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Abstract

Eight multilateral rounds of negotiations under the General Agreement on Tariffs and Trade (GATT) and international agreements under the World Trade Organisation (WTO) have contributed significantly to the reduction of tariffs among WTO members. However, the imposition and use of non-tariff measures (NTMs) have surged over the years, mostly for legitimate policy goals. Among these measures, technical barriers to trade (TBTs) and sanitary and phytosanitary (SPS) measures, in particular, allow countries to impose restrictions on the imports of low-quality products suspected of harming domestic consumers' health, plants, animals or the global environment. Such trade policy instruments aim to force higher standards in the import market and to ensure alignment with domestic regulations. The main question therefore is whether and how regulative NTMs affect trade flows, and in particular the quality of traded goods. Following the theoretical framework proposed by Feenstra and Romalis (2014), we theoretically illustrate how NTMs affect the average quality of imported products, while also incorporating the impact on the quantity and value of imports. The framework then allows us to estimate the impact of NTMs on traded values, quantities, unit values, quality and quality-adjusted prices at the detailed HS six-digit level. The results of the various estimated variables for all countries at the detailed product level are available in a visualised format (Tableau) as well as an online data appendix, providing comprehensive insights for scholars and policy makers. Generally, the results point towards a quality-increasing impact of regulative NTMs, though this may come with lower traded quantities or values. These aspects must be weighed against the positive outcomes, i.e. the compliance with the aims of the regulations concerning health, security or environmental goals and the overall increase in quality. Imposing such measures should therefore be done in such a way that they reduce trade frictions as much as possible while recognising the legitimate motivations behind the imposition of NTMs. Further, harmonisation of standards at the multilateral level may circumvent potential frictions while supporting the overall aims of regulative NTMs.

Keywords: non-tariff measures, technical barriers to trade, sanitary and phytosanitary measures, quality of products, global bilateral trade

JEL classification: F13, F14, L15

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1. INTRODUCTION

1.1. The increasing role of NTMs in trade policy measures

Eight multilateral rounds of negotiations under the General Agreement on Tariffs and Trade (GATT) and international agreements under the World Trade Organisation (WTO) have contributed significantly to the reduction of tariffs among WTO members. Aiming at trade liberalisation, protectionist and discriminatory motives for trade policy measures are not permitted by the regulations, while the use of non-tariff measures (NTMs) is permitted for various reasons. Legitimate reasons for the imposition of NTMs have triggered their extensive use over the years.

According to the Multi-Agency Support Team (MAST) classification (UNCTAD, 2010), NTMs are 'policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both'. Classifications of NTMs are mostly based on legal international regulations mandated by the WTO and other organisations, while scholars have additionally divided NTMs into two broad categories based on their nature and implications. The first category includes quantitative NTMs such as anti-dumping (AD), quantitative restrictions (QRs), safeguard measures (SGs), etc. Despite having quantitative implications, this category of NTMs is based on national security requirements, health and environmental issues, market adjustments, etc. The second category refers to regulative NTMs which are aimed at the qualitative characteristics of products. Sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBTs) are the most important ones in the 'regulative NTMs' category. TBTs and SPS measures allow countries to impose restrictions on imports of low-quality products suspected of harming domestic consumers' health, the global environment, safety, etc. Such trade policy tools are aimed at inducing specific standards in the import market or reducing the negative externalities of production in the export market. Improving market efficiency through information requirements such as mandatory labelling, for example, or setting standards for the intermediate inputs of production to meet the technical requirements in the next stages of production are examples of such quality-related aspects that may drive the introduction of a TBT. Bans on the import of poultry washed with chlorinated water (Ghodsi and Stehrer, 2019) or restrictions on the import of peanuts with large amount of aflatoxin are examples of SPS measures (Otsuki et al., 2001). Where the market fails to address these quality issues optimally, governments are obliged to establish regulative frameworks to enhance the level of standards (Swinnen, 2016; Ing and Cadot, 2017).

While countries are obliged to notify their NTMs directly to the WTO Secretariat, the WTO regulations also provide for an alternative system, which allows countries to discuss issues related to other members' policies and notify them to the meetings of the TBT and SPS Committees (where the discussions are reported in the WTO Committee minutes). If a country notifies its own policies directly to the Secretariat, other countries can raise their own Specific Trade Concerns (STCs). While TBTs and SPS measures are usually unilateral regulations and standards imposed against all partners, a TBT STC or an SPS STC

could be discriminatory, meaning that there are specific exporters raising their concerns about a given TBT or SPS measure. These STCs have certain restrictive impacts on bilateral trade flows and can affect the exports of firms negatively, so that only the most productive firms can comply with these restrictive NTMs (Fontagné et al., 2015). Moreover, restrictive TBT STCs imposed by a developing country such as India, for example, have a negative impact on the performance of firms that are importing their intermediate inputs targeted by these TBT STCs into that developing country (Singh and Chanda, 2021). Therefore, these restrictive NTMs are initially discussed in the Committee meetings of the WTO to find mutually acceptable solutions. If they are not resolved, they may lead to trade disputes that are dealt with by the Dispute Settlement Mechanism (DSM) of the WTO (Ghodsi and Michałek, 2016).

The literature thus suggests that regulative NTMs lead to different results because of their nature and aims and because they are imposed by different countries and on different products. Therefore, they are an ambiguous protection as argued by Gründler and Hillman (2021). Thus, the impact that NTMs have is still a 'Black Box', which needs to be opened to be fully understood. A restrictive measure that improves the quality of imported goods may have achieved its initial objectives in good faith, which could also be in line with the WTO agreements.

1.2. Selected illustrative examples

For instance, let us assume that a developed country, which is technologically advanced and produces high-tech pharmaceutical products, imposes a TBT or an SPS measure on imported medicines to restrict low-quality imports and improve the safety of these medicines. As an advanced economy with a highly developed technology sector the importing country's pharmaceutical producers already need to comply with such a regulative measure domestically. However, exporting medicine to this market and meeting its high set of standards is unlikely to be possible for less advanced economies. Therefore, because of imposition of the regulative NTMs, imports from less advanced countries would be hampered while the average quality of imports would be improved. This could be interpreted as a legitimate trade policy measure that is also in line with WTO agreements.

However, when a restrictive NTM imposed on a product does not have any impact on the quality of the imported product, then acknowledging its non-discriminatory objectives may prove difficult. Let us assume that regulative NTMs are now imposed on the imports of peanuts, a raw food product in which the advanced country has no production capacity. To eliminate the risk of lethal allergic reactions to peanuts, the country imposes an SPS measure that sets the maximum level of aflatoxin in imports of peanuts. At the same time this country also imposes a TBT measure that requires the labelling of the product to contain enough information regarding the maximum levels of aflatoxin. One can immediately understand that these two measures imposed by the same country on the same product may have completely different implications for the imported value, volume and quality. The SPS measure may prohibit the import of peanuts from certain producers from low-income countries who cannot easily meet the required standards embedded in the SPS measure (Otsuki et al., 2001). This SPS measure should eventually lead to an average higher quality of total imports of that product to that country. However, the TBT measure may additionally stimulate the import of products from safe countries, while it may have no significant impact on the average quality of imports. As Disdier et al. (2020) show, this TBT measure may give a positive signal to domestic consumers that the existing product is now safe, which essentially reduces the asymmetry of the information in the market. This could result in a surge in demand and a heterogeneous consequence on price.

2. A SNAPSHOT OF THE LITERATURE

Studies in the literature indicate that NTMs are in general very complex and that their opacity conceals the true motivations even of democratic governments (Baba, 1997; Kono, 2006). In such an environment, governments may push protectionist measures by imposing restrictive regulative NTMs which are also trade restrictive. Irrespective of the complex motives behind such regulative trade policy measures – i.e., based on legitimate motives, unlike discriminative and protectionist motives – regulative NTMs are potentially motivated by technology, domestic standards and innovations, and qualitative, health and environmental issues (Ghodsi, 2018). Therefore, qualitative NTMs are mainly considered to have – in addition to a quantitative impact – a non-quantitative effect on trade flows, on production procedures and on quality improvement. As a result, standard-based and regulative NTMs can potentially improve the production procedures or the quality of products (Wilson and Otsuki, 2004; Trienekens and Zuurbier, 2008; Swinnen, 2016). Using import unit values as a proxy for the quality of the imported products, Ghodsi (2015) found evidence of diverse quality improvements of TBT STCs imposed by the EU, the US and China. Ing and Cadot (2017) provide a theoretical partial equilibrium framework only on the demand side of imports to illustrate how standard-like regulations imposed via NTMs induce a higher quality of imported products. Based on their theoretical framework and its assumptions, they estimate the ad-valorem equivalent (AVE) of NTMs using the unit values of traded products in a single year. Overall, very few studies in the literature have analysed the impact of NTMs on the quality of traded goods. Disdier et al. (2020) used the conceptual framework of Akerlof (1978) to allow quality improvement to be defined in a mechanism through which the imposed standards oblige the existing supplying firms to signal their high quality to consumers. This operates in an environment where producers of bad-quality products have exited the market and the market has failed to provide enough information to a concerned consumer to be convinced of the high quality of the existing goods in the market. Therefore, the theoretical framework allows the NTMs to correct for the asymmetric information in the market.

The literature has mostly studied the impact of NTMs on trade values and trade volumes. For instance, Bora et al. (2002) offer some measurements of NTMs and their impact on aggregate trade flows. Bao and Qiu (2012) find that TBTs imposed by WTO members during 1995-2008 reduce the probability of exports (extensive margin) while increasing the export volumes (intensive margin). Blind (2001) and Blind and Jungmittag (2005) use patents and standards as proxies for innovative capacity increasing trade flows and competitiveness. Disdier and Fontagné (2010) explain how the legislation implemented by the EU on genetically modified organisms (GMOs) reduces the trade of food products to the EU. These trade regulations imposed by the EU led to a trade dispute, and in the end the EU measures were condemned by the dispute settlement body of the WTO, which ruled in favour of remedies and compensation for the losses suffered by the exporting countries. Some other studies in the literature analyse the diverse impacts of NTMs on trade flows at product levels. While Kee et al. (2009) define the impact of NTMs as trade restrictive, more recent studies in the literature provide evidence that NTMs are also enhancing trade flows of some products (Beghin et al., 2015; Cadot and Gourdon, 2016; Bratt, 2017; Ghodsi et al., 2016, 2017; Niu et al., 2018; Cadot et al., 2018). Fontagné et al. (2015) and Sithamparam et al. (2017) study the impact of technical NTMs on the exports of firms. Both extensive and intensive margins are analysed in these studies, showing the heterogeneous impact of NTMs even at the firm level.

3. OPENING THE 'NTM BLACK BOX'

These examples above and the literature review indicate that the impacts of regulative NTMs constitute a 'Black Box' with heterogeneous implications for the trade variables of interest (i.e., traded value, quantity, unit value, quality and quality-adjusted price), as these depend on the information and the set of rules that are embedded in them. Some of the NTMs imposed by countries may simply pursue a quality-upgrading objective in good faith that is also legitimate within the WTO agreements. To achieve such an objective, trade may be hampered or stimulated. However, such a quality-upgrading objective may not necessarily be achieved but trade may be unnecessarily hampered. Therefore, this research aims to open this 'NTM Black Box' and to analyse its components comprehensively. The result is a database on the importer-specific impact of TBTs and SPS measures on the imported value, quantity, unit value, quality and quality-adjusted price of each product at the six-digit level of the Harmonised System (HS). The results of the various estimated variables for all countries at the detailed product level are available in a visualised format (Tableau) as well as an online data appendix[1].

In the first paper Ghodsi and Stehrer (2020) study the impact of regulative NTMs on the quality of traded products. Based on Feenstra and Romalis (2014) and drawing on their data, we find that TBTs induce a higher quality of trade. Results indicate that the existence of *stocks* of TBTs that have remained in force over time has a stronger impact on the quality of traded products than the newly imposed *flows* of TBTs in each year. Running the regressions on 10 one-digit sectors would give us the impact of NTMs per sector. TBTs in all have shown to have a positive impact on the quality of traded goods in many sectors. However, TBTs have a negative impact on the quality of traded goods in the sector of miscellaneous manufactured articles (with SITC code 8). Moreover, the insignificant impact of some measures of TBT on some sectors indicates that the impact of TBTs on the traded quality of various products is heterogeneous. This motivates the research in the next paper of the project, which estimates the importer-product-specific impact of NTMs on various trade variables, including quality.

The impact of SPS measures on the quality of goods traded globally is also positive. However, this impact is insignificant when using the count variable of *stocks* of the total number of SPS measures, and it is only strongly significant when using the *dummy* variable on flows of SPS measures. Therefore, empirical evidence points to the fact that the existence of an SPS measure which protects human health and safety is the most important factor for the quality improvement of traded products, while the impact over time (i.e. proxied in *stock* measure) and the stringency (i.e. proxied in count measure) on the quality of traded products fade. The fact that most of the impact of SPS measures occurred in the first year makes sense. There could be a big rush to meet the standards stipulated by the SPS measures, in effect filtering the market and reducing competition, followed by a stabilisation of the new standards across the industry.

Unlike TBTs, SPS measures have a positive impact on the quality of traded goods across only a few sectors. The sectors in which we find positive and statistically significant impacts of some measurements of SPS measures on the traded quality are: Food and live animals chiefly for food (SITC 0); Beverages and tobacco (SITC 1); Crude materials, inedible, except fuels (SITC 2); Machinery and transport equipment (SITC 7); and Chemicals and related products, n.e.s. (SITC 5). This could be mostly because SPS measures are dominant across the sectors which are related to food products and medicines. This strong positive impact manifests itself, as expected, across all different measurements of SPS measures in Food and live animals chiefly for food (SITC 0). For beverages and tobacco, only the count measure

[1] The comprehensive output data in the online appendix are available upon request.

of stocks of SPS measures has a strong positive impact. This suggests that for beverages and tobacco the stringency of SPS measures that persists over time has a strong positive impact on the quality of traded goods.

In a second contribution by Ghodsi (2021) the framework of Feenstra and Romalis (2014) is extended by including additional regulative NTMs. The research results of the second paper provide a database on the importer-product-specific impacts of TBTs and SPS measures in the world. In fact, based on such a database one can rank and prioritise the regulative NTMs imposed globally by their quality implications. By comparing the quality impact and quantity impact of NTMs imposed by a country on a given product, the opened 'NTM Black Box' could provide important insights into the nature of each NTM and the achievements of the respective government's objectives behind it.

Ghodsi (2021) provides estimates of quality of products at the HS six-digit level traded bilaterally at the global level, while taking the qualitative impact of regulative NTMs into account. Results of the analysis at both the HS six-digit level in Ghodsi (2021) and the four-digit level of the SITC in Ghodsi and Stehrer (2020) suggest that both TBTs and SPS measures improve the quality of traded goods statistically significantly. TBTs reduce the traded values and quantities globally, while SPS measures stimulate trade. However, when the 'NTM Black Box' is explored across imposing countries and products, the impacts become diverse. TBTs imposed by the EU have improved the quality of imported goods to each member state. Results suggest that the number of products whose quality is upgraded as a result of TBTs is more evident among EU member states. The seven countries with the largest number of quality-upgraded imported products as a result of TBTs are Poland, Hungary, France, China, Austria, Germany and the Netherlands (see Table A6 in Ghodsi, 2021). However, there are no EU members among the top six counties whose imported products are more frequently upgraded by SPS measures than others (see Table A8 in Ghodsi, 2021). These top six countries are Nepal, Armenia, the US, Egypt, New Zealand and the Kyrgyz Republic, followed by Poland and Hungary.

Furthermore, one of the interesting findings of the paper suggests that the unit values of traded products do not necessarily show the quality of products. It is possible that regulative NTMs have opposite impacts on the imported quality and quality-adjusted price, which are the two components of traded unit value that are disentangled following the methodological framework presented by Ghodsi (2021). For instance, the quality of 1,431 imported goods to Hungary is improved by TBTs. However, the quality-adjusted price of only 515 of these goods is significantly affected by TBTs. The quality-adjusted price of 265 of these products imported to Hungary is even decreased by TBTs with an average elasticity of -0.53. This suggests that using the unit value of imported goods as a proxy for quality may be misleading if the quality and costs associated with quality are not separated from the costs associated with the quantities of production.

4. SUMMARY AND POLICY ASPECTS

Since the conclusion of the General Agreement on Tariffs and Trade (GATT) in 1947, the most important policy initiatives to stimulate global trade have been the reduction and elimination of tariffs and quantitative restrictions such as quotas. The establishment of the World Trade Organisation (WTO) in 1995 and the multilateral negotiations that preceded it have highlighted other areas of concern related to international trade that needed to be addressed, negotiated and legislated within the framework of WTO agreements. Non-tariff measures (NTMs) are among the important issues that have been addressed and regulated in different agreements of the WTO. In this respect, NTMs can be divided into two broad categories: (i) quantitative NTMs such as anti-dumping, safeguards and quotas, and (ii) regulative NTMs such as technical barriers to trade (TBTs) and sanitary and phytosanitary (SPS) measures. With respect to the latter, the WTO agreement on TBTs recognises that 'no country should be prevented from taking measures necessary to ensure the quality of its exports, or for the protection of human, animal or plant life or health, of the environment, or for the prevention of deceptive practices, at the levels it considers appropriate, subject to the requirement that they are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade'. The WTO agreement on the application of SPS measures also reaffirms that 'no Member should be prevented from adopting or enforcing measures necessary to protect human, animal or plant life or health, subject to the requirement that these measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between Members where the same conditions prevail or a disguised restriction on international trade.'

The implications of quantitative NTMs may impede trade, which is a straightforward outcome. However, the implications of regulative NTMs are not so straightforward. On the one hand, some regulative NTMs may restrict trade unnecessarily, and they may sometimes induce specific trade concerns (STCs) among exporting countries. These concerns are addressed and documented in the respective WTO meetings. When these concerns are not resolved and regulative NTMs are reported as discriminative measures by trading partners, trade disputes may arise and the dispute settlement bodies of the WTO may intervene to resolve the dispute. This indicates the vital need for a comprehensive analysis of the diverse implications of the various regulative NTMs, to which this research contributes.

On the other hand, unlike traditional tariffs or quantitative NTMs, regulative NTMs embed standards and regulations that could pursue diverse objectives, depending on the type of product and its technological content. This has contributed to the opaque nature of regulative NTMs. Standards and regulations within TBTs and SPS measures may be aimed at improving the quality of imported products. Due to their stringency and restrictiveness they could also prohibit imports of lower-quality products that do not meet the importing country's sets of standards, which may well lead to disputes as discussed above. However, the ultimate objective is to increase the quality of products in line with the regulations in force in the imposing market. Whether this is the case may be a matter of concern and could lead to trade disputes. Specifically, from January 1995 to January 2021 there were 57 cases submitted to the WTO dispute settlement mechanism citing the TBT Agreement and 50 cases citing the SPS Agreement. Some of these disputes are still unresolved many years after their initial submission. Compared with the number of cases (135) submitted citing the Anti-Dumping Agreement, agreements on regulative NTMs have been cited less frequently, but disputes over regulative NTMs are even more challenging, as the main objectives behind their imposition addresses vital concerns of policy makers and society.

Therefore, this project pays specific attention to the quality of traded goods. There are good reasons why the imposition of NTMs results in higher-quality products. One type of trade cost is associated with the compliance behind borders for exported products that already have a high quality and can easily meet the required standards embedded within NTMs. This could increase either the ad-valorem or the specific (per-unit) trade cost of a product. Another type of cost is related to a situation in which the product is initially not produced in compliance with the relevant regulations. Therefore, the exporter needs to incur an additional fixed cost of technological change to completely modify its production procedure. When the exporter is more productive and more efficient, both compliance costs and the fixed cost related to technological change may become smaller, leading to a surge in the volume of exports of high-quality products. Thus, due to the compliance with the regulation and its cost implications, the overall quality of imported goods is expected to be higher than before the imposition of the regulation. This phenomenon is known as the 'Washington apples' (or Alchian-Allen) effect.

And indeed, the results point to a general positive impact of regulative NTMs on the quality of globally traded goods. However, it also points to a trade-off, as the negative impact of TBTs on traded values and quantities cannot be fully neglected and has to be weighed against the positive aspects, i.e. compliance with the aims of the regulations concerning health, security or environmental goals and the overall increase in quality. Given these trade-offs, respective policies should be aimed at reducing trade frictions as much as possible while recognising the legitimate motivations of governments to impose regulative NTMs. This should avoid trade disputes and potential trade wars. Further, policies should be aimed at harmonising higher standards and the mutual recognition of regulative measures across countries (see, for instance, Cadot et al., 2015, or Nabeshima and Obashi, 2019). Such a standard-setting is enforced in practice in the EU single market, which allows frictionless trade across the EU member states. This reduces the compliance costs behind the border substantially and reduces the uncertainties surrounding the prospect of investments in technological change that arise from new sets of regulations in various markets. Such a framework needs to be discussed and negotiated in future multilateral negotiations at WTO level. A valid concern may be that less developed countries are unable to comply with such standards. However, our research shows that this can potentially benefit less-developed countries. Ghodsi and Stehrer (2020) show that regulative NTMs may prevent developing countries from falling into a 'commodity trap' by improving their products and finding respective market niches under the more stringent regulations. Thus, compliance with regulative NTMs may lead to quality upgrading that can assist less-developed economies in achieving sustainable development goals.

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APPENDIX – DATABASE AND VISUALISATION

The findings of this research have resulted in a database indicating the effects on quality along with the estimated trade outcomes from Ghodsi (2021) and are available on request. The importer-specific impacts of NTMs by country and across trade variables are visualised in an interactive Tableau figure.[2] This interactive figure can be used to assess the impact of regulative NTMs imposed by WTO members as importing countries on all products. For instance, Figure A.1 shows the product-specific impact of TBTs on the quality of imported goods to Austria. The other estimated trade variables from the analysis are also available on tabs at the top of the graph. The snapshot presented in the figure shows the tab 'TBT ln z', which stands for the elasticity of imported quality with respect to TBTs that is shown on the vertical axis. The horizontal axis shows the product spectrum from the first product in the HS classification, which is 'Horses: Pure-bred breeding animals' with the six-digit HS code 01.01.11 to the last product in the classification, which is 'Antiques of an age exceeding one hundred years' with the six-digit HS code 97.06.00. The vertical axis shows the elasticity of the trade variable – i.e. on this snapshot quality of traded goods – with respect to the regulative NTMs, which is TBTs on this snapshot.

Only the results which are statistically significant are presented in these graphs. Furthermore, all estimates with elasticities above 10 are excluded from the graphs for better visibility, although they are available on request. Green points on the graph indicate positive elasticities, while red points represent negative elasticities. The colour intensity of points shows the level of significance of estimates. One can also use the zoom button to magnify some specific points to go deeper into the graphs and show some point estimates that are hidden behind other dots.

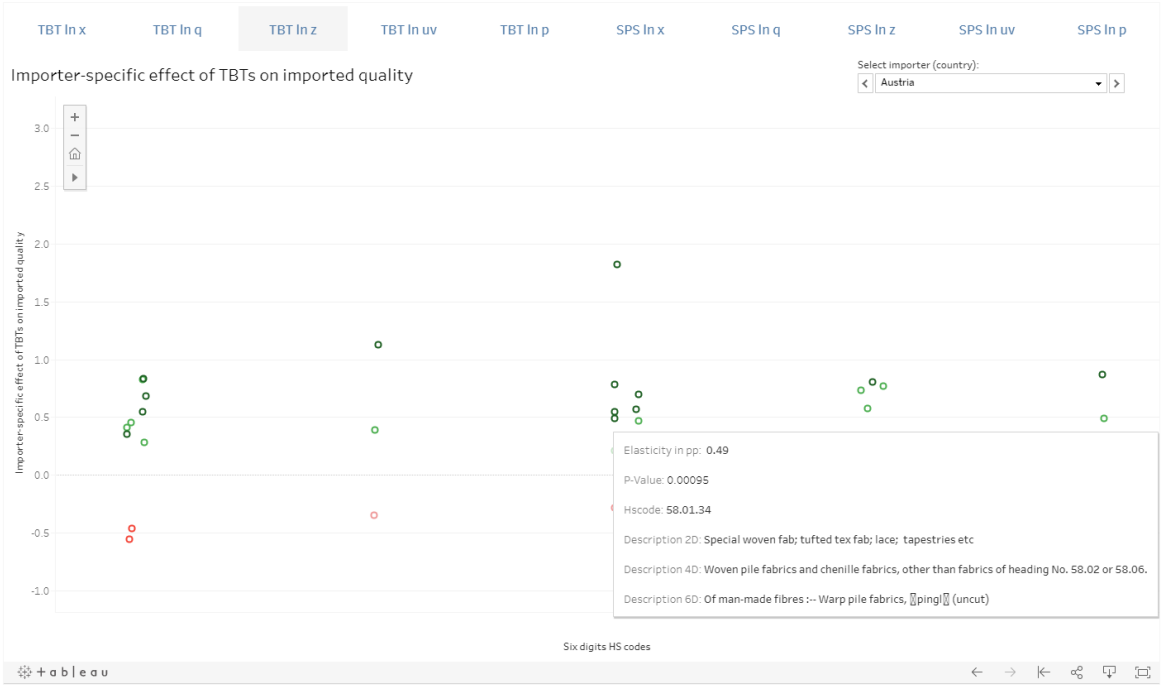
For instance, zooming in on this graph and filtering the available data for the product 'Woven pile fabrics and chenille fabrics; of man-made fibres: Warp pile fabrics, Epingle (uncut)' with HS code 58.01.34 shows a positive elasticity of quality with respect to TBTs (see Figure A2). This elasticity is equal to 0.49, which means that a 1% increase in the number of TBTs imposed by Austria on this product improves the quality of imports by 0.49%. The elasticity of quality with respect to TBTs of other goods in the same four-digit category is also presented. Again, results suggest that Austrian TBTs generally induce a higher quality for varieties of such a product. The elasticity of the quality-adjusted price (see Figure A3) and the unit-value (see Figure A4) of this imported product in Austria with respect to TBTs are both negative with a magnitude of -2.58 and -2.1, respectively. Moreover, the elasticity of the trade value (see Figure A5) and the quantity (see Figure A6) of this imported good with respect to TBTs are positive with a magnitude of 4.95 and 7.04, respectively. One can understand that such a TBT imposed by Austria and the EU contributed significantly to a higher quality of imports. Furthermore, other costs associated with the imports of this product are reduced substantially, which has resulted in a lower unit value of imported goods and has also led to a surge in import volumes and values.

[2] https://public.tableau.com/profile/the.vienna.institute.for.international.economic.studies#!/vizhome/Non-TariffMeasuresBlackBoxWIIW_16128833648400/TBTlnx

Figure A1 / Product-specific impact of TBTs on quality of products imported to Austria during the period 1996-2017

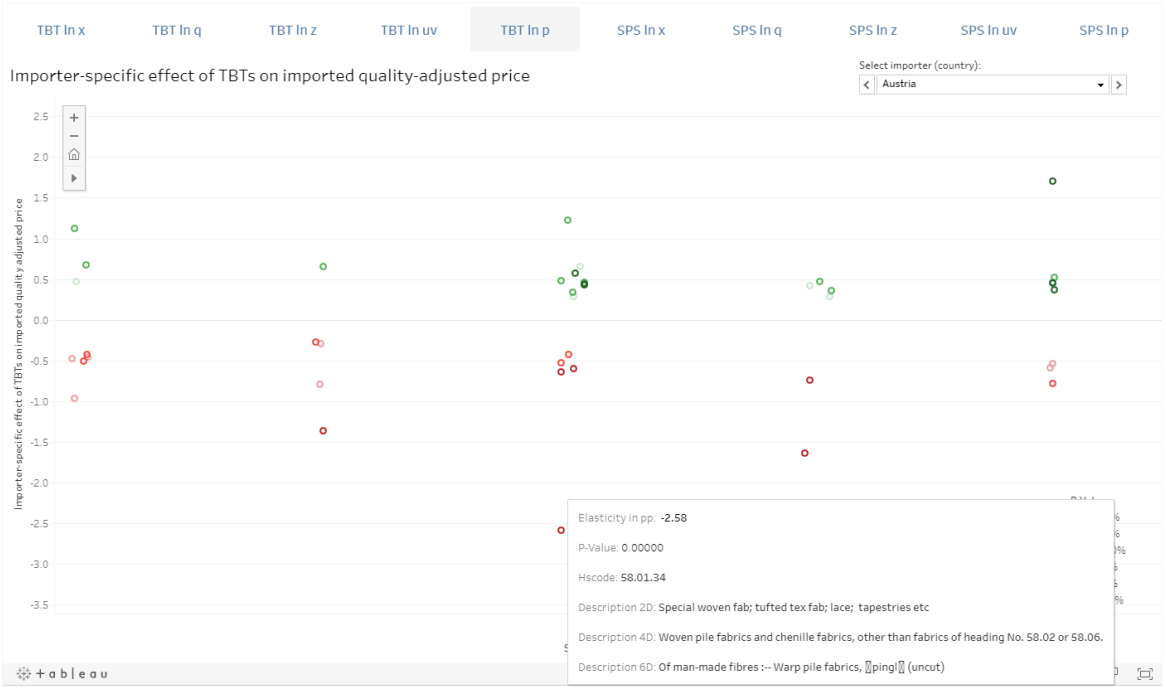
Source: Ghodsi (2021); and Tableau.

Figure A2 / Impact of TBTs on quality of products imported to Austria during the period 1996-2017 (focusing on product 58.01.34)



Source: Ghodsi (2021); and Tableau.

Figure A3 / Impact of TBTs on quality-adjusted price of products imported to Austria during the period 1996-2017 (focusing on product 58.01.34)



Source: Ghodsi (2021); and Tableau.

Figure A4 / Impact of TBTs on price of products imported to Austria during the period 1996-2017 (focusing on product 58.01.34)

Source: Ghodsi (2021); and Tableau.

Figure A5 / Impact of TBTs on import value of products to Austria during the period 1996-2017 (focusing on product 58.01.34)

Source: Ghodsi (2021); and Tableau.

Figure A6 / Impact of TBTs on quantity of products imported to Austria during the period 1996-2017 (focusing on product 58.01.34)

Source: Ghodsi (2021); and Tableau.

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