Discussion paper

Economic Integration Agreements and Firm Internationalization

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Abstract

Economic Integration Agreements (EIAs) can be powerful instruments for countries to stimulate the international activity of their firms. We combine micro data on the international trade and investment activities of Dutch firms as well as the presence of tariff and non tariff measures over the period 2008-2018 with macro data on the presence of preferential trade (PTAs), bilateral investment (BITs) and double taxation treaties (DTTs). During this period, we show that non-tariff measures have been increasing while the decrease in tariff reductions has stagnated. In addition, we show that PTAs are positively associated with the extensive and intensive margin of trade and investment flows, while the results for BITs and DTTs are more diffuse. We exploit the granularity of our firm level data to show that larger firms, already facing on average higher tariffs, are more negatively affected by such tariffs than smaller firms. On the other hand, SMEs are more affected by non-tariff measures. Given the important role that SMEs play in distributing the gains of globalization to the wider society, a tentative policy recommendation would be to focus increasingly on deepening trade agreements and streamline non-tariff measures.

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1 Introduction

Economic Integration Agreements (EIAs) are a popular policy instrument to boost firms' international activities. By helping firms to expand internationally, they are able to grow in size and productivity, employing more workers and paying higher wages. Other potential advantages include improved product quality and safety or lower prices, both improving consumer welfare.

The World Trade Organization (WTO), established in 1994 as a replacement for the GATT, aims to ensure that international trade runs smoothly between countries. In doing so, it aims to remove trade barriers and ensure that countries comply with the agreements. The WTO has been successful in this regard, as witnessed by the huge decrease in bilateral trade rates in the period. In addition, various studies have stated that international trade has made enormous progress thanks to the efforts of the WTO (Subramanian and Wei, 2007; Tomz et al., 2007; Liu, 2009; Herz and Wagner, 2011).

Against the reduction in tariffs, there is an enormous growth in non-tariff measures (NTMs). NTMs are policy measures, other than trade tariffs, that may have an economic effect on the quantity and price of international trade. The main NTM categories are technical trade to barriers (TBTs) and sanitary and phytosanitary (SPS) measures. Although such policies can be justified with regard to food safety and product quality, they can also serve as protectionism or for political purposes (Beverelli et al., 2014; Ronen, 2017; Niu et al., 2018). When NTMs have a clear distortionary effect on trade, they are typically referred to as non-tariff barriers (NTBs).

In order to remove these barriers as well, trade agreements must become more extensive and deeper. This means that, in addition to tariffs, they must also determine how the safety and quality of products can be recognized, how intellectual property rights are protected, anti-corruption, fair competition and other *beyond the border measures*. Other economic integration agreements such as bilateral investment treaties (BITs) are becoming deeper as well. The culmination of this deepening of trade integration was in 2016, when there were ongoing negotiations about the so called mega-regionals like TPP, TTIP and CETA. Since then, however, there has been a backlash of anti-globalization sentiment, that seems to have halted further integration.

This backlash is surprising, given the economic doctrine that EIA's are generally trade and welfare promoting. This has sparked new interest in the topic. Trying to explain this apparent paradox, new research aiming to take into account the heterogeneity in the depth of EIAs has emerged, (e.g. Kohl et al. (2016); Ruta et al. (2017)). However, doing so has not necessarily made the fundamental question as to how EIAs affect trade and investment any easier to answer (Baier et al., 2019; Saucier and Rana, 2017).

Instead of finding resolution in more granular EIA data, resolving the debate may lay in using more granular trade and investment data. The vast majority of the literature relies on macro data, in terms of trade between countries and industries. However, in the spirit of Melitz (2003), firm level differences allow firm internationalization to widely diverging degrees. Taking the fixed (e.g. establishing an affiliate abroad, search costs) and variable (e.g. transport, tariffs, non-tariff measures) costs of trade policies into account, Baccini et al. (2017) show both theoretically and empirically that only the most productive firms are able to benefit from EIAs. If that is indeed the case, given the important role that SMEs play in distributing the economic gains of internationalization to the wider economy, it may explain part of the anti globalization sentiment. In any case, we agree with Baccini et al. (2017) that debates over the politics of trade policy, and particularly its distributional

consequences which are so crucial in explaining the sentiment regarding globalization, are best informed using evidence at the micro level. In exploring the design and consequences of trade agreements, it would therefore appear natural to focus analytical inquiry on the political and economic activities of firms.

In line with these developments on the increasing granularity in terms of the content of EIAs as well as the importance to control for firm-level differences, this paper employs a firm level analysis of the effect of preferential trade agreements (PTAs), Bilateral Investment Treaties (BITs), Double Taxation Treaties (DTTs), tariffs and non-tariff measures on firm internationalization in the Netherlands over the period 2008-2018. As a co-founder of one of the world's largest integration projects, (the European Union), the Netherlands is an interesting case study, given the open nature of its economy. International trade makes up a third of the Dutch GDP and investment flows from and to the Netherlands consistently rank among the top of the world (UNCTAD, 2018). The country also ranks among the top countries in the world in terms of the amount of bilateral investment, trade and taxation treaties it has signed (Franssen, 2018). This large network also allows for treaty shopping: the practice whereby multinational enterprises (MNEs), rather than investing directly in a host country, redirect the investment through a third country to take advantage of treaty provisions not found between the host and the home country of the investment (Davies, 2004). As a result, as much as 80% (Franssen, 2018) of Dutch incoming and outgoing investments are done through special purpose vehicles (SPVs). The literature has already shown that an important determinant for these investments flows include investment and tax treaties (Weyzig, 2013; van't Riet and Lejour, 2018).

Besides the presence, depth, duration and content of these agreements, we also present firm level measures of the presence of NTMs and trade tariffs, a novelty in the literature. We find that PTAs have a particularly strong and positive effect on the intensive and extensive margin of exports. The results for BITs and DTTs as well as the links with investment activity are more diffuse. PTA depth as well as tariff and non-tariff measures, initially, do not seem to significantly affect internationalization activity. However, when conditioning tariffs and non-tariff measures on firm size, we see that tariffs particularly hurt larger firms, and NTMs the smaller firms. This would suggest that large firms could benefit particularly from shallow agreements focusing on tariff reductions only, while smaller firms could benefit from deeper trade agreements, a finding that is in line with a recent paper by Baccini et al. (2017).

The rest of this paper is structured as follows. The next section reviews the extant literature on the topic, looking both at the aim and evidence of EIAs on firm internationalization. Section 3 discusses the data and section 4 the empirical methodology. After presenting the results, a conclusion will follow.

2 Aim and content of international investment agreements

The aim of EIAs is to foster economic integration and allow firms to access larger international markets and grow in size and productivity. By reducing tariffs, EIAs can help firms to export to foreign markets cheaper, or import important inputs at a lower price. By setting quality requirements, EIAs can improve product quality, improving consumer safety and welfare. Over the past decades, the number of treaties has grown signficantly, although it has attenuated in recent years.

The fundamental question remains whether and how EIAs affect international trade and investment. Bhagwati (1999) was the among the first to postulate that such agreements might actually have a negative impact on trade, given the formation of trade diversion resulting from a higher external tariff against outsiders. Rose (2004) provided empirical evidence that there was no significant evidence that the WTO-GATT had a significantly positive effect on trade, after taking into account standard gravity effects and the Generalized System of Preferences (GSP) from high-income countries to developing countries. Against such contributions, there is an arguably larger volume of empirical contributions that have shown positive effects (Subramanian and Wei, 2007; Tomz et al., 2007; Liu, 2009; Herz and Wagner, 2011). In fleshing out this effect, recent literature has pointed to the importance of correctly accounting for the heterogeneity of economic integration agreements, e.g. Baccini et al. (2015); Kohl et al. (2016); Hofmann et al. (2017); Baier et al. (2018); Saucier and Rana (2017). While Kohl et al. 2013 show that the presence of WTOX clauses in PTAs have a negative impact on trade, Orefice and Rocha (2014) find the opposite. Saucier and Sana (2018) go deeper, by separating the actual clauses and show a great deal of heterogeneity amongst the clauses. They find evidence of a pro-trade effect. The general consensus of these papers is that there is a significantly positive effect of PTAs on international trade, with the addition that deeper agreements typically affect trade even more.

The story is largely the same for international investments. While early studies did not find an immediate effect of BITs on international investments (Hallward-Driemeier, 2003; Rose-Ackerman and Tobin, 2005), later studies that opened the door to using more granularity on BITs found that deeper BITs do have an effect. Busse et al. (2010) was among the first studies that tested whether there was a difference among BITs with different provisions. They found only statistically significant results for the effects of BITs on FDI for treaties with ISDS provisions in place. The treaties without such provisions were statistically insignificant. Dixon and Haslam (2016) and Aisbett et al. (2018) find that BITs have a positive effect on bilateral FDI inflows into low and middle income countries. A study by Egger and Merlo (2012) uses firm-level data to analyze the effect of the presence of a BIT on the investment behavior of German multinational enterprises from the time period from 1996 to 2005. The authors broadly confirm their hypotheses that BITs should affect the number of active firms, as well as the number of plants, sales, FDI stocks and fixed assets per firm and host country.

The apparent increasing consensus in the literature that EIAs have a positive effect on trade stands in stark contrast to the anti-globalization backlash that has contributed to the halting of megaregional trade agreements. How can these be reconciled? Rather than looking for an answer in increasingly detailed data on EIAs, Baccini et al. (2017) refer to firm-level differences. As we know from other streams of literature (Melitz, 2003), only the most productive firms tend to be able to grasp further benefits of internationalization. Baccini et al. (2017) show that only these firms actually benefit from EIAs and that, in turn, they are also the ones with a lot of power drafting these agreements ex ante.

The content of PTAs is now sometimes characterized as being WTO+, referring to areas falling under WTO mandate, e.g. tariff barriers, customs administration, technical barriers to trade, import and export restrictions etc. Areas outside of WTO mandate are referred to as WTOx and include competition policy, labor mobility, environmental standards etc.

3 Data and descriptive statistics

We combine micro data on the activities of the full population of Dutch firms with macro data on the presence of international trade and investment agreements. The microdata is centered around the firm level information provided by Statistics Netherlands. We start from the Register of Business Demographics (RBD), which is the backbone of the firm-level statistics in the Netherlands as it contains data on firm characteristics such as the age of the firm, its size, ownership structure, multinationality and sector of activity of all enterprises that exist in the Netherlands in a given year. Using a common firm identifier, this data is then enriched with various other information. Firstly, R&D data and financial information taken from Baseline. This data source contains information on capital, turnover and intermediary inputs which allows us to calculate productivity in terms of value added per worker and capital intensity as well. Second, we add information from The International Trade in Goods statistics (ITG) which measures the value of goods involved in cross-border trade at the firm level. This data is recorded by two agencies. Extra-EU data is recorded by the Dutch Customs Authority. Intra-EU data is recorded by the Dutch Tax Authority where firms with intra-EU import and/or export values larger than a certain threshold[1] have to specify their trade at a product-country level. Below this threshold they only report the total value of import and export of intra-EU trade. Because of this limitation we have chosen to aggregate the Intra-EU trade in goods at the European level, for destinations outside the EU we keep the country level as this is recorder for all firms by the Dutch Customs Authority. Further, note that the export flows include re-exports. Third, we use data from the Dutch Tax Authority that records for each firm whether they have a foreign affiliate in a certain country as well as the value of that foreign direct investment. By matching this investment data to the RBD database, we exclude special purpose vehicles who do not engage in any productive activities other than SPV investments.

Besides the data from Statistics Netherlands, we add various external data with information on economic integration agreements (EIAs), tariff and non-tariff measures, and other destination specific variables. Specifically, we use information on the presence of Double Taxation Treates (DTTs) from the Dutch government (Rijksoverheid.nl), trade agreements from the DESign of Trade Agreements (DESTA, Dür et al. (2014)), Bilateral Investment Treaties (BITs) from BiTSel (Chaisse and Bellak, 2015) and UNCTAD. Tariff information comes in the form of weighted average ad valorem equivalents from MacMap while the NTM data is taken from UNCTAD TRAINS. Since these latter two datasets do not provide information for all destinations included in the firm level data, nor on every year for the sampled countries, we make several important assumptions. Concerning the NTM data, we only use the most recent information (see Appendix). We then assume that that information is valid for the entire period 2008-2018. Regarding tariffs, additional years are sampled per country, but gaps in the data are filled by assuming that the most recent data is again still valid in later years. For example, tariff data was sampled for Canada in 2013 and 2016, we then assume that the 2013 data applies to 2014 and 2015 as well. The appendix shows for which country-years we have primary data. Finally, standard gravity control variables are taken from CEPII.

After matching the firm specific data from Statistics Netherlands with the various external data sources, we end up with a firm level panel dataset of just over 158 thousand firms that have either exported or invested abroad in one of the possible 221 foreign

[1]This threshold can differ per year, but is currently at a total export value of 1.2 million euros.

destination[2] across the period 2008-2018. We have data on the presence of PTAs for 205 countries, tariffs for 70 and NTMs for 75 countries. Furthermore, over the period 2008-2018, the Netherlands were faced with 23 new PTAs, 5 new BITs and 13 new DTTs. This is relatively small, compared to the earlier years of economic integrations in the later 20th century and may be interpreted as a sign of the deglobalizing trend discussed earlier.

3.1 Descriptive statistics

This section provides an overview of the three main instruments of trade policy present in our dataset: the tariffs, NTMs and international trade and investment agreements. For tariffs, we show the unweighted and weighted ad valorem equivalents faced by Dutch exporters in the period 2010-2018. Unweighted AVEs are simply the average of all firms AVEs per country. Weighted AVEs take the exports of individual firms as weight, to provide weighted AVEs at the country level. Indices of NTMs, i.e. frequency, prevalence and coverage ratios are calculated based on the methodology in Cadot et al. (2015).

The top chart in Figure 1 applies to the full sample for which we have primary data (see Appendix). Apart from a peak in 2012, this figure does not show a clear trend. However, since our panel is unbalanced, each year does not necessarily show the same sample of countries. We therefore also take out two important extra-EU trading partners: the United States and China and show the AVEs only for years in which we have primary data. First thing that catches attention is the tariffs are markedly higher in China than in the US. Second, the weighted AVEs in China show a notably increasing trend since 2011. That increase is less visible in the USA, although there does seem to be a spike in the year 2016. This spike, however, is likely to be caused by an overall slow down in exports that year. The remaining basket of traded goods are likely agricultural goods which are typically higher taxed.

It if often said (World Bank, 2020) that tariff barriers have been decreasing over time, but that non-tariff measures are on the rise and sometimes acting as substitutes for formal tariffs (Beverelli et al., 2014; Orefice, 2017). Unfortunately, our firm level data does not allow a year by year overview of the development of NTMs so we used the WTO I-TIP database to look at the number of initiated NTMs per year. Here, the trend is much clearer and is notably going upwards (Figure 2).

[2]Note that the EU countries are collapsed from 28 destinations into 1.

Figure 1: Overview of AVEs over the period 2010-2018 for China and the USA

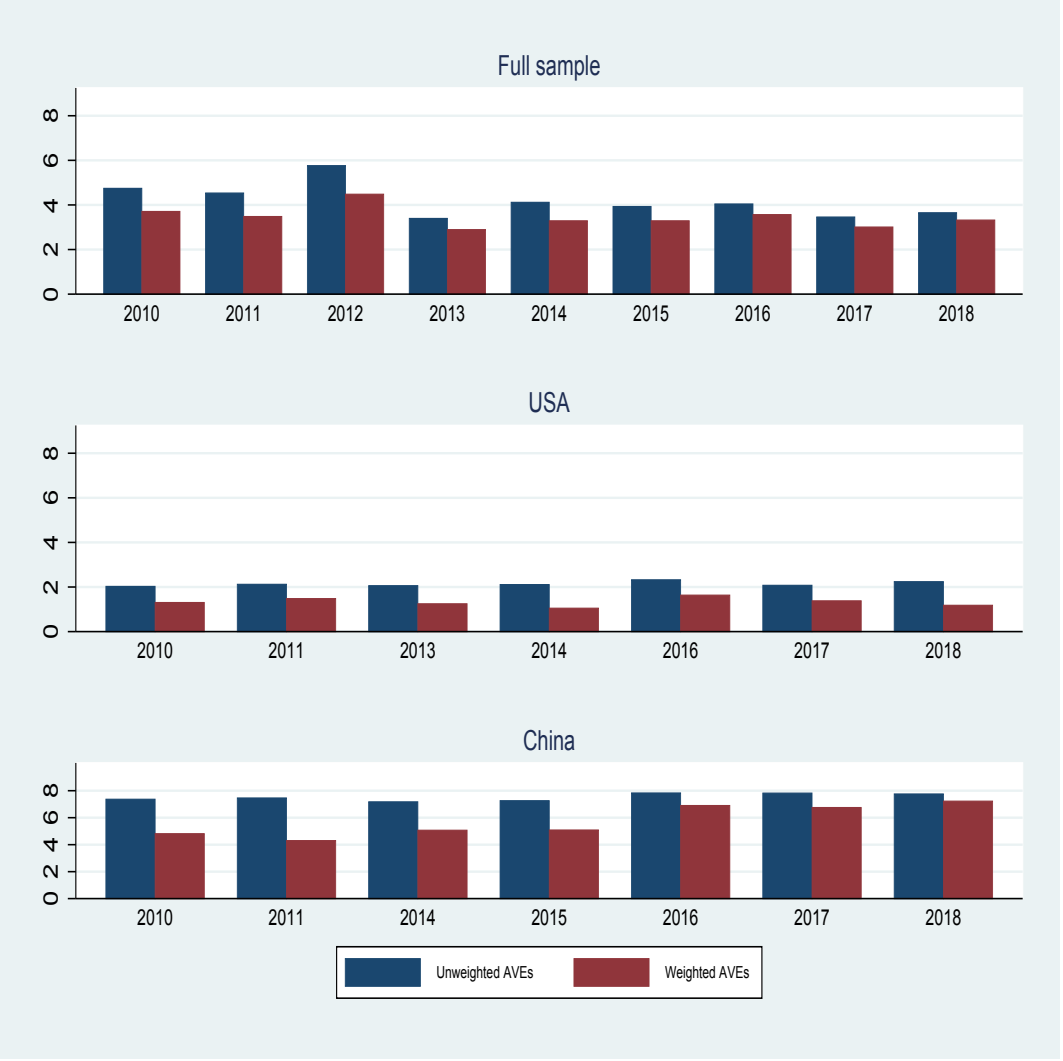
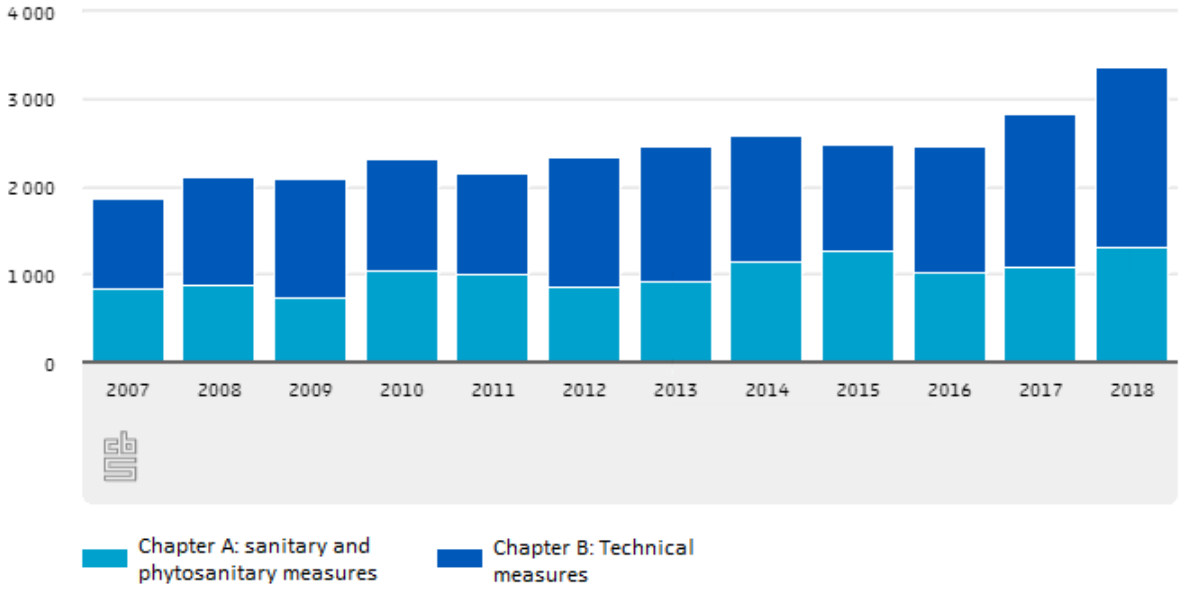


Figure 2: Number of initiated product specific NTMs over the period 2008-2018



Source: WTO I-TIP

Table 1 exploits the granularity of our data by providing additional information about the average tariffs faced by different firm classes, categorized e.g. by size and multinational status. Several things stand out. Firstly, we see that independent SMEs[3] (2.50%) on average pay less tariffs than non-SMEs (3.02%). Remarkably, Dutch MNEs, i.e. Dutch firms with foreign affiliates, face an average of only 0.95%. while simultaneuosuly facing the highest amount of NTMs in the form of the coverage, prevalence and frequency ratio, but the lowest regulatory distance. This is likely explained by the fact that these firms will export heavily to the EU, which is characterized by high regulation, but homogenous regulation within the EU. Indeed, when we exclude the European union, we see that this group of Dutch MNEs actually face the highest amount of tariffs on average (4.29%).

Table 2 shows the average tariff and non-tariff measures faced by Dutch firms in different parts of the world. What stands out is that Africa has relatively high tariffs, but low regulatory barriers. This is the opposite in Europe and America. In fact, the Table suggests that firms are faced with the lowest tariffs in America. Finally, the relatively high coverage, prevalence and frequency ratio but low regulatory distance in Europe can be simply explained by the European Union: despite a lot of regulation, it is homogenous within the bloc so that it has a low distance. Lastly, Table 3 shows that tariff and non tariff barriers are significantly lower in the presence of a PTA. Surprisingly, however, the absolute NTM indicators do not further in the presence of a deep rather than a shallow PTA. Investment (BIT) and tax (DTT) treaties do not seem to be correlated with significantly lower trade barriers, which seems intuitive.

[3]Independent SMEs are defined as firms with up to 250 employees, that also have no more than 249 employees at the highest aggregate domestic enterprise group level of the firm and with the ultimate control located in the Netherlands (see Chong et al. (2019) for an elaborate discussion)

Table 1: Overview of (non-)tariff (measures) per firm type

Firm type	AVE (%)	AVE (%) excl EU	Coverage	Prevalence	Frequency	Reg distance
Firm average	2.71	4.01	0.77	11.6	0.77	0.47
I-SME	2.50	3.89	0.78	10.5	0.77	0.47
non I-SME	3.02	4.17	0.77	13.1	0.77	0.46
Dutch MNE	0.95	4.29	0.88	15.4	0.88	0.35
Foreign MNE	2.70	3.66	0.78	13.6	0.77	0.45
Not an MNE	3.07	4.13	0.75	10.3	0.75	0.54

Note: Average apply to the full period. AVEs are unweighted averages of individual firms.

Table 2: Overview of (non-)tariff (measures) per destination

	AVE (%)	AVE (%) excl EU	Coverage	Prevalence	Frequency	Reg distance
Country average	2.73	3.36	0.87	16.1	0.81	0.43
Africa	6.56	6.56	0.69	8.4	0.55	0.33
America	2.77	2.77	0.86	20.1	0.82	0.51
Asia	3.67	3.67	0.87	12.6	0.80	0.48
Europe	1.51	3.07	0.88	17.1	0.84	0.19

Note: Average apply to the full period. AVEs are weighted averages of individual countries.

Table 3: Overview of (non-)tariff (measures) per treaty

	AVE (%)	AVE (%) excl EU	Coverage	Prevalence	Frequency	Reg distance
No PTA	3.89	3.89	0.90	17.6	0.86	0.52
Shallow PTA	2.37	2.37	0.73	9.3	0.63	0.39
Deep PTA	0.97	2.14	0.85	15.9	0.78	0.25
No BIT	2.45	2.45	0.87	20.7	0.84	0.50
BIT	2.89	4.15	0.86	13.1	0.79	0.38
No DTT	2.30	2.30	0.87	18.2	0.81	0.49
DTT	2.90	3.96	0.86	15.1	0.81	0.40

Note: Average apply to the full period.
Shallow PTAs only focus on tariff reductions, deep PTAs also look at NTMs

4 Econometric specification

We follow the literature in using a Poisson maximum likelihood estimator (Santos Silva and Tenreyro, 2006) to estimate the effects of EIAs on the extensive margin of firm internationalization as follows:

$$Int_{jt} = exp(\beta_1 treaties_{jt-1} + \beta_2 NTM_{jt-1} + \beta_3 tariff_{jt-1} + \beta_4 gravity_{jt-1} + \theta_{jt})\epsilon_{ijt} \quad (1)$$

where Int_{jt} represents the number of firms that either export or invest in destination j at time t. This specification is based on Egger and Merlo (2012) formulation of the extensive and intensive margins as log-linear functions of trade costs, market size, production costs and fixed costs. For the trade costs, we will use information on whether the Netherlands has a DTT, a BIT and/or a PTA in force with country j at time t. Besides these simple dummy variables, we will also include indicators for the depth of the agreement, the duration of the agreement and the presence of specific provisions such as the investor state dispute settlement (ISDS). Like the other control variables, we will use the information in $t-1$, due to the endogenous relationship with the dependent variable. Besides such treaties, we also look at trade costs in the form of tariff and non-tariff barriers. For tariffs, we use the average weighted AVE faced by Dutch firms in destination j at time t. For NTMs, we will use the average regulatory distance in NTM policies over absolute proxies such as the coverage, frequency and prevalence ratio. For market size, we use the (log of) the destination's GDP. We also include gravity variables such as the weighted distance to the destination and the (log of) the destinations GDP. We further follow Egger and Merlo (2012) in modelling production costs as being proportional to GDP, the average tertiary school enrollment and capital/labour ratio in destination j and time t. Finally, θ_{jt} includes time and destination fixed effects, depending on the specification.

Besides the extensive margin, we also look at the intensive margin of trade and investment. We do so by using the richness of our data and employing our analysis at the firm level. Specifically, we expand specification (1) to:

$$Int_{ijt} = exp(\beta_1 treaties_{jt-1} + \beta_2 NTM_{ijt-1} + \beta_3 tariff_{ijt-1} + \beta_4 gravity_{jt-1} + \beta_5 firm_{it-1} + \theta_{jt})\epsilon_{ijt} \quad (2)$$

where Int_{ijt} is now the value of either goods exports or investment of firm i in destination j at time t. For the treaties and the gravity variables, we use the same indicators as before. For trade and investment barriers, we can now look at tariff (AVEs) and non-tariff barriers at the firm level, a unique feature of this paper. Finally, we include various control variables for firm. Rather than using purely observed variables at the firm and destination level, we will also experiment with fixed effects to control for various unobserved effects at the firm, country and/or year level, covered in θ_{jt}.

Having information at the firm level means we are able to explore how firm heterogenity might explains the apparent conflict in the literature. We therefore follow Baccini et al. (2017) in conditioning the effect of treaties and tariffs on firm size by interacting these variable with a dummy variable separating independent SMEs from other classes, or the (log of) number of employees, of firm i at the time $t-1$. This specification will give us an insight in how firms of different sizes are affected in their internationalisation by changes to tariffs and treaties. We are particularly interested if we find evidence in line with Baccini et al. (2017) that larger firms tend to benefit from reductions in tariffs,

while smaller firms tend to benefit from changes in the depth of trade and investment agreements.

5 Results

This section is divided in two large sections. We will explain by analyzing the results as dictated by equation (1) that provide an indication of the effect of various trade policies at the number of firms exporting to and investing in foreign destinations. After that, the second section looks at the outcome of specification (2) for the intensive margin. In that section, we will also look at conditional effects of the size of a firm.

5.1 Extensive margin

Table 4 shows the effect of treaties on the extensive margin of trade. A PTA has a positive effect in most specifications (columns 4-9). That is robust to their interaction with other treaties (columns 4, 5, 8 and 9), the inclusion of tariff and NTM control variables (col. 5, 7, 9) and the inclusion of country fixed effects (col. 6-9). The effect of the other treaties (BITs and DTTs) seems more diffuse, with BITs entering the equation signficantly negative in columns 1, 2 and 7 but insignificant in 4,5 and 8 but significantly positive in column 9. Given the likely multicollinearity between treaties, the columns with interactions between the treaties are preferred. In those specifications, BITs and DTTs typically seem to have a positive association with the number of exporters per country.

The depth index in column (2) is insignificant, but notice that we lose a lot of observations because it only applies to countries where there is a PTA. To solve that problem for the key variable in column 4, the number of years enforced per treaty, we coded non-existing treaties with a value of 0. However, the results in column 3 suggest there is no significant effect of the duration on export values. What is surprising, perhaps, is that if we exclude the EU from the sample, the duration of PTAs and DTTs has a significantly positive effect on export values (not shown). The tariff and non tariff measures also enter the equation insignificantly. The gravity like control variables enter as one would expect. Perhaps interesting is that the number of investors in a country is also significantly positive, pointing to the complementarity of trade and investments.

Table 5 provides the results for the number of investors per destination. There are less columns because, compared to Table 4, we have dropped columns that included specific trade controls, such as the depth of a trade agreement (Table 4, col. 3) and the inclusion of specific trade barriers (Table 4, columns 5, 7 and 9).

As stated before, our preferred specification includes the one where the various treaties are interacted, to control for their likely multicollinearity. In that case, column 3 shows DTTs, BITs and PTAs all have a significantly positive effect on the total number of Dutch investors in the respective destinations. Surprisingly, however, we find a significantly negative coefficient for the combination of a PTA and a BIT in column (5). This is likely to be explained by a compositional effect, as this relatively small sample only applies to countries (given the inclusion of destination fixed effects) where a new treaty has been signed with over the past 12 years. This is another reason why our preferred specification is one with interacting treaties, excluding destination fixed effects.

Finally, the number of exporters in a country is also positively correlated with the number of investors, although the effect is weaker than the other way around as displayed

in Table 4. This suggests that investmens follow exports more than the other way around, which is in line with the findings by Conconi et al. (2016).

Table 4: Trade policy and the extensive margin of trade (number of exporters)

	(1) Exp	(2) Exp	(3) Exp	(4) Exp	(5) Exp	(6) Exp	(7) Exp	(8) Exp	(9) Exp
PTA	0.0919					0.133***	0.144***		
	(1.48)					(3.91)	(3.42)		
BIT	-0.185**	-0.286***				-0.0391	-0.0456**		
	(-2.25)	(-2.92)				(-1.07)	(-1.99)		
DTT	0.167**	0.238				0.0300	0.0139		
	(2.29)	(1.37)				(1.15)	(0.42)		
PTA depth		-0.0165							
		(-0.69)							
PTA years enforced			-0.0000105						
			(-0.01)						
BIT years enforced			-0.000630						
			(-0.19)						
DTT years enforced			0.00164						
			(0.65)						
DTT only				0.155	0.0464			0.0622	0.121**
				(1.34)	(0.51)			(1.15)	(2.57)
BIT only				-0.0366	-0.0400			0.00707	0.0779**
				(-0.24)	(-0.30)			(0.13)	(2.12)
BIT and DTT only				0.108	0.0480			0.0435	0.0774**
				(0.94)	(0.50)			(0.73)	(2.44)
PTA only				0.246*	0.221**			0.200***	0.263***
				(1.95)	(1.98)			(5.22)	(7.52)
PTA and DTT only				0.432***	0.375***			0.218***	0.297***
				(3.40)	(3.10)			(3.81)	(4.40)
PTA and BIT only				-0.0299	-0.0856			0.116**	
				(-0.22)	(-0.68)			(2.00)	
PTA, BIT and DTT				0.0960	0.114			0.161**	0.104**
				(0.75)	(0.85)			(2.41)	(2.27)
Tariff pct					-0.0144		0.00117		0.00202
					(-1.16)		(0.16)		(0.26)
Reg Dist					0.156		-0.00275		-0.0401
					(0.80)		(-0.02)		(-0.27)
ln(distance)	-0.327***	-0.381***	-0.374***	-0.312***	-0.270***	-0.0824*	-0.0215	-0.0760*	-0.0146
	(-6.25)	(-3.92)	(-7.06)	(-6.77)	(-6.09)	(-1.96)	(-0.46)	(-1.67)	(-0.25)
ln(GDP)	0.222***	0.189***	0.217***	0.228***	0.232***	0.0199	0.246**	0.0194	0.240**
	(10.61)	(2.80)	(10.25)	(10.78)	(16.57)	(1.47)	(2.55)	(1.42)	(2.47)
School	0.00429***	0.00785	0.00346**	0.00421***	0.00216	-0.000109	-0.000680	-0.000384	-0.000939
	(2.70)	(1.48)	(2.17)	(2.77)	(1.29)	(-0.06)	(-0.44)	(-0.19)	(-0.51)
ln(capital/labour)	0.0365	-0.0293	0.0750**	0.0322	0.133***	0.0535***	0.0469	0.0550***	0.0632
	(0.96)	(-0.48)	(2.19)	(0.91)	(3.53)	(3.05)	(0.69)	(3.06)	(0.95)
ln(nb of investors)	0.0628*	0.0875*	0.0740**	0.0620**	0.0169	-0.00579	-0.0111	-0.00555	-0.00998
	(1.90)	(1.75)	(2.14)	(2.05)	(1.12)	(-0.78)	(-1.09)	(-0.74)	(-1.00)
Constant	1.761*	3.765	2.011**	1.370	0.293	7.299***	-1.026	7.224***	-1.051
	(1.92)	(1.33)	(2.31)	(1.47)	(0.44)	(15.94)	(-0.34)	(15.64)	(-0.34)
Observations	986	537	982	986	287	985	283	985	283

*p<0.10 **p<0.05 ***p<0.01

Note: All estimations use time dummies, columns (6)-(9) add country fixed effects

Table 5: Trade policy and the extensive margin of investment (number of investors)

	(1) Inv	(2) Inv	(3) Inv	(4) Inv	(5) Inv
PTA	0.433**			0.0744	
	(2.05)			(0.71)	
BIT	0.586*			0.000233	
	(1.72)			(0.01)	
DTT	0.237			-0.122**	
	(1.16)			(-2.07)	
PTA years enforced		0.0105**			
		(2.33)			
BIT years enforced		0.0155*			
		(1.73)			
DTT years enforced		0.0106*			
		(1.69)			
DTT only			0.634**		-0.102
			(2.11)		(-1.09)
BIT only			0.812**		-0.149
			(2.17)		(-1.44)
BIT and DTT only			0.823***		-0.148
			(3.47)		(-1.45)
PTA only			1.109***		0.237***
			(3.79)		(3.83)
PTA and DTT only			0.375		0.0375
			(1.14)		(0.52)
PTA and BIT only			0.454		-0.295**
			(1.32)		(-2.55)
PTA, BIT and DTT			1.511***		0.0724
			(7.77)		(0.81)
ln(distance)	-0.0621	0.0694	-0.0282	0.00939	0.0680
	(-0.36)	(0.41)	(-0.21)	(0.15)	(1.16)
ln(GDP)	0.318***	0.304***	0.291***	0.0235	0.00173
	(2.65)	(4.05)	(2.94)	(0.39)	(0.03)
School	0.00315	0.000723	0.00578*	0.000517	-0.00163
	(0.69)	(0.24)	(1.79)	(0.22)	(-0.73)
ln(capital/labour)	0.0761	0.100	0.0663	0.0294	0.0214
	(0.55)	(1.04)	(0.61)	(0.92)	(0.63)
ln(nb of exporters)	0.495	0.426*	0.531*	0.0433	0.0370
	(1.31)	(1.73)	(1.81)	(0.39)	(0.34)
Constant	-9.795***	-9.709***	-9.534***	5.936***	6.496***
	(-6.21)	(-6.16)	(-6.15)	(3.33)	(3.37)
Observations	738	735	738	720	720

*p<0.10 **p<0.05 ***p<0.01

Note: All estimations use time dummies, columns (4)-(5) add country fixed effects

5.2 Intensive margin

When we extent the analysis to exports of individual firms, we can investigate the effect of trade policy on the intensive, rather than the extensive margin of trade. As before, PTAs are significantly and positively correlated with export values. This applies for all the specification of Table 6. Furthermore, the longer a PTA is enforced, the higher firms' exports to that country appear to be (column 4). The effect of BITs and DTTs is somewhat ambiguous, with significantly positive and insignificant coefficients across various specifications. However, in our preferred specifications of columns 2 and 5, they correlations are all significantly positive. Tariffs are negatively correlated with trade values, which is intuitive (column 5), while the regulatory distance does not seem to have any significant effect. The control variables are intuitive.

Table 7 shows the effects for the intensive margin of firms' foreign direct investments. A perhaps surprising result is the significantly negative coefficient on the BIT dummy in the first column, which dissapears however when we include country fixed effects in column 4. This is most likely explained by the presence of the United States, which is after the joint European Union, the destination with the highest aggregate value of Dutch foreign direct investments. However, there is no BIT between the Netherlands and the US. As such, it seems intuitive how the significantly negative BIT dummy in column 1 becomes insignificant in column 4. Furthermore, when interacting the presence of treaties, along the lines of our preferred specification, shows significant relations only in the presence of country fixed effects (column 5).

Finally, we are interested in whether these forms of trade policy affect firms of different sizes differently. To that extent, 8 shows various interesting results. First of all, the mere presence of a PTA seems to benefit ISMEs more than non-ISMEs given the larger coefficient for ISMEs (2.361 rather than 1.754). The depth of a PTA still does not seem to matter significantly, except in column (6) where we include country fixed effects. That result suggests that non-ISMEs benefit from deeper PTAs. Even more interesting are the results on tariff and non tariff measures. Where the previous table (6) showed no significant effect of tariffs, Table 8 shows that tarrifs are significantly negatively correlated with export values for non-ISMEs while they are insignificantly correlated with the export values of ISMEs. On the other hand, NTMs, in the form of the regulatory distance (RD) seem to hurt ISMEs significantly, but not non-ISMEs (columns 5 and 9).

So while the mere presence of a PTA does seem to benefit ISMEs particularly, the depth does not seem to matter much. For larger firms, (the non-ISMEs), tariffs seem to be the main issue while for smaller firms, non-tariff measures are a more significant factor. This may seem intuitive, given that ISMEs already face, on average, lower tariffs than large firms (Table 1). These results are also in line with what Baccini et al. (2017) found, as they showed that tariff reductions particularly benefit larger firms and deeper agreements benefit smaller firms. While we don't find a direct association from our depth variable, we do see that smaller firms are affected by NTMs more so than large firms, which are typically the sort of obstacles that are the aim of deeper trade agreements.

Table 6: Effect of treaties on intensive margin of (total value of) firm exports

	(1) export	(2) export	(3) export	(4) export	(5) export	(6) export	(7) export	(8) export	(9) export
PTA	1.560***					0.0205	-0.251***		
	(3.24)					(0.80)	(-3.06)		
BIT	0.334		-0.0828			0.203	0.165***		
	(1.04)		(-0.24)			(1.06)	(3.85)		
DTT	0.262		-0.183			-0.0300	0.358*		
	(1.09)		(-0.81)			(-0.14)	(1.71)		
DTT only		0.933**			1.353***			-0.0449	0.0188
		(2.40)			(3.81)			(-0.26)	(0.13)
BIT only		0.822**			1.072*			0.0161	-0.282**
		(2.18)			(1.88)			(0.06)	(-2.26)
BIT and DTT only		0.559*			0.762**			0.147	0.177
		(1.93)			(2.19)			(0.50)	(1.57)
PTA only		2.009**			1.928***			0.104	-0.236***
		(2.06)			(2.68)			(0.74)	(-2.61)
PTA and DTT only		1.691			2.614***			-0.125	-0.261***
		(1.56)			(2.77)			(-0.92)	(-2.75)
PTA and BIT only		1.689***			1.848***			0.0538	
		(3.63)			(4.92)			(0.18)	
PTA, BIT and DTT		2.373***			2.428***			0.241	0.0370
		(4.27)			(6.29)			(0.90)	(0.24)
PTA depth			-0.0675						
			(-1.10)						
PTA years enforced				0.0415***					
				(4.40)					
BIT years enforced				0.0335***					
				(3.18)					
DTT years enforced				0.00487					
				(1.10)					
Tariff pct					-0.0566*		-0.0377		-0.0377
					(-1.92)		(-1.57)		(-1.57)
Reg dist					-0.203		0.181		0.179
					(-0.68)		(0.85)		(0.84)
ln(employees)	0.680***	0.679***	0.655***	0.655***	0.662***	0.662***	0.650***	0.662***	0.650***
	(19.60)	(19.20)	(49.72)	(14.99)	(23.34)	(19.12)	(24.51)	(19.11)	(24.53)
ln(inv value)	0.0244***	0.0234***	0.0210***	0.0178***	0.0183***	0.0190***	0.0163***	0.0189***	0.0162***
	(4.79)	(5.50)	(7.04)	(4.97)	(12.89)	(5.31)	(15.27)	(5.32)	(15.43)
ln(distance)	-0.283	-0.257	-0.197	0.396	0.142	0.726***	0.709***	0.727***	0.709***
	(-1.32)	(-1.12)	(-0.98)	(0.99)	(0.60)	(4.70)	(17.33)	(4.78)	(17.49)
ln(GDP)	0.959***	0.932***	1.258***	0.740***	1.050***	1.232***	1.239***	1.232***	1.239***
	(7.47)	(5.40)	(10.46)	(10.86)	(5.67)	(130.97)	(110.79)	(133.13)	(113.81)
School	0.0126***	0.0159***	0.00767	0.00783*	0.0159***	-0.00645	-0.0127***	-0.00748*	-0.0135***
	(3.10)	(2.90)	(1.12)	(1.83)	(2.59)	(-1.49)	(-5.78)	(-1.84)	(-7.82)
ln(capital/labour)	-0.393*	-0.395*	-0.533***	0.0225	-0.620*	-0.953***	-1.856***	-0.980***	-1.880***
	(-1.90)	(-1.69)	(-3.65)	(0.18)	(-1.78)	(-2.65)	(-3.34)	(-2.66)	(-3.42)
Constant	-12.36***	-12.12**	-17.23***	-15.29***	-16.14***	-19.28***	-9.944*	-18.99***	-9.422*
	(-2.99)	(-2.26)	(-4.12)	(-2.69)	(-3.30)	(-7.29)	(-1.72)	(-6.84)	(-1.67)
Observations	2788414	2788414	1363267	2303557	476172	2788414	476172	2788414	476172

*p<0.10 **p<0.05 ***p<0.01

Note: All estimations use time and sector dummies, columns (6)-(9) add destination dummies.

Table 7: Effects of treaties on intensive margin of investment: Firms' FDI

	(1) FDI	(2) FDI	(3) FDI	(4) FDI	(5) FDI
PTA	1.015			-0.163	
	(1.53)			(-0.47)	
BIT	-1.292***			0.270	
	(-3.28)			(1.16)	
DTT	0.346			0.559***	
	(1.17)			(3.77)	
PTA years enforced		0.0131*			
		(1.67)			
BIT years enforced		-0.0360***			
		(-2.66)			
DTT years enforced		0.00703			
		(0.73)			
DTT only			0.551		1.333***
			(1.34)		(6.32)
BIT only			-0.885		1.240***
			(-1.11)		(6.95)
BIT and DTT only			-0.816		1.250***
			(-1.21)		(11.56)
PTA only			1.346		0.441**
			(1.28)		(2.23)
PTA and DTT only			1.567		1.056***
			(1.27)		(3.34)
PTA and BIT only			-0.522		0.643***
			(-0.97)		(3.53)
PTA, BIT and DTT			0.191		1.559***
			(0.19)		(7.62)
ln(employees)	0.245***	0.223***	0.244***	0.241***	0.255***
	(6.39)	(7.02)	(6.81)	(7.27)	(7.80)
ln(export value)	0.0123	0.00757	0.0114	-0.00371	-0.0252
	(0.47)	(0.31)	(0.42)	(-0.12)	(-0.74)
ln(distance)	-0.171	-0.266	-0.166	1.053***	1.284***
	(-0.55)	(-0.86)	(-0.51)	(4.47)	(4.73)
ln(GDP)	0.676***	0.481***	0.696***	0.706***	0.696***
	(5.00)	(6.51)	(4.24)	(4.98)	(4.79)
School	-0.00355	-0.000468	-0.000370	-0.0145***	-0.0165**
	(-0.53)	(-0.07)	(-0.05)	(-2.80)	(-2.37)
ln(capital/labour)	0.0434	0.227	0.0153	-0.345	-0.243
	(0.18)	(0.92)	(0.08)	(-1.59)	(-1.14)
Constant	-0.340	4.330	-1.012	-5.809	-9.040*
	(-0.05)	(0.93)	(-0.12)	(-1.19)	(-1.81)
Observations	285051	244315	285051	285051	307685

*p<0.10 **p<0.05 ***p<0.01

Note: All estimations use time and sector dummies, columns (4)-(5) add destination dummies.

Table 8: Conditional effects

	(1) export	(2) export	(3) export	(4) export	(5) export	(6) export	(7) export	(8) export
PTA#1.ISME	-1.852***							
	(-7.34)							
PTA#0b.ISME	1.754***							
	(3.41)							
PTA#1.ISME	0.509							
	(0.96)							
ISME		-1.388***	-1.655***	-1.217***	-1.155***	-1.652***	-1.187***	-1.129***
		(-8.29)	(-7.86)	(-20.16)	(-87.66)	(-7.71)	(-16.60)	(-105.76)
PTA depth for non-ISME		-0.0969*						
		(-1.71)						
PTA depth for ISME		-0.0688						
		(-1.08)						
Depth2 for non-ISME			0.207***			0.00530		
			(3.87)			(0.92)		
Depth2 for ISME			0.269***			0.0713***		
			(4.85)			(2.77)		
Tariffs for non-ISME				-0.0494**			-0.0263	
				(-1.97)			(-1.43)	
Tariff for ISME				-0.0515			-0.0321	
				(-1.17)			(-0.90)	
RD for non-ISME					-0.545			0.219*
					(-1.48)			(1.88)
RD for ISME					-1.810***			-1.089***
					(-4.31)			(-3.34)
PTA				1.809***	1.834***		-0.142**	0.484*
				(3.17)	(3.32)		(-2.04)	(1.86)
DTT, no BIT	0.568	-0.477	0.467	1.307***	0.904**	-0.171	-0.0548	0.620**
	(1.18)	(-1.50)	(0.81)	(4.59)	(2.53)	(-1.47)	(-1.46)	(2.06)
BIT, no DTT	0.399	-0.707	0.0601	0.608	0.393	-0.0120	-0.284**	0.603
	(1.15)	(-1.05)	(0.17)	(1.28)	(0.90)	(-0.04)	(-2.00)	(1.57)
BIT and DTT	0.747***	-0.312	0.400	0.741*	0.647**	0.140	0.0742**	0.793*
	(2.76)	(-0.84)	(1.28)	(1.86)	(2.12)	(0.43)	(2.18)	(1.96)
ln(inv value)	0.0337***	0.0324***	0.0358***	0.0301***	0.0335***	0.0311***	0.0281***	0.0304***
	(7.41)	(10.98)	(7.02)	(16.75)	(7.20)	(7.43)	(19.19)	(7.86)
ln(distance)	-0.141	-0.0479	-0.247	0.181	0.212	1.268***	1.205***	1.338***
	(-0.56)	(-0.19)	(-1.05)	(0.67)	(0.78)	(9.97)	(13.34)	(15.90)
ln(GDP)	1.038***	1.247***	0.897***	1.142***	1.117***	1.179***	1.199***	1.210***
	(6.68)	(19.75)	(4.95)	(8.70)	(7.65)	(99.41)	(113.97)	(59.69)
School	0.0169***	0.0166*	0.00853	0.0208***	0.0117*	-0.00480	-0.00900**	-0.00579
	(3.01)	(1.67)	(1.48)	(3.55)	(1.88)	(-1.02)	(-2.46)	(-1.01)
ln(cap/labour)	-0.538***	-0.598***	-0.434*	-0.888***	-0.420	-1.046***	-1.907***	-0.960
	(-2.64)	(-3.89)	(-1.65)	(-3.05)	(-1.31)	(-3.01)	(-5.52)	(-1.59)
Constant	-11.83**	-14.41***	-6.575	-13.77***	-17.11***	-17.49***	-8.403**	-20.42***
	(-2.13)	(-4.05)	(-1.15)	(-2.87)	(-3.48)	(-6.69)	(-2.40)	(-3.24)
Observations	3081388	1500078	3060631	563473	1290410	3060631	563473	1290410

*p<0.10 **p<0.05 ***p<0.01

Note: All estimations use time and sector dummies, columns (6)-(8) add destination dummies.

6 Conclusion

This paper is one of the few papers that looks at the effect of trade policy - in the form of economic integration agreements, tariff and non tariff barriers - on the intensive and extensive margin of trade and investment by using firm level data. As explained by Baccini et al. (2017), debates over the politics of trade policy and particularly its distributional consequences - a key factor in todays anti-globalization sentiment - are best informed using evidence at the micro level. We look at a relatively recent period, 2008-2018, one that is characterized by what some describe as the era of deglobalization. Indeed, we observed only 23 new PTAs, 5 new BITs and 13 new DTTs for the Netherlands during this period. In addition, we have shown that the decline of tariffs seems to have stagnated and indeed slightly risen in this period and that non-tariff measures have become far more important.

The econometric results have shown that both the extensive and intensive margin of trade are significantly positively correlated with the presence of preferential trade agreements. The effect of investment and tax treaties, as well as the effect on the extensive and intensive margin of investment are more ambiguous. The depth of trade agreements and the presence of tariffs and NTMs do not seem to significantly affect internationalization. Conditioning the effect of tariffs and NTMs on firm size, however, we see that tariffs appear to hurt larger firms predominantly, while NTMs hurt smaller firms' exports. This suggests that large firms would benefit from trade agreements focusing merely on the reduction of tariffs, and smaller firms on the reduction or streamlining rather of non-tariff measures, e.g. by deepening trade agreements. Those findings are largely in line with Baccini et al. (2017).

At this point, more research is needed to look deeper into these distributional effects. We intend to look deeper into the various depth variables as well as firm characteristics. We will also extent the analysis to the intensive margin of investments and explore the endogeneity issue. While reverse causality may arguably be less of an issue in the case of using micro data (an individual firm may not be able to affect the formation of a treaty, certainly not as much as a country), we still want to test this specifically. Nonetheless, we think these results give an interesting first impression of how critical trade policy variables have affected the internationalisation of Dutch firms over the recent 12 years.

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7 Appendix

Table 9: Overview of data availability for tariff and non-tariff measures

Country	NTM	Tariff
Afghanistan	2012	2012, 2013, 2018.
Albania	.	2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018,.
Algeria	2017	2014, 2015, 2016, 2017, 2018
Angola	.	2014, 2015, 2016, 2018,.
Anguilla	.	2012, 2013, 2014, 2015, 2016, 2017, 2018
Antigua and Barbuda	2016	2012, 2013, 2014, 2015, 2016, 2017, 2018
Argentina	2017	2010, 2011, 2012, 2013, 2014
Aruba	.	2011, 2012, 2015, 2016, 2017, 2018,.
Australia	2016	2011, 2013, 2014, 2015, 2016, 2017, 2018
Azerbaijan	.	2011, 2012, 2013, 2014, 2015
Bahamas	2015	2010, 2011, 2013, 2014, 2015, 2016, 2018
Bahrain	2015	2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018,.
Bangladesh	2017	2016
Barbados	2015	2013
Belarus	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Belize	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Benin	2014	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Bermuda	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Bhutan	.	2015
Bolivia	2015	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Bosnia and Herzegovina	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Botswana	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Brazil	2017	2010, 2011, 2012, 2014, 2015, 2016, 2017, 2018,.
Brunei Darussalam	.	2014, 2016, 2017, 2018,.
Burkina Faso	2012	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Burundi	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Cote d'Ivoire	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Cabo Verde	2014	2010, 2011, 2013, 2015,.
Cambodia	2015	2014
Cameroon	2015	2011, 2012, 2014
Canada	2017	2010, 2012, 2013, 2015, 2016, 2017, 2018
Cayman Islands	.	2016, 2017,.
Chad	.	2011, 2015, 2016
Chile	2017	2015, 2017, 2018
China	2016	2010, 2011, 2014, 2015, 2016, 2017, 2018
Colombia	2017	2010, 2011, 2012, 2013, 2014, 2017, 2018
Comoros	.	2010, 2011, 2012, 2013, 2014, 2015, 2017, 2018,.
Congo	.	2013, 2014, 2015
Congo, D.R.	.	2014
Cook Islands	.	2010, 2012, 2013, 2015, 2016, 2017, 2018
Costa Rica	2017	2014, 2016, 2018
Cuba	2017	2010, 2011, 2012, 2013, 2015, 2016, 2017
Djibouti	.	2011, 2012, 2014
Dominica	2015	2011, 2012, 2013, 2015, 2016, 2017,.
Dominican Republic	.	2015, 2016, 2017
Ecuador	2017	2010, 2011, 2012, 2014, 2015, 2016, 2017, 2018,.

Egypt	.	2013, 2014, 2015, 2016, 2017, 2018,.
El Salvador	2017	2012, 2013, 2014, 2015, 2017, 2018,.
Eswatini	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Ethiopia	2015	2010, 2011, 2012, 2015, 2018
Fiji	.	2010, 2011, 2013, 2017, 2018
French Polynesia	.	2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018,.
Gabon	.	2015, 2016,.
Gambia	.	2011, 2012, 2018
Georgia	.	2010, 2011, 2012, 2014, 2015
Ghana	2014	2013, 2016, 2017, 2018,.
Grenada	2015	2010, 2011, 2012, 2013, 2015, 2016,.
Guatemala	2017	2010, 2011, 2012, 2013, 2014, 2015,.
Guinea	2012	2010, 2012, 2017, 2018,.
Guinea-Bissau	.	2010, 2011, 2012, 2013, 2014, 2017, 2018
Guyana	2015	2010, 2011, 2012, 2015, 2016, 2017, 2018
Haiti	.	2011, 2012, 2013, 2014, 2015, 2016,.
Honduras	2017	2015, 2018,.
Hong Kong, China SAR	.	2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018,.
Iceland	.	2010, 2012, 2013, 2014, 2015, 2016, 2017
India	.	2016, 2017, 2018
Indonesia	2015	2010, 2011, 2013, 2017,.
Iran (Islamic Republic of)	.	2011
Israel	2016	2013, 2014, 2015, 2016, 2017
Jamaica	2015	2010, 2011,.
Japan	2016	2011, 2014, 2016, 2017, 2018
Jordan	2016	2014, 2015, 2016, 2017,.
Kazakhstan	2017	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Kenya	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Kosovo	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Kuwait	2015	2012, 2013, 2014, 2015, 2016, 2017, 2018
Kyrgyzstan	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Laos	.	2014, 2015, 2016, 2017, 2018
Lebanon	2016	2014, 2015, 2016, 2017, 2018
Lesotho	.	2010
Liechtenstein	.	2010, 2013, 2014, 2015, 2016, 2017, 2018
Macao, China SAR	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Macedonia, FYROM	.	2010, 2011, 2012, 2014, 2015, 2016, 2017, 2018,.
Madagascar	.	2010, 2011, 2012, 2013, 2014, 2017, 2018
Malawi	.	2010, 2011, 2012, 2013, 2014, 2015, 2016
Malaysia	2015	2014
Mauritania	2015	2014, 2015, 2018
Mauritius	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Mayotte	.	2010, 2011, 2012, 2013,.
Mexico	2017	2014, 2017, 2018
Moldova, Republic of	.	2010, 2012, 2013, 2014, 2015, 2016,.
Mongolia	.	2011, 2012, 2013, 2015, 2017, 2018,.
Montenegro	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Montserrat	.	2013, 2015, 2016, 2017, 2018
Morocco	2016	2012, 2014, 2015, 2016, 2017
Mozambique	.	2010, 2014, 2016, 2018,.
Myanmar	2015	2015

Namibia	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Nauru	.	2016, 2017, 2018
Nepal	2012	2010, 2011, 2012
New Zealand	2016	2013, 2014, 2015, 2016, 2017
Nicaragua	2015	2010, 2013, 2014, 2015, 2016, 2017, 2018
Niger	2014	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Nigeria	2013	2013, 2014, 2015, 2016,.
Pakistan	2016	2014, 2015, 2016, 2018,.
Palau	.	2010, 2011, 2012, 2015, 2016, 2017, 2018
Palestine, State of	.	2013, 2014, 2015, 2016, 2017
Panama	2017	2013
Papua New Guinea	.	2010, 2018,.
Paraguay	2017	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Peru	2017	2010, 2011, 2013, 2014, 2017, 2018,.
Philippines	.	2017, 2018,.
Qatar	2016	2012, 2013, 2014, 2015, 2016, 2017, 2018
Russia	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Rwanda	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Saint Kitts and Nevis	.	2010, 2011, 2014, 2015, 2016, 2017, 2018
Saint Lucia	.	2014, 2015, 2016
Saint Pierre and Miquelon	.	2015, 2016, 2017, 2018,.
Sao Tome and Principe	.	2013, 2014, 2015, 2016, 2018
Saudi Arabia	2016	2012, 2013, 2014, 2017,.
Senegal	2012	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Serbia	.	2010, 2013, 2014, 2015, 2016, 2017, 2018
Seychelles	.	2015, 2016, 2017, 2018,.
Singapore	2015	2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018,.
Solomon Islands	.	2010, 2011, 2012, 2013, 2015, 2016, 2017, 2018,.
South Africa	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
South Korea	.	2015, 2017, 2018
Sri Lanka	2016	2010, 2011, 2012, 2014, 2017, 2018,.
Sudan	.	2010, 2011, 2012, 2013, 2017
Suriname	2015	2018
Switzerland	2015	2010, 2011, 2013, 2014, 2015, 2016, 2017, 2018,.
Syrian Arab Republic	.	2013
Taipei, Chinese	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Tajikistan	2015	2010, 2012, 2013, 2014, 2015, 2016, 2017
Tanzania, United Republic of	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Thailand	2015	2014, 2015,.
Timor-Leste	.	2011, 2012, 2013
Tonga	.	2010, 2011, 2012, 2013, 2015, 2016, 2017
Tunisia	2016	2013, 2015,.
Turkey	2016	2010, 2011, 2013, 2014, 2015, 2016, 2017, 2018,.
Tuvalu	.	2010, 2017,.
Uganda	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Ukraine	.	2010, 2012, 2014, 2015, 2017, 2018,.
United Arab Emirates	.	2012, 2013, 2014, 2015, 2016
United States of America	2014	2010, 2011, 2013, 2014, 2016, 2017, 2018
Uruguay	2017	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017,.
Uzbekistan	.	2012, 2014, 2015
Vanuatu	.	2012, 2015, 2016, 2017,.

Venezuela	.	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Viet Nam	2015	2010, 2013, 2014, 2015, 2016, 2017, 2018
Wallis and Futuna	.	2015, 2016, 2017, 2018,.
Yemen	.	2012, 2013, 2015, 2016, 2017
Zambia	.	2011, 2012, 2013, 2018,.
Zimbabwe	.	2015

Explanation of figures

Empty cell	Figure not applicable
.	Figure is unknown, insufficiently reliable or confidential
*	Provisional figure
**	Revised provisional figure
2019–2020	2019 to 2020 inclusive
2019/2020	Average for 2019 to 2020 inclusive
2019/2020	Crop year, financial year, school year, etc., beginning in 2019 and ending in 2020
2017/18–2019/20	Crop year, financial year, etc., 2017/18 to 2019/20 inclusive

Due to rounding, some totals may not correspond to the sum of the separate figures.

Colophon

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