%)	Tariff Lines
Treated products	5.86	8.09	0.38	78.62	691
Control products	0	0	0	0	3,931
Ineligible products	5.93	16.00	0.43	125.89	146

*Tariff rates for treated and control products are from 2000, and the tariff rates for the ineligible products are from 2002.

Table 2B: Japanese Special GSP – Treated and Ineligible Products by Sections

Product Sections (HS Chapters)	Treated Products	Control Products	Ineligible Products
Animal products (1-5)	112 (16.21%)	72 (1.83%)	18 (12.33%)
Veggies (6-14)	111 (16.06%)	126 (3.21%)	16 (10.96%)
Fats (15)	22 (3.18%)	19 (0.48%)	5 (3.42%)
Foodstuff (15-24)	83 (12.01%)	90 (2.29%)	16 (10.96%)
Minerals (25-27)	5 (0.72%)	131 (3.33%)	0
Chemicals (28-38)	3 (0.43%)	680 (17.3%)	4 (2.74%)
Plastic (39-40)	0	188 (4.78%)	26 (17.81%)
Leather (41-43)	14 (2.03%)	35 (0.89%)	5 (3.42%)
Wood (44-46)	11 (1.59%)	50 (1.27%)	9 (6.16%)
Paper (47-49)	0	128 (3.26%)	0
Textiles (50-63)	307 (44.43%)	471 (11.98%)	40 (27.4%)
Footwear (64-67)	2 (0.29%)	48 (1.22%)	2 (1.37%)
Stone (68-70)	0	133 (3.38%)	0
Precious stone (71)	4 (0.58%)	47 (1.20%)	1 (0.68%)
Base metal (72-83)	17 (2.46%)	510 (12.97%)	3 (2.05%)
Machinery (84-85)	0	730 (18.57%)	0
Transport equipment (86-89)	0	125 (3.18%)	0
Medical instrument (90-92)	0	215 (5.47%)	1 (0.68%)
Arms (93)	0	14 (0.36%)	0
Other manufactured (94-96)	0	112 (2.85%)	0
Arts (97)	0	7 (0.18%)	0
Total	**691 (100%)**	**3,931(100%)**	**146 (100%)**

Table 3A: Descriptive Statistics: Average Tariff Rates of EU EBA

	Mean (%)	S.D.	Min (%)	Max (%)	Tariff Lines
Treated products	23.05	41.37	15	263.4	1986
Control products	0	0	0	0	2,776
Ineligible products	2.60	2.16	0.18	35.81	512

*Tariff rates for treated and control products are from 2000; and the tariff rates for the ineligible products are from 2002.

Table 3B: EU EBA -- Treated Products by Sections

Product Sections (HS Chapters)	**Treated Products**	**Control Products**	**Ineligible Products**
Animal products (1-5)	151 (7.6%)	71 (2.56%)	0
Veggies (6-14)	126 (6.34%)	139 (5.01%)	9 (1.76%)
Fats (15)	20 (1.01%)	21 (0.76%)	6 (1.17%)
Foodstuff (15-24)	109 (5.49%)	85 (3.06)	1 (0.2%)
Minerals (25-27)	18 (0.91%)	133 (4.79%)	1 (0.2%)
Chemicals (28-38)	211 (10.62%)	450 (16.21%)	158 (30.86%)
Plastic (39-40)	12 (0.6%)	129 (4.65%)	73 (14.26%)
Leather (41-43)	5 (0.25%)	71 (2.56%)	0
Wood (44-46)	23 (1.16%)	61 (2.20%)	0
Paper (47-49)	53 (2.67%)	103 (3.71%)	8 (1.56%)
Textiles (50-63)	577 (29.05%)	244 (8.79%)	31 (6.05%)
Footwear (64-67)	35 (1.76%)	20 (0.72%)	0
Stone (68-70)	61 (3.07%)	65 (2.34%)	15 (2.93%)
Precious stone (71)	0	52 (1.87%)	1 (0.2%)
Base metal (72-83)	234 (11.78%)	296 (10.66%)	64 (12.5%)
Machinery (84-85)	226 (11.38%)	465 (16.75%	108 (21.09%)
Transport equipment (86-89)	28 (1.41%)	103 (3.71%)	3 (0.59%)
Medical instrument (90-92)	66 (3.32%)	145 (5.22%)	30 (5.86%)
Arms (93)	0	21 (0.76%)	0
Other manufactured (94-96)	31 (1.56%)	95 (3.42%)	4 (0.78%)
Arts (97)	0	7 (0.25%)	0
Total	**1,986 (100%)**	**2,776 (100%)**	**512 (100%)**

Table 4A: Descriptive Statistics: Average Tariff Rates of Norwegian GSP for LDCs

	Mean (%)	S.D.	Min (%)	Max (%)	Tariff Lines
Treated products	31.75	82.51	0.02	1052.36	1,429
Control products	0	0	0	0	3,316
Ineligible products	99.58	337.51	0.17	4146.71	205

*Tariff rates for treated and control products are from 2001; and the tariff rates for the ineligible products are from 2003.

Table 4B: Norwegian GSP for LDCs -- Treated Products by Sections

Product Sections (HS Chapters)	**Treated Products**	**Control Products**	**Ineligible Products**
Animal products (1-5)	83 (5.81%)	99 (2.99)	12 (5.85%)
Veggies (6-14)	108 (7.56%)	59 (1.78%)	89 (43.41%)
Fats (15)	3 (0.21%)	2 (0.06%)	41 (20%)
Foodstuff (15-24)	80 (5.60%)	42 (1.27%)	55 (26.83%)
Minerals (25-27)	0	142 (4.28%)	0
Chemicals (28-38)	76 (5.32%)	666 (20.08%)	8 (3.9%)
Plastic (39-40)	65 (4.55%)	127 (3.83%)	0
Leather (41-43)	19 (1.33%)	32 (0.97%)	0
Wood (44-46)	0	79 (2.38%)	0
Paper (47-49)	18 (1.26%)	120 (3.62%)	0
Textiles (50-63)	501 (35.06%)	307 (9.26%)	0
Footwear (64-67)	38 (2.66%)	17 (0.51%)	0
Stone (68-70)	29 (2.03%)	111 (3.35%)	0
Precious stone (71)	2 (0.14%)	49 (1.48%)	0
Base metal (72-83)	164 (11.48%)	393 (11.85%)	0
Machinery (84-85)	63 (4.41%)	736 (22.20%)	0
Transport equipment (86-89)	7 (0.49%)	123 (3.71%)	0
Medical instrument (90-92)	87 (6.09%)	148 (4.46%)	0
Arms (93)	9 (0.63%)	6 (0.18%)	0
Other manufactured (94-96)	77 (5.39%)	51 (1.54%)	0
Arts (97)	0	7 (0.21%)	0
Total	**1,429 (100%)**	**3,316 (100%)**	**205 (100%)**

Table 5A: Descriptive Statistics: Average Tariff Rates of New Zealand GSP for LDCs

	Mean (%)	S.D.	Min (%)	Max (%)	Product Lines
Treated products	11.27	1.96	1.67	12	266
Control products	0	0	0	0	4,744
Ineligible products	88.22	135.74	3.35	478.41	101

*Tariff rates for treated and control products are from 2000; and the tariff rates for the ineligible products are from 2002.

Table 5B: New Zealand GSP for LDCs -- Treated Products by Sections

Product Sections (HS Chapters)	**Treated Products**	**Control Products**	**Ineligible Products**
Animal products (1-5)	0	195 (4.11%)	0
Veggies (6-14)	0	265 (5.59%)	0
Fats (15)	0	44 (0.93%)	0
Foodstuff (15-24)	0	176 (3.71%)	11 (78.6%)
Minerals (25-27)	2 (0.75%)	142 (2.99%)	0
Chemicals (28-38)	0	760 (16.02%)	0
Plastic (39-40)	1 (0.38%)	191 (4.03%)	0
Leather (41-43)	0	65 (1.37%)	0
Wood (44-46)	1 (0.38%)	79 (1.67%)	0
Paper (47-49)	0	143 (3.01%)	1 (7.14%)
Textiles (50-63)	228 (85.71%)	584 (12.31%)	0
Footwear (64-67)	27 (10.15%)	28 (0.59%)	2 (14.29%)
Stone (68-70)	0	147 (3.10%)	0
Precious stone (71)	0	51 (1.08%)	0
Base metal (72-83)	0	559 (11.78%)	0
Machinery (84-85)	0	804 (16.95%)	0
Transport equipment (86-89)	7 (2.63%)	123 (2.59%)	0
Medical instrument (90-92)	0	237 (4.99%)	0
Arms (93)	0	15 (0.32%)	0
Other manufactured (94-96)	0	129 (2.72%)	0
Arts (97)	0	7 (0.15%)	0
Total	**266 (100%)**	**4,744 (100%)**	**101 (100%)**

Table 6A: Descriptive Statistics: Average Tariff Rates of Canada's Market Access Initiative

	Mean (%)	S.D.	Min (%)	Max (%)	Observations
Treated products	8.78	14.06	1	129.5	646
Control products	0	0	0	0	4247
Ineligible products	95.41	43.36	27.18	254.75	48

*Tariff rates for treated and control products are from 2001; and the tariff rates for the ineligible products are from 2003.

Table 6B: Canada's Market Access Initiative -- Treated Products by Sections

Product Sections (HS Chapters)	Treated Products	Control Products	Ineligible Products
Animal products (1-5)	10 (1.55%)	150 (3.53%)	34 (70.83%)
Veggies (6-14)	23 (3.56%)	231 (5.44%)	0
Fats (15)	2 (0.31%)	40 (0.94%)	0
Foodstuff (15-24)	12 (1.86%)	150 (3.53%)	12 (25%)
Minerals (25-27)	0.00	142 (3.34%)	0
Chemicals (28-38)	0.00	748 (17.61%)	2 (4.17%)
Plastic (39-40)	0.00	192 (4.52%)	0
Leather (41-43)	0.00	51 (1.20%)	0
Wood (44-46)	0.00	79 (1.86%)	0
Paper (47-49)	0.00	138 (3.25%)	0
Textiles (50-63)	572 (88.54%)	236 (5.56%)	0
Footwear (64-67)	26 (4.02%)	29 (0.68%)	0
Stone (68-70)	0.00	140 (3.30%)	0
Precious stone (71)	0.00	51 (1.20%)	0
Base metal (72-83)	0.00	557 (13.12%)	0
Machinery (84-85)	0.00	799 (18.81%)	0
Transport equipment (86-89)	0.00	130 (3.06%)	0
Medical instrument (90-92)	0.00	235 (5.53%)	0
Arms (93)	0.00	15 (0.35%)	0
Other manufactured (94-96)	1 (0.15%)	127 (2.99%)	0
Arts (97)	0.00	7 (0.16%)	0
Total	**646 (100%)**	**4247 (100%)**	**48 (100%)**

Figure 1: Average Value of LDC Imports by Product Groups (in thousand USD) – JAPAN

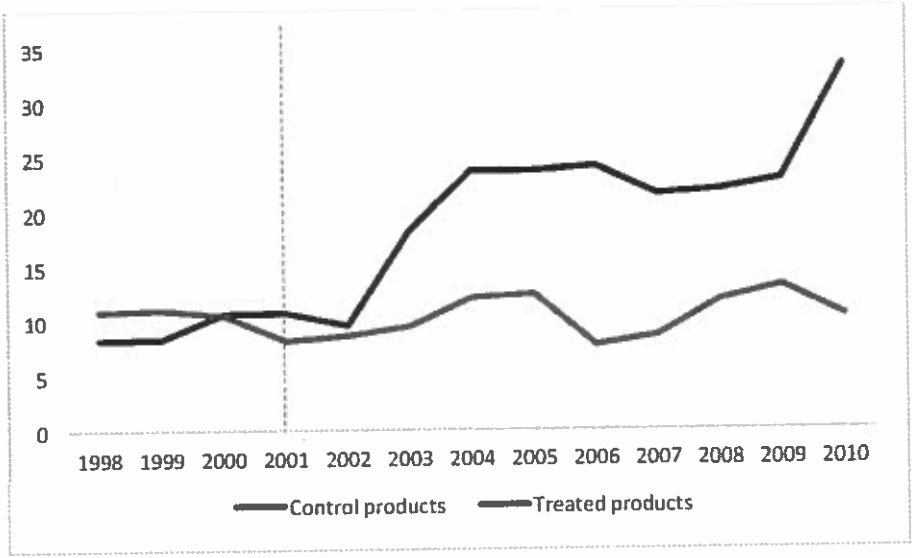

Figure 2: Average Value of LDC Imports by Product Groups (in thousand USD) – EU15

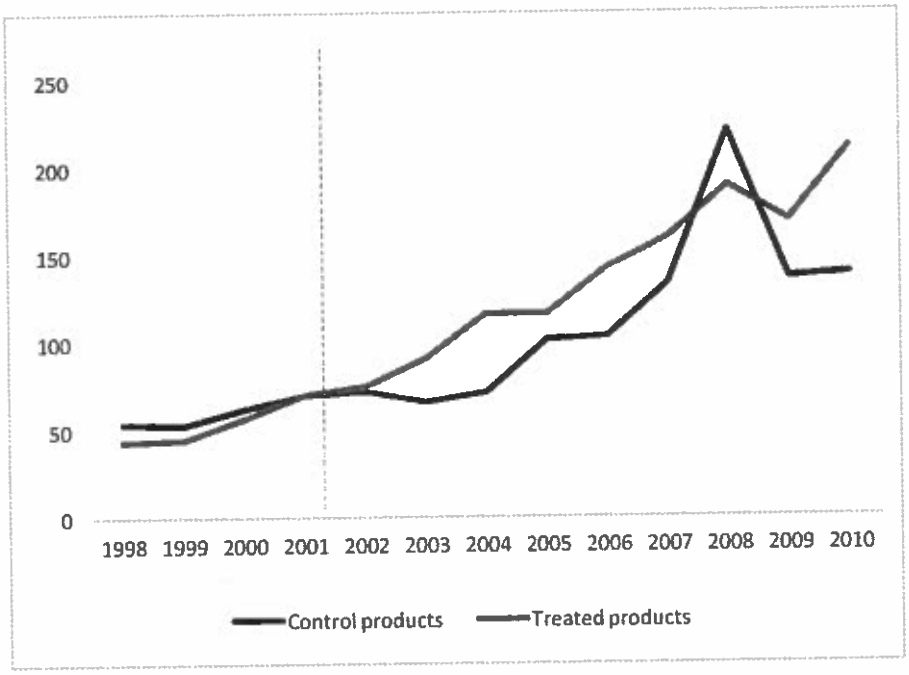

Figure 3: Average Value of LDC Imports by Product Groups (in thousand USD) – NORWAY

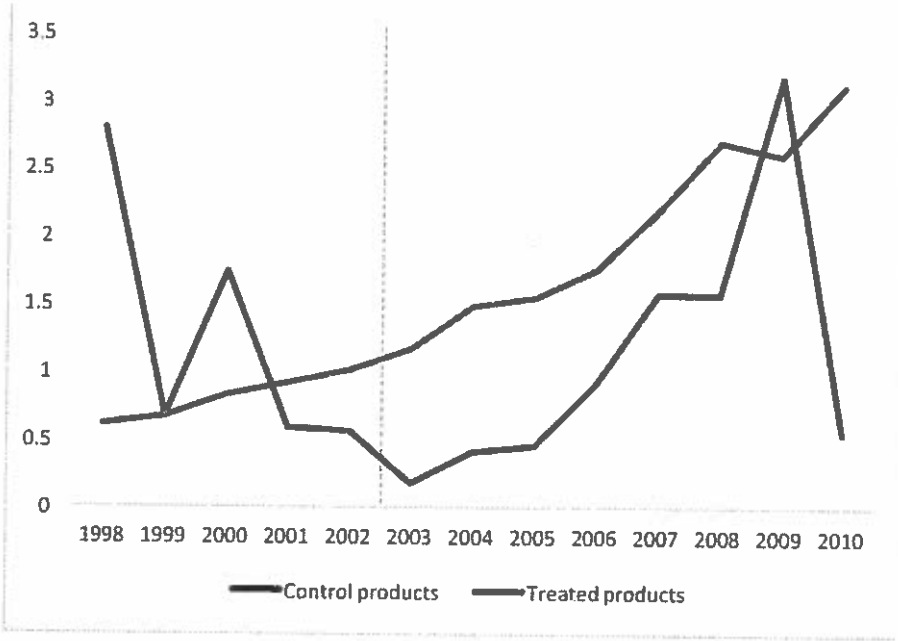

Figure 4: Average Value of LDC Imports by Product Groups (in thousand USD) – NEW ZEALAND

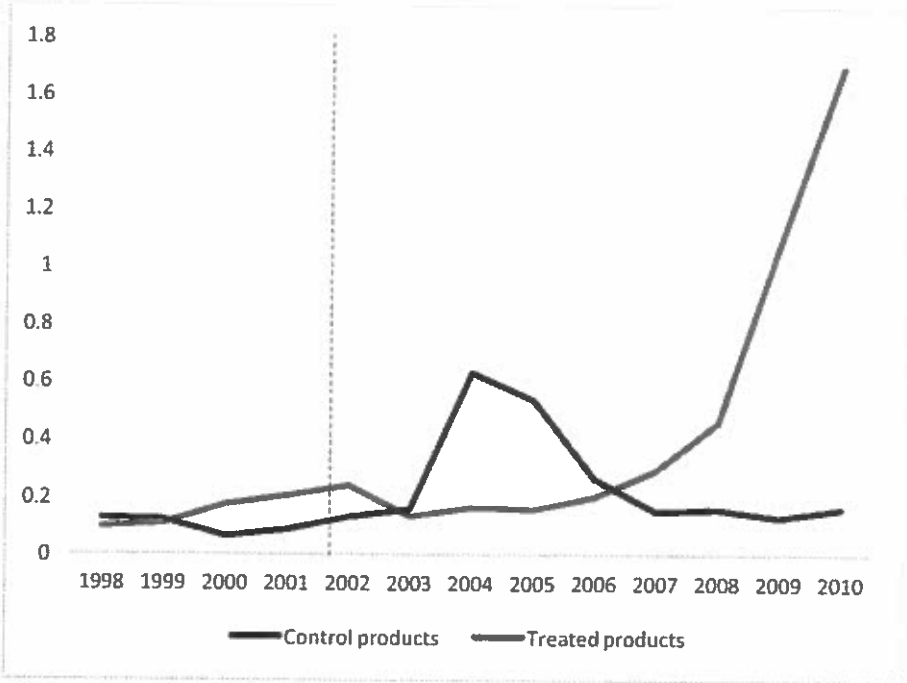

Figure 5: Average Value of LDC Imports by Product Groups (in thousand USD) – CANADA

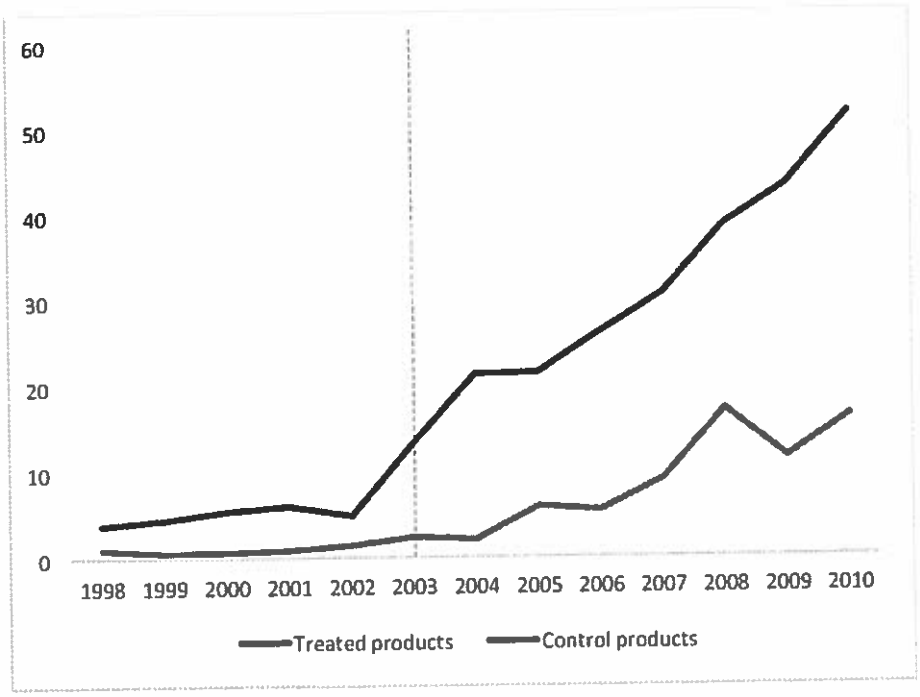

Table 7: Main Results for Japan

	(1) Baseline	(2)	(3)	(4)	(5) Baseline*	(6) Sensitivity	(7) LDCs	(8) LMs	(9) DDD
treatedproducts* treatedyears	-0.0193**	-0.0180**	-0.0168**	-0.0136**	-0.0267**	-0.0158**	-0.0193**	-0.056***	-0.0538***
	(0.00780)	(0.00718)	(0.00695)	(0.00629)	(0.0113)	(0.00617)	(0.00780)	(0.0171)	(0.0169)
treatedproducts	-0.115**	-0.106**	-0.107**	-0.0634***	-0.126**		-0.115**	-0.36***	-0.284***
	(0.0485)	(0.0473)	(0.0474)	(0.0198)	(0.0521)		(0.0485)	(0.0639)	(0.0512)
treatedyears	0.0270**	0.0432***	-0.0216	0.00759	0.0364***		0.0270**	0.151***	0.149***
	(0.0103)	(0.0161)	(0.0457)	(0.0101)	(0.0129)		(0.0103)	(0.0398)	(0.0394)
ineligible	-0.131**	-0.125**	-0.125**	-0.0432***	-0.147**		-0.131**	0.0192	-0.323***
	(0.0517)	(0.0512)	(0.0511)	(0.0151)	(0.0568)		(0.0517)	(0.0182)	(0.0501)
treatedproducts* treatedyears *treatedcountries									0.0299*
									(0.0178)
Country FE	-	Y	Y	Y	-	-	-	-	-
Time FE	-	Y	Y	-	-	Y	-	-	-
Time trend	-	-	Y	Y	-	-	-	-	-
Chapter FE	-	-	-	Y	-	-	-	-	-
Product-Country FE	-	-	-	-	-	Y	-	-	-
Observations	2,406,454	2,406,454	2,406,454	2,406,454	1,275,558	2,406,454	2,406,454	5,061,472	7,467,926
R-squared	0.003	0.072	0.076	0.085	0.003	0.000	0.003	0.003	0.017

Notes: For all columns, the dependent variable is natural log of import values with 1 dollar added to zero trade flows. The sample is restricted to the LDCs for all columns except (8) and (9). All standard errors are clustered at the country level. Column (6) runs fixed-effects model as in equation (2) and examines the variation within country-product pair. Column (8) runs equation (1) with the sample restricted other developing countries (Lower-Middle income countries and Low income countries without LDC designation) with no fixed effects controls. Column (9) runs the triple-differences specification; other double interaction terms have been omitted from the column. Stars follow the convention: *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Main Results for EU15

	(1) Baseline	(2)	(3)	(4)	(5) Baseline*	(6) Sensitivity	(7) Sensitivity*	(8) LDCs	(9) LMs	(10) DDD
treatedproducts* treatedyears	-0.0357**	-0.0320**	-0.0279*	-0.0269*	-0.00593	-0.0306**	-0.000996	-0.0357**	-0.0748***	-0.0752***
	(0.0150)	(0.0145)	(0.0140)	(0.0141)	(0.0151)	(0.0142)	(0.0147)	(0.0150)	(0.0160)	(0.0160)
treatedproducts	-0.00189	0.000946	-0.000862	-0.0703***	-0.00338			-0.00189	0.0420	0.0275
	(0.0378)	(0.0373)	(0.0375)	(0.0150)	(0.0379)			(0.0378)	(0.0427)	(0.0435)
treatedyears	0.136***	0.182***	0.453**	0.0647	0.0813***			0.136***	0.439***	0.440***
	(0.0281)	(0.0453)	(0.217)	(0.0388)	(0.0300)			(0.0281)	(0.0662)	(0.0662)
ineligible	-0.0259	-0.0335	-0.0336	0.131***	-0.0350			-0.0259	0.245***	0.156***
	(0.0250)	(0.0259)	(0.0259)	(0.0191)	(0.0252)			(0.0250)	(0.0526)	(0.0379)
treatedproducts* tyears *tcountries										0.0402*
										(0.0219)
Country FE	-	Y	Y	Y	-	-	-	-	-	-
Time FE	-	Y	Y	-	-	Y	Y	-	-	-
Time trend	-	-	Y	Y	-	-	-	-	-	-
Chapter FE	-	-	-	Y	-	-	-	-	-	-
Product-Country FE	-	-	-	-	-	Y	Y	-	-	-
Observations	2,769,210	2,769,210	2,769,210	2,769,210	1,312,149	2,769,210	1,312,149	2,769,210	5,673,110	8,442,320
R-squared	0.001	0.065	0.070	0.098	0.000	0.001	0.001	0.001	0.002	0.036
# of country-product pair						230,962	228,467			

Notes: For all columns, the dependent variable is natural log of import values with 1 dollar added to zero trade flows. The sample is restricted to the LDCs for all columns except (9) and (10). All standard errors are clustered at the country level. Column (6) and (8) run fixed-effects model as in equation (2) and examines the variation within country-product pair. Column (9) runs equation (1) with the sample restricted other developing countries (Lower-Middle income countries and Low income countries without LDC designation) with no fixed effects controls. Column (10) runs the triple-differences specification, other double interaction terms have been omitted from the column. Stars follow the convention: *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Main Results for Norway

	(1) Baseline	(2)	(3)	(4)	(6) Sensitivity	(7) LDCs	(8) LMs	(9) DDD
treatedproducts* treatedyears	0.0233*	0.0230*	0.0204*	0.0207*	0.0184*	0.0233*	0.0970***	-0.0538***
	(0.0132)	(0.0129)	(0.0120)	(0.0123)	(0.0108)	(0.0132)	(0.0209)	(0.0169)
treatedproducts	0.0233*	0.0381	0.0398	-0.0155**		0.0445*	0.237***	0.237***
	(0.0132)	(0.0231)	(0.0237)	(0.00718)		(0.0260)	(0.0660)	(0.0661)
treatedyears	0.0233*	0.0197***	-0.0387	-0.00608*		0.00787**	0.115***	0.115***
	(0.0132)	(0.00597)	(0.0239)	(0.00334)		(0.00314)	(0.0353)	(0.0352)
ineligible	0.0233*	0.00620	0.00617	-0.00367		0.0233*	0.0970***	0.0970***
	(0.0132)	(0.00512)	(0.00510)	(0.00614)		(0.0132)	(0.0209)	(0.0208)
treatedproducts* treatedyears *treatedcountries								-0.0737***
								(0.0246)
Country FE	-	Y	Y	Y	-	-	-	-
Time FE	-	Y	Y	-	Y	-	-	-
Time trend	-	-	Y	Y	-	-	-	-
Chapter FE	-	-	-	Y	-	-	-	-
Product-Country FE	-	-	-	-	Y	-	-	-
Observations	2,121,950	2,121,950	2,121,950	2,121,950	2,121,950	2,406,454	5,061,472	7,467,926
R-squared	0.002	0.078	0.084	0.094	0.001	0.003	0.003	0.017
# of country-product pair					195,416			

Notes: For all columns, the dependent variable is natural log of import values with 1 dollar added to zero trade flows. The sample is restricted to the LDCs for all columns except (8) and (9). All standard errors are clustered at the country level. Column (6) runs fixed-effects model as in equation (2) and examines the variation within country-product pair. Column (8) runs equation (1) with the sample restricted other developing countries (Lower-Middle income countries and Low income countries without LDC designation) with no fixed effects controls. Column (9) runs the triple-differences specification; other double interaction terms have been omitted from the column. Stars follow the convention: *** p<0.01, ** p<0.05, * p<0.1.

Table 10: Main Results for New Zealand

	(1) Baseline	(2)	(3)	(4)	(5) Baseline*	(6) Sensitivity
treatedproducts* treatedyears	0.0563	0.0556	0.0557	0.0558	0.0310	0.0396
	(0.0338)	(0.0340)	(0.0339)	(0.0339)	(0.0204)	(0.0322)
treatedproducts	0.0455	0.0418	0.0417	-0.0381**	0.0455	
	(0.0274)	(0.0278)	(0.0278)	(0.0163)	(0.0274)	
treatedyears	0.00856***	0.0168***	-0.0548*	-0.00576**	0.00569**	
	(0.00248)	(0.00496)	(0.0305)	(0.00255)	(0.00227)	
ineligible	0.0230**	0.0206**	0.0206**	0.00161	0.0182**	
	(0.00948)	(0.00817)	(0.00819)	(0.00918)	(0.00826)	
treatedproducts* treatedyears *treatedcountries						
Country FE	-	Y	Y	Y	-	-
Time FE	-	Y	Y	-	-	Y
Time trend	-	-	Y	Y	-	-
Chapter FE	-	-	-	Y	-	-
Product-Country FE	-	-	-	-		Y
Observations	2,233,177	2,233,177	2,233,177	2,233,177	1,566,766	141,979
R-squared	0.002	0.051	0.052	0.054	0.002	0.004
# of country-product pair						12,165

Notes: For all columns, the dependent variable is natural log of import values with 1 dollar added to zero trade flows. The sample is restricted to the LDCs for all columns. All standard errors are clustered at the country level. Column (7) runs fixed-effects model as in equation (2) and examines the variation within country-product pair. Stars follow the convention: *** p<0.01, ** p<0.05, * p<0.1.

Table 11: Main Results for Canada

	(1) Baseline	(2)	(3)	(4)	(5) Sensitivity	(6) LDCs	(7) LMs	(8) DDD
treatedproducts* treatedyears	0.110*	0.113*	0.113*	0.106*	0.091*	0.110*	0.0607*	0.0607*
	(0.0609)	(0.0606)	(0.0603)	(0.0585)	(0.0468)	(0.0609)	(0.0606)	(0.0318)
treatedproducts	0.108	0.106	0.107	-0.0306*		0.108	0.4503***	0.4501
	(0.0648)	(0.0640)	(0.0642)	(0.0160)		(0.0648)	(0.1034)	(0.1033)
treatedyears	0.0257***	0.0233***	-0.00820	0.0264***		0.0257***	0.1723***	0.1723
	(0.00595)	(0.00505)	(0.00631)	(0.00611)		(0.00595)	(0.0378)	(0.0377)
ineligible	-0.0191*	-0.0167	-0.0155	0.0205		-0.0191*	0.0302	0.0151
	(0.0113)	(0.0109)	(0.0109)	(0.0184)		(0.0113)	(0.082)	(0.0569)
treatedproducts* treatedyears *treatedcountries								0.0469
								(0.468)
Country FE	-	Y	Y	Y	-	-	-	-
Time FE	-	Y	Y	-	Y	-	-	-
Time trend	-	-	Y	Y	-	-	-	-
Chapter FE	-	-	-	Y	-	-	-	-
Product-Country FE	-	-	-	-	Y	-	-	-
Observations	2,358,194	2,358,194	2,358,194	2,358,194	2,358,194	2,358,194	5,293,485	7,651,679
R-squared	0.005	0.083	0.083	0.083	0.001	0.005	0.0052	0.0187
Country-product pairs					209,556			

Notes: For all columns, the dependent variable is natural log of import values with 1 dollar added to zero trade flows. The sample is restricted to the LDCs for columns (1) to (6). All standard errors are clustered at the country level. Column (5) runs fixed-effects model as in equation (2) and examines the variation within country-product pair. Column (7) runs equation (1) with the sample restricted other developing countries (Lower-Middle income countries and Low income countries without LDC designation) with no fixed effects controls. Column (5) runs the triple-differences specification; other double interaction terms have been omitted from the column. Stars follow the convention: *** p<0.01, ** p<0.05, * p<0.1.