

## COMMITTING TO GROW: THE FULL IMPACT OF WTO ACCESSIONS

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### Abstract

This paper studies the impact of GATT/WTO accession on developing countries' growth rates, exploring the patterns of commitments during negotiations (pre-accession) and the timing of their implementation (post-accession). For some countries, accession encompasses reforms that go beyond narrowly defined trade liberalization. Using original data on negotiation proceedings and implementation of commitments, we build two indices that capture the heterogeneity in the timing of reforms in both pre- and post-accession periods. We find a positive effect of reforms on growth not only after WTO entry, but also during the accession process. We estimate that five years after accession economies that underwent Article XII negotiations are 44% larger than had they not acceded. By using instrumental variables and falsification tests, we present quantitative and qualitative evidence for the consistency of the estimates.

**Keywords:** WTO accession, economic reforms, trade and growth

**JEL Classification:** F14; F43; F62

### 1 INTRODUCTION

Accession to the GATT/WTO is the outcome of negotiations (Williams, 2008). It entails a series of reforms that can fundamentally transform the economy of the acceding country, and serve as catalysts for institutional improvements by imposing changes and overcoming domestic political pressures.<sup>2</sup> WTO Members aspire to encourage job creation, enhance competition in order to increase competitiveness, improve quality and reduce consumer prices, and to build a business-friendly and growth-conducive environment (Gonzalez, 2017). To get there, countries commit to legal, institutional and economic reforms. These commitments are reflected in their Protocols of Accession and enforceable under the Dispute Settlement Mechanism (DSM). The implementation of reforms often starts before the accession date. The announcements of the reforms may serve as signals of the government's intent and are part of the negotiations.

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<sup>2</sup> For example, China made commitments related to its large state-owned enterprise sector that went beyond other WTO members' commitments in the area, as this was an area of specific concern to existing members.

Negotiations can take several years during which parties meet, discuss issues, and progressively make and implement commitments. Each country's accession differs in the number of meetings, timing and issues discussed. In this study, we exploit this heterogeneity in accession proceedings to explore the relationship between reforms and growth.

The question that this paper addresses is whether commitments taken to enter the WTO have an impact on growth. To address this question, we build two indices that capture the timing of reform commitments for both the pre- and post-accession periods. Using detailed information on the proceedings of each negotiation – when parties meet, the number of issues raised by the existing members and answered by the applicant – we build the *pre-accession* index of the reforms. Next, using detailed information on the pace of implementation of tariff commitments, we build a *post-accession* index to capture further reforms undertaken following accession. We find that commitments undertaken during negotiations have a positive effect growth even prior to accession, and that finalizing reforms following accession has an additional positive impact.

There are several economic arguments that support the view that entry to the WTO fosters economic growth. One is that accession to WTO is designed to reduce barriers to trade and increases the flow of overseas commerce. WTO boosts trade and trade boosts growth (Easterly, 1993; Estevadeordal and Taylor, 2013). Both these effects are sizable. For example, Larch et. al (2019) find that joining GATT/WTO increases trade by 171%. Frankel and Romer (1999) find that a rise of one percentage point in the ratio of trade to GDP increases income per capita by between one-half and two percent. Feyrer (2019) estimates that trade can explain 17 percent of the variation in growth rates across countries between 1960 and 1995.

Another argument is that WTO can foster growth because it promotes good governance. Countries often undertake extensive domestic economic reforms as part of their membership negotiations and make legally binding commitments in a wide range of policy areas. Countries acceding the WTO have to comply with the GATT and all other WTO agreements in the areas of subsidies, agriculture, textile and clothing, trade-related investment, services, and intellectual property.<sup>3</sup> Accession commitments may also require a country to limit export duties, the elimination of fees and charges other than tariffs on imports, impose strict limits on industrial subsidies geared towards exports, and limit price controls.<sup>4</sup> Trade-related investment rules place limits on local content requirements or trade-balancing (capping a firm's imports to a given value). There are also commitments that include privatization plans (Montenegro, Russia, Samoa, Tajikistan), which have been found to correlate with growth (Plane, 1997). Countries may use WTO commitments to lock in reforms that are beneficial to the business environment, and to signal to other nations their commitment to reform, demonstrating a desire for global cooperation (Cattaneo and Primo Braga, 2009).

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<sup>3</sup> Financial services are also included (banking, insurance, accounting). Viet Nam, for example, granted access for accountancy services directly upon accession.

<sup>4</sup> "If the authorities continue to apply price controls, this should be done in a WTO-consistent manner, in particular on the products of natural monopolies (Lao People's DR, Montenegro, Tajikistan). For example, in Russia, after accession to the WTO, price controls continued to be applied on certain products and services." (Kireyev, 2015)

Furthermore, WTO can promote growth because it promotes a more predictable trading environment. Uncertainty is detrimental to investment. It slows down capital accumulation (Leahy and Whited, 1996; Guiso and Parigi, 1999) and hence growth. Evidence pointing to the relevance of this channel can be found in Mansfield and Reinhardt (2008) who find that WTO and PTA membership can decrease the volatility of trade flows. They attribute this result to the role of trade agreements in enhancing the rule of law, for example, by enforcing market-access commitments, deterring new protectionist barriers, fostering transparency and policy convergence among member states

Empirical evidence on the impact of WTO accession on trade has established a clear connection between the extent of commitments and trade performance. While Rose's (2004a) seminal paper has called into question the effectiveness of GATT/WTO in promoting trade in a way that poorer countries could benefit from, subsequent studies have showed that failing to account for the heterogeneous impact of WTO across countries underestimates its impact. For example, Subramanian and Wei (2007), show that, while membership of the multilateral trade system causes trade to increase, it does so unevenly, disproportionately benefiting developed economies. Tomz et. al (2007) showed the importance of considering formal and informal membership, specifically the *de facto* membership of many GATT countries that were former colonies, many of which had rights and obligations under the agreement. This misclassification creates a downward bias in WTO membership estimates. He found that *de facto* GATT/WTO membership substantially increases trade for developing countries. Eicher and Henn (2011) find that WTO membership boosts trade controlling for PTA formation and increases trade among proximate developing countries at the expense of more distant ones. More recently, also Dutt (2020) finds that the strongest WTO trade effect over time is for developing countries that underwent rigorous accession procedure to access WTO. In sum, the lesson from this literature is that merely looking at membership status is in itself insufficient, and that the quality and circumstances of membership matter for us to accurately describe its impact. In this paper, we extend this reasoning to the analysis of WTO membership and growth.

While there is an extensive literature on the impact of WTO membership on trade, existing literature on the impact of GATT/WTO accession on growth is limited. One notable exception is the paper by Tang and Wei (2009). They find that GATT/WTO membership promotes growth, but only for those members that undertake commitments. While the increase in growth rates is typically sustained only during the first five years after accession, the economy of a country joining the GATT/WTO is on average permanently larger by 20% if it undertook commitments as part of the accession process. Differently, countries that were not required to make commitments – mostly former colonies or overseas territories of GATT members that acceded under Article XXVI 5(c) of the GATT – did not benefit. When extending the sample to countries that acceded under Article XII more recently, we find an even larger effect (Brotto, Jakubik, and Piermartini, 2020). On average, joining the WTO through Article XII resulted in a 30% permanent increase in GDP compared to non-members. In this paper we also employ the TW methodology<sup>5</sup> on our extended sample to highlight key facts about

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<sup>5</sup> TW employ an event study methodology, creating dummy variables to for the years around accession for the treatment group. The authors estimate the set of  $\alpha_s$  as in the following equation:  $\Delta \log Y_{i,t} = \alpha_0 \log \text{GDP per capita}_{i,t-1} + \sum_s \alpha_s \text{Dits}_s + \gamma \text{X}_{i,t} + \epsilon_{i,t}$ .  $\text{Dits}_s$  equals one in year  $s$  around accession. In order to estimate long-run effects, the authors add a  $\text{Dit}_{\text{beyond}}$  term which equals one for 5 or more years after accession.

heterogeneous accession effects across countries and over time. We find that countries that went through a negotiation process to accede experienced higher growth rates also prior to accession. In the rest of the paper, we explain this observation with the patterns of commitments undertaken during the negotiating process.

This is the first paper to account for all GATT/WTO accessions over the seven decades since 1950. Exploiting differences in accession processes, we estimate the effect on growth of undertaking accession commitments. Therefore, our main focus is on the 36 countries that acceded to the WTO under Article XII of the Marrakesh Agreement, which entails more stringent accession modalities than the GATT and for which we are able to construct an index that tracks the pattern of commitments over time. Our estimated average effect of WTO accession on GDP (cumulated over eleven years centred around accession) is 44% for Article XXII economies compared to their GDP had they not acceded. By using instrumental variables and falsification tests, we present quantitative and qualitative evidence for the consistency of the estimates.

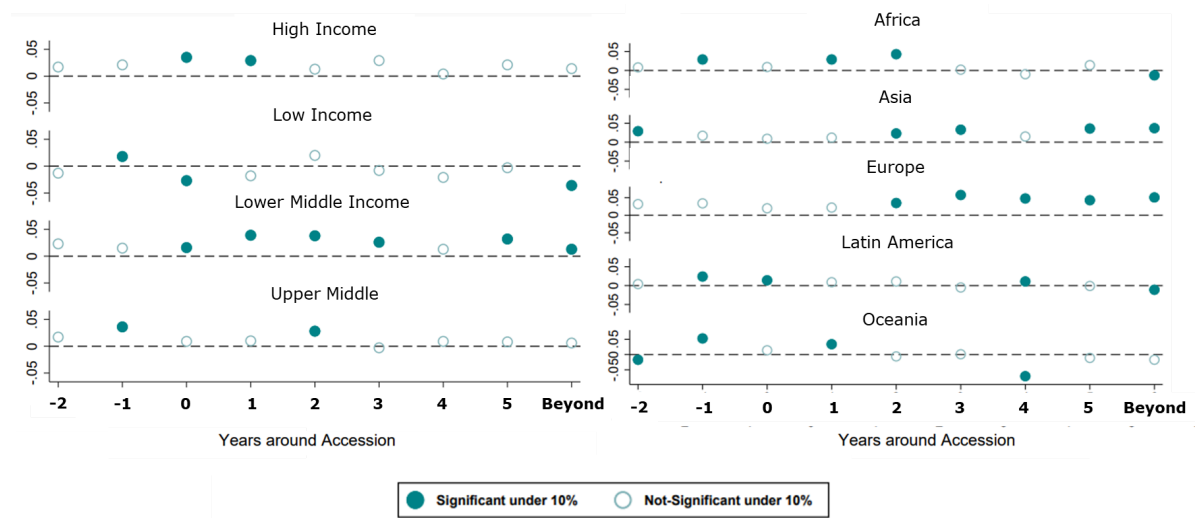
The paper is organized as follows. Section 2 describes the patterns of growth around accessions that motivate our work. Section 3 outlines important features of the accession process and presents our two commitment indices. Section 4 describes our empirical specification and presents our baseline results. Section 5 addresses identification issues and presents robustness checks. Section 6 concludes.

## **2 GATT AND WTO ACCESSIONS: DIFFERENTIAL IMPACT OVER TIME**

To explore the heterogeneous impact of WTO on growth across group of countries, we employ the TW empirical specification on an extended sample of 146 developing and transition economies over the period 1981-2017. As in TW, we do not include developed countries (at the time of accession) in our sample, since we want the control group to closely match the treatment group.

Figure 1 plots the time profile of our estimated coefficients by income groups and geographical region. Tables of the associated regressions can be found in the Appendix.

**Figure 1: WTO impact over time, by income group and region**



Results show more significant coefficients over time for middle-income than for high-income countries.<sup>6</sup> The group of low-income countries, mostly composed of African countries, presents a significant and negative long-term coefficient.

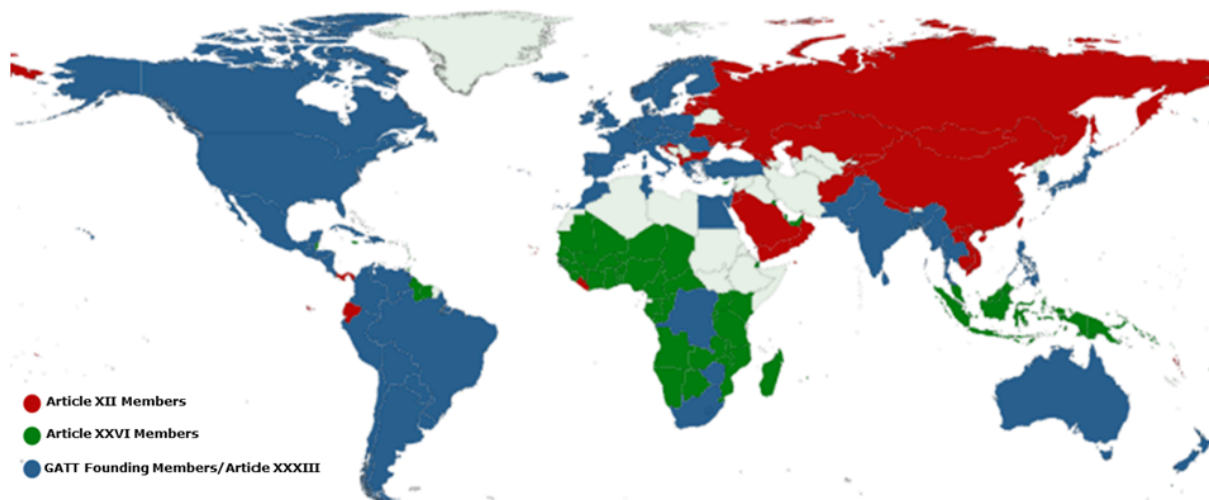
The right-hand side panel of Figure 1 shows the results of our regressions by geographical region.<sup>7</sup> It shows that every region presents at least one positive and significant coefficient. Asia, which includes Asian Tigers and China, stands out, together with Europe. Oceania, comprising only Fiji, has a divergent pattern of coefficients, with positive and negative ones. As indicated by the income analysis, Africa has a negative long-term coefficient.

A third dimension of heterogeneity that we explore is that related to the mode of accession. The literature has already hinted at such differences playing a role, with Subramanian and Wei (2007) highlighting that qualitative differences between pre- and post-Uruguay Round accessions drive more positive coefficients of the impact on WTO on trade for the latter. On average, newer members of the WTO/GATT trade about 30% more than older ones. When analysing growth rates, TW found that countries that joined the WTO under Article XII experienced faster GDP growth after accession. While the increase in growth rates is typically sustained only during the first five years, the economy is permanently larger by 20% as a result. Haddad et. al (2015) also finds considerable improvements in the country risks indicators of Article XII members compared to non-Article XII countries.

<sup>6</sup>WTO development classification was used to exclude developed countries from the control group, and IMF income classification was used to define the groups (High, Upper Middle, Lower Middle and Low Income). Note that 21 countries currently classified as "High Income" by the IMF but "developing" at the WTO are in the sample.

<sup>7</sup>Latin America is composed by South America, Central America and Mexico. North America is not presented since the USA and Canada are considered developed countries both at the IMF and the WTO.

Figure 2: GATT/WTO Accession Procedures



The specific accession procedure (whether it follows Article XII, Article XXVI or Article XXXIII) determines differences in terms of commitments undertaken, tariff cuts, implementation periods, agreements covered at accession and legislations enacted. Figure 2 displays a map where economies are distinguished by the types of accession process members have undergone.

*Article XII Members* are the group of 36 members that have acceded after 1995. This is a heterogeneous group of countries in terms of governance, population and area, from every continent of the world. 25% of them hold least developed countries (LDC) status. China (2001) and Russia (2012) are also in the group. As provided for in Article XII, since 1995 applicants to the WTO are required to undergo a more rigorous process of accession negotiations, necessitating extensive economic reforms for the applicant's trade regime to conform to the WTO framework than under the GATT.<sup>8</sup> As of now, more than 50 governments have applied to accede under these new procedures.

*Article XXVI Members* are the group of accessions formed by more than 60 ex-colonies, overseas territories and provisional members that were not requested to commit to any reforms in order to join the GATT. In practice, granting GATT membership for these territories was a matter of sending notifications. As of 1994, almost all eligible countries, mostly from Africa (60%) had requested *de facto* membership.<sup>9</sup> 17 small islands and 2 Asian Tigers, Singapore and Hong Kong, have also invoked Article XXVI 5(a) or 5(c) in order to join.<sup>10</sup>

Two other groups of members are the founding members and *Article XXXIII Members*. The former is composed by the 23 countries that signed the agreement to create the GATT in 1948. It comprises

<sup>8</sup> An interesting feature of Article XII is its brevity. It is nowhere described what exactly are the terms to be agreed by applicants, these being left to be decided by WTO members.

<sup>9</sup> Aside from procedural difference, such as not paying dues or vote, *de facto* members could enjoy all the benefits of the GATT framework. Some of these countries also had LDC status. An excellent description of the singularities from Article XXVI accessions was made in Tomz et. al (2007).

<sup>10</sup> Antigua and Barbuda, Barbados, Cyprus, Dominica, Fiji, Grenada, Maldives, Madagascar, Malta, Mauritius, Papua New Guinea, Singapore, Solomon Islands, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines and Trinidad and Tobago.

many of the currently developed countries in the world.<sup>11</sup> Article XXXIII group comprises more than 40 countries that joined the GATT by a two thirds majority vote upon completion of requirements set by existing members.

Both Article XXXIII and Article XII stipulate that applicants shall undergo reforms and lower their tariff bindings. However, the process for developing countries joining the GATT differed greatly from WTO accessions in the breadth and depth of commitments undertaken. As shown by Staiger and Tabellini (1999), the GATT tried to improve the process for developed countries by assigning policy reforms as part of concessions made in the Tokyo Round. However, the same cannot be claimed for developing members. As described by Patterson (1992), "while each of the protocols differs in detail, those of developing countries [that entered under Article XXXIII] often call for little more than the binding of most of their existing tariffs, frequently at rates of 50% or more, as well as pledges to reduce their tariffs in the future along with import surcharges, import licensing requirements and import quotas." In contrast, commitments undertaken nowadays by Article XII applicants are broader, comprising aspects of the applicants' economy that cannot be directly linked to trade, such as investment, fiscal and monetary policies or even privatization plans.

**Figure 3: WTO effect on growth over time, by accession mode**

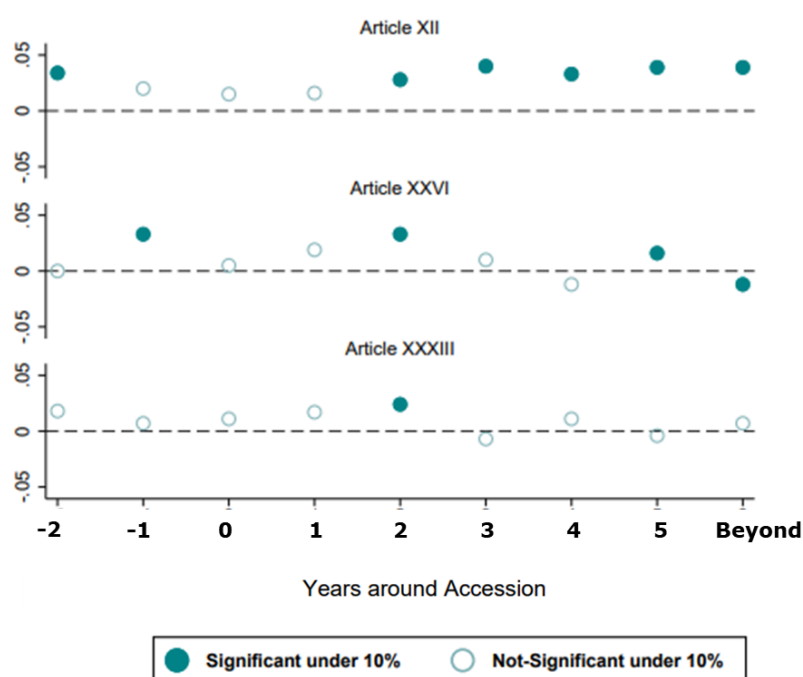


Figure 3 shows the results of our TW regressions for the three accession modes. Results support the view that accession modes are a major source of heterogeneity. Article XII members not only show more significant coefficients but are also the only group with positive long-term coefficients.

There is a lot of heterogeneity of the impact of WTO on growth also within country groups. Table 1 shows growth rates of GDP per capita for groups of members that acceded. Overall, GATT/WTO accession is positively correlated with growth. Yet, note that not all countries that acceded grew

<sup>11</sup> Almost all the other developed countries acceded to the GATT in the mid-1950s.

faster after entry. Among Article XII countries, around 65% of countries grew faster, whereas the average for developing countries stands at 52%.

**TABLE 1: GROWTH RATES BEFORE AND AFTER ACCESSION, AVERAGES BY GROUP**

|                         | I           | II                    | III                   | IV                | V              |
|-------------------------|-------------|-----------------------|-----------------------|-------------------|----------------|
|                         | Article XII | Article XXVI 5<br>(c) | Article XXVI 5<br>(c) | Article<br>XXXIII | Developin<br>g |
|                         | 1995-2017   | 1957-1995             | 1990-1994             | 1950-1994         | 1950-2017      |
| Average 5 years before  | 3.82%       | 2.31%                 | 1.60%                 | 2.07%             | 2.71%          |
| Average 5 years after   | 5.19%       | 3.21%                 | 2.90%                 | 1.91%             | 3.32%          |
| Difference              | 1.37p.p.    | 0.90p.p.              | 1.30p.p.              | -0.16p.p.         | 0.61p.p.       |
| Grew faster than before | 62.5%       | 52.8%                 | 50.0%                 | 45.0%             | 52.0%          |
| Number of Countries     | 32          | 57                    | 18                    | 30                | 112            |

Figure 4 compares average increases before and after accession using a 45° line for all 117 countries in our sample. Apart from Article XII and XXVI countries, the graph also includes 30 Article XXXIII members<sup>12</sup>. To date, 9 LDCs<sup>13</sup> acceded pursuant to Article XII, but we do not have GDP data for Afghanistan, Samoa and Vanuatu. Moreover, eight other LDCs are negotiating to join<sup>14</sup>. Except for Yemen, every other LDC registered positive growth averages after accession. Cabo Verde and Cambodia stand out within this group as the most successful. The small African islands actually lost their status of LDC months before their accession to the WTO, after 39 commitments had been undertaken and 73 new legislations enacted. Samoa also changed status two years after accession and Vanuatu, a member since 2012, is expected to graduate soon. After ten years of membership, non-LDC countries have a GDP per capita increase of 90% whereas LDCs registered a 70% increase.

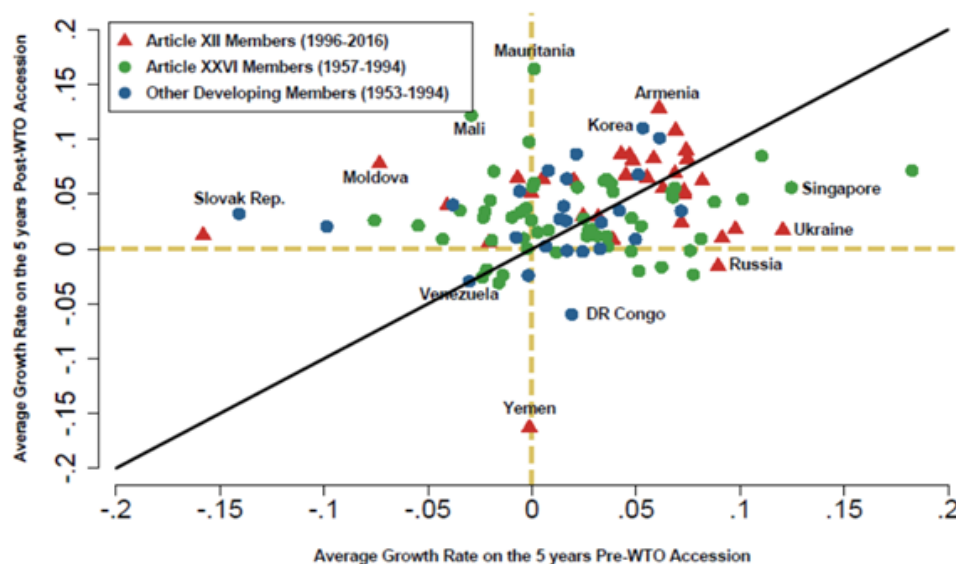
<sup>12</sup>Argentina, Bangladesh, Bolivia, Colombia, Costa Rica, Czech Republic, Democratic Republic of Congo, Egypt, El Salvador, Guatemala, Honduras, Hungary, Korea, Mexico, Morocco, Paraguay, Philippines, Romania, Slovak Republic, Slovenia, Thailand, Tunisia, Uruguay and Venezuela. The remaining ones only had growth data for post-accession years or were considered as developed countries already at accession.

<sup>13</sup> We use the UN classification at accession year.

<sup>14</sup> Bhutan, Comoros, Ethiopia, São Tomé e Príncipe, Somalia, South Sudan, Sudan and Timor-Leste.



**FIGURE 4: GROWTH RATE BEFORE AND AFTER ACCESSION, BY COUNTRY**



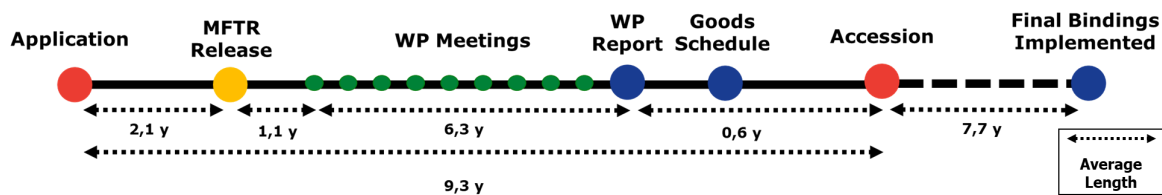
The existence of pre-accession effects is a remarkable feature of the data and it is something we seek to explain in this paper. Equally noteworthy is the evidence of a heterogeneous effect of WTO impact across countries. Our working hypothesis in this paper is that this is the effect of the timing and the depths of the commitments undertaken during the negotiations. Our pre- and post-accession indices will attempt to capture these dynamics.

### 3 MEASURING PATTERNS OF COMMITMENTS UNDERTAKING AND IMPLEMENTATION

The process of accession to the WTO spans over several years. On average, for Article XII members, the period from application to accession lasted 9.3 years. The length of negotiations varies significantly across members. Seychelles and Kyrgyz Republic recorded, respectively, the longest and shortest accession process with 19.9 and 2.8 years. During this time applicants must complete their commitments and notify the WTO Secretariat. Figure 5 summarise the principal steps of the accession process.<sup>15</sup>

**FIGURE 5 – ARTICLE XII ACCESSION TIMELINE**

<sup>15</sup> All documents referring to the negotiations, commitments and schedules are available for consultation on WTO online platforms. For a more detailed expose of the accession and negotiation process we refer the reader to the Handbook on Accession to the WTO (Williams, 2008).



After the formal application, one of the first steps taken by the WTO is to establish the Working Party (WP), a group of members that will examine the application and submit recommendations to the General Council/Ministerial Conference regarding the terms of accession. WP membership is open to all interested members. The size of the WP varies considerably (from 17 to 62 members<sup>16</sup>) and is highly correlated with the applicant's size in the global economy (Williams, 2008).

Before starting the negotiations, applicants are requested to provide a full description of their trade regime, known as the Memorandum of Foreign Trade Regime (MFTR), which will be the starting point for the WP to construct its final report to the General Council, the Working Party Report.<sup>17</sup> The MFTR is released on average 2 years after application. WP members are invited to examine the document and submit questions related to its content or to topics that were not addressed but are relevant for the WTO framework. Then, applicants answer these questions, completing the first round of questions and answers (Q&A hereafter). The initial meeting of the Working Party is scheduled once members are satisfied that the Memorandum, and the first replies, provide an adequate factual basis to begin the examination of the applicant's trade regime.<sup>18</sup> Normally only one set of replies is needed before the first meeting. This takes on average around one year.

The primary goal of the first meeting is to identify non-conformities with WTO requirements and discuss the remedial actions to be taken. At WP meetings, representatives from the acceding government and WP members discuss the answers and the shortcomings in person. Following a meeting, members submit other questions. Another meeting takes place when the respective answers are formulated. This process continues until both sides (acceding country and WP members) reach an agreement on the accession conditions. All these commitments will then be included in the WP Report. The total number of meetings will depend on the difficulties faced during this negotiation process, the interest generated by a particular accession, the complexity of the policies examined and the adequacy of the information supplied (Williams, 2008). Only two meetings with the WP were needed for Vanuatu's and Samoa's accession, meanwhile Russia's WP met in 31 different occasions.

The applicant's terms of entry form a single package which must be agreed by all members and by the applicant. Hence, for the WP to finish its work under its mandate and conclude the Working Party

<sup>16</sup> Australia, Canada, the European Community, Japan and the United States have been members of every WP.

<sup>17</sup> The MFTR is divided into six main categories: Economic Policies, Framework for Making and Enforcing Policies, Policies Affecting Trade in Goods, TRIPS Regime, Trade Related Services Regime, Transparency and Trade Agreements. A list of the subjects covered by each of these headings can be found on Annex 6 of the *Handbook on Accession to the WTO*. The structural commitments published on the Working Party Report will be arranged under these same headings. The Goods Schedule with all tariff commitments, different than the multilateral/plurilateral commitments, will form part of the Protocol of Accession.

<sup>18</sup> For the great majority of Article XII members, only one set of replies was necessary before the first meeting of the WP. The interspersed relation between Q&A documentation and WP meetings is normally maintained.

Report, the Goods Schedule of concessions must also be finalized. The key output of these negotiations are the tariff bindings which applicants will need to adopt.<sup>19</sup> Under WTO rules, members are obliged to keep their tariffs below product specific maximum levels but are free to change their applied tariffs at any time to any level not exceeding these rates. In general, applicants bind almost all their agricultural and non-agricultural tariff lines. Together with the final bindings rates, members also negotiate implementation periods to progressively lower the bindings. As a remark, it is important to mention that while the terms of accession are decided on a case-by-case basis and are different for each applicant, accessions are similar enough for patterns to emerge.

Accession packages normally contain two types of measures. The first affects trade through market access (import tariffs and quantitative restrictions).<sup>20</sup> It dictates the pace of trade liberalisation after membership is completed. It is on the basis of the patterns of this implementation commitments that we build our post-accession index. The second group includes measures not related to tariffs. Adopting international best practices helps governments to create a better environment for business and trade. These include the commitments decided on a multilateral/plurilateral basis at the WP meetings: price controls, intellectual property rights, domestic support, trading rights (export subsidies, tariff exemptions and anti-dumping duties), competition, privatization plans, etc. They can be characterized as the set of reforms that will contribute to the efforts of governments to modernise and transition to market economies (Haddad et al., 2015). These commitments must be implemented or be on track before accession.<sup>21</sup> It is for this reason that we expect to observe their potential impacts already prior to accession, and we attempt to capture this effect by building a pre-accession index, aiming to capture the patterns of these commitments.

#### **i. Pre-Accession Commitment Index – Structural Commitments**

The official announcement of all economic reforms to be implemented is made in the Draft of the WP Report, which comes right after the last WP meeting. However, it is known that countries implement their respective commitments progressively as the meetings and Q&A rounds unfold. The final round of Q&As normally takes place one year before accession, when the implementation of commitments has already happened.

Our pre-accession commitment index is the proportion of questions that have been answered by an applicant in a given year to the number of questions answered after all meetings have been concluded. To this purpose, we manually counted the questions from the hundreds of Q&A documents reported by the WP, referring always to the date of the document's release. Hence the index ranges from 0 to 1 for every country, independent of how many questions were answered in total. The absolute number of questions are not to be used because this is correlated with the final number of commitments and consequentially with the size of the applicant in world trade (Basu, 2008). More

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<sup>19</sup> Richter and Verbeet (2020) show, with a restricted sample of developed countries, that PTA's tariffs have not been as widely utilized as expected, giving even more relevance to the MFN tariff bindings established during WTO accession.

<sup>20</sup> "Quantitative restrictions on imports in acceding countries are usually eliminated, which should, in principle, increase imports. Their commitments cover such non-tax measures as quotas, licenses, bans, permits, prior authorization and other qualitative requirements not justified under WTO provisions" Kireyev (2015)

<sup>21</sup> Given that only developing accessions are being assessed, it is relevant to underline that developing country status in the WTO brings certain rights such as longer transition periods for many WTO agreements and/or commitments.

commitments do not necessarily mean a greater impact. What matters is how closely the country is aligned with the WTO framework.

Formally, our index can be defined as:

$$Pre - Accession Commitment Index_{i,t} = \frac{\sum_{n=0}^t (Questions Answered in WP Meetings)_{i,n}}{T}$$

We assume that the number of questions answered during the Q&A evolves at the same pace as the number of multilateral/plurilateral commitments agreed during meetings, regardless of the area.<sup>22</sup> As exposed by Rodrik (2007): "...appropriate growth policies are almost always context specific. This is not because economics works differently in different settings, but because the environments in which households, firms, and investors operate differ in terms of the opportunities and constraints they present." Christiansen, Schindler and Tressel (2009) add to the discussion by showing that, in the past decades, structural reforms undertaken by developing countries varied depending on their income level. Low income countries focused on reducing trade barriers and price controls, reforming the banking sector and improving basic education, lower-middle-income countries focused on maintaining productivity growth and increasing competition, whereas upper-middle-income countries focused on a more skilled labour force and invested in the development of new technologies.

## FIGURE 6 – PRE-ACCESSION COMMITMENT INDEX

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<sup>22</sup> This index is quite different than the weighted and time-invariant index of Chemutai and Escaith (2017), which assumes that commitments taken by only a few acceded members were less important than commitments taken by many. We capture evolution over time whereas they capture static differentiation between reforms.

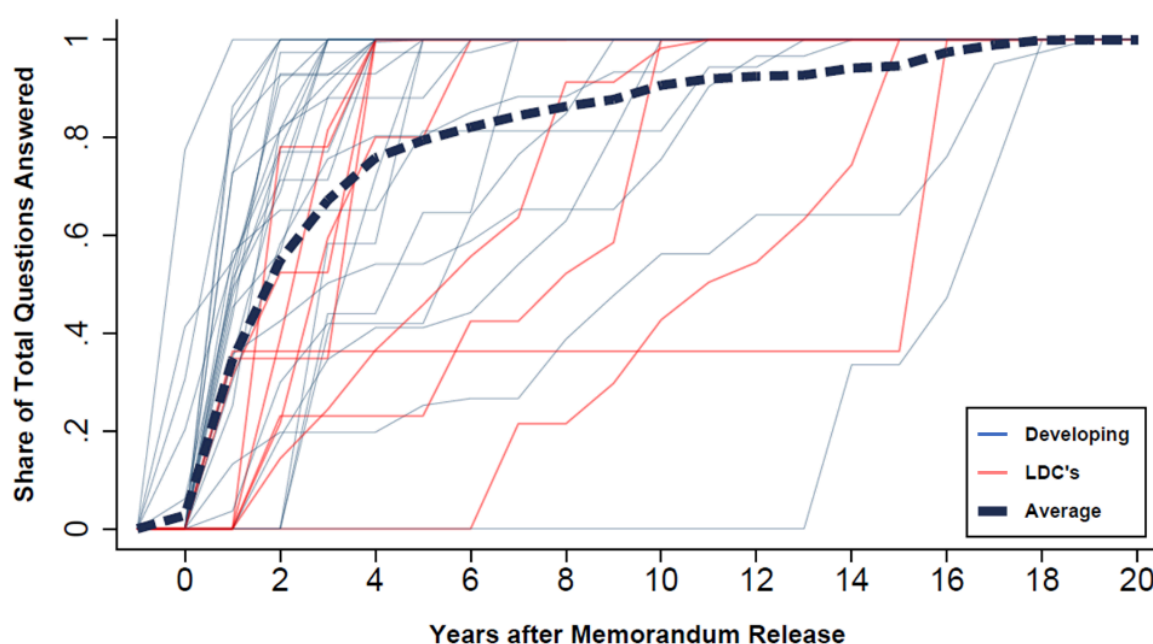


Figure 6 shows the pre-accession index for all Article XII members. On average, an applicant answers 80% of all questions 5 years after the MFTR is released. The evolution of the questions answered varies a lot from one member to another, and this heterogeneity is essential for the validation of the index. These differences may arise for several reasons, such as technical barriers to implementing reforms, difficulties in reaching agreements due to domestic politics or even financial difficulties some applicants have in attending the meetings or hiring negotiators with proper knowledge of institutional and legal procedures and economic policies.<sup>23</sup> It is important to note that Figure 6 starts at year -1 as some applicants answer their first round of Q&A before the completion of one year from MFTR release. Vanuatu (16 years), Seychelles (18 years) and Kazakhstan (19 years) had the longest time to complete their Q&As. On the other hand, Ecuador (1 year), Armenia, Georgia and Kyrgyz Republic (2 years) were the fastest. We include in the Appendix a more technical description of the pre-accession index.

Table 2 below shows the overall number of questions answered, commitments undertaken, legislation enacted<sup>24</sup> and WP meetings held during the accession process. The positive correlation between questions and commitments (0.69) supports the assumption we made to build our index that questions can be used as proxy for commitment. As with tariff bindings, LDCs present a different pattern in the evolution of questions answered. Since they end up having fewer commitments than non-LDCs (27 vs 46), they are also asked fewer questions (589 vs 1208) and hold fewer meetings with

<sup>23</sup> The obstacles faced by some LDCs in this regard are mentioned in Christoffersen (2007) and after by Scalera (2014), who found that countries with more bureaucratic capacity, i.e. possessing more human and financial resources, experienced a shorter and less difficult accession process, everything else equal.

<sup>24</sup> Number of laws enacted follows the same logic of commitments since the forces driving this process are practically the same, and it also cannot be measured yearly. The Legislative Action Plan (equivalent to the MFTR for commitments) provides a timeline for adoption of WTO consistent legislation and regulations. The document is often reviewed during accessions. Unfortunately, only in the latest accessions implementation dates of the new regulations started to be reported. We assume that both commitments and legislation are equally correlated to the number of questions answered.

the WP (6 vs 10). Note the timeline of the accession process has lengthened since the establishment of the WTO (Evenett and Primo Braga, 2005) and the average number of commitments and legislations has been growing accordingly. For instance, Ecuador and Bulgaria, which acceded in 1996 but started the process even before the creation of the WTO, are the countries that answered the fewest questions. The length of accession documents has also increased substantially. Kazakhstan's accession documents reached 30,760 pages whereas Bulgaria's only had 1,700. In order to comply with the WTO framework, Article XII members have made 1,454 accession-specific commitments (40 on average), enacted 4,905 legislations (136 on average) and answered more than 36,000 questions (1,019 on average).

#### **TABLE 2 – ACCESSION DETAILS ARTICLE XII**

| Country                                   | Accession Year | Years to accede | Questions   | WP Meetings | Legislations | Commitments |
|-------------------------------------------|----------------|-----------------|-------------|-------------|--------------|-------------|
| Afghanistan                               | 2016           | 13              | 773         | 5           | 75           | 37          |
| Albania                                   | 2000           | 8               | 607         | 8           | 66           | 29          |
| Armenia                                   | 2003           | 5               | 434         | 5           | 87           | 39          |
| Bulgaria                                  | 1996           | 9               | 276         | 9           | 26           | 26          |
| Cabo Verde                                | 2008           | 6               | 888         | 6           | 73           | 26          |
| Cambodia                                  | 2004           | 5               | 460         | 5           | 85           | 29          |
| China                                     | 2001           | 38              | 3029        | 38          | 441          | 82          |
| Chinese Taipei                            | 2002           | 10              | 960         | 11          | 96           | 63          |
| Croatia                                   | 2000           | 6               | 919         | 6           | 111          | 27          |
| Ecuador                                   | 1996           | 10              | 111         | 10          | 69           | 21          |
| Estonia                                   | 1999           | 9               | 490         | 9           | 77           | 24          |
| Georgia                                   | 2000           | 3               | 512         | 3           | 53           | 29          |
| Jordan                                    | 2000           | 5               | 929         | 5           | 52           | 29          |
| Kazakhstan                                | 2015           | 20              | 1900        | 20          | 412          | 118         |
| Kyrgyzstan                                | 1998           | 6               | 952         | 6           | 155          | 29          |
| Lao People's DR                           | 2013           | 10              | 1224        | 10          | 159          | 26          |
| Latvia                                    | 1999           | 6               | 396         | 6           | 77           | 22          |
| Liberia                                   | 2016           | 4               | 264         | 4           | 102          | 31          |
| Lithuania                                 | 2001           | 5               | 640         | 5           | 167          | 28          |
| Republic of Moldova                       | 2001           | 6               | 861         | 6           | 124          | 28          |
| Mongolia                                  | 1997           | 5               | 146         | 5           | 33           | 17          |
| Montenegro                                | 2012           | 8               | 1015        | 8           | 114          | 35          |
| Nepal                                     | 2004           | 3               | 466         | 3           | 24           | 25          |
| Oman                                      | 2000           | 6               | 808         | 6           | 55           | 26          |
| Panama                                    | 1997           | 5               | 502         | 5           | 45           | 24          |
| Russian Federation                        | 2012           | 31              | 2566        | 31          | 529          | 163         |
| Samoa                                     | 2012           | 14              | 914         | 2           | 123          | 37          |
| Saudi Arabia                              | 2005           | 14              | 1218        | 14          | 95           | 59          |
| Seychelles                                | 2015           | 7               | 1043        | 7           | 287          | 40          |
| Tajikistan                                | 2013           | 9               | 1296        | 9           | 137          | 40          |
| North Macedonia                           | 2003           | 5               | 829         | 5           | 132          | 24          |
| Tonga                                     | 2007           | 12              | 416         | 3           | 74           | 29          |
| Ukraine                                   | 2008           | 17              | 3810        | 17          | 385          | 64          |
| Vanuatu                                   | 2012           | 17              | 343         | 2           | 123          | 30          |
| Viet Nam                                  | 2007           | 14              | 3511        | 14          | 184          | 70          |
| Yemen                                     | 2014           | 11              | 1164        | 11          | 58           | 28          |
| <b>Article XII members</b>                |                |                 | <b>1019</b> | <b>9</b>    | <b>136</b>   | <b>40</b>   |
| <i>of which LDCs</i>                      |                |                 | <b>589</b>  | <b>6</b>    | <b>69</b>    | <b>27</b>   |
| <i>of which non-LDCs</i>                  |                |                 | <b>1208</b> | <b>10</b>   | <b>166</b>   | <b>46</b>   |
| <i>of which accession year &lt;= 2000</i> |                |                 | <b>691</b>  | <b>5</b>    | <b>90</b>    | <b>30</b>   |
| <i>of which accession year &gt; 2000</i>  |                |                 | <b>1145</b> | <b>10</b>   | <b>154</b>   | <b>44</b>   |

### Post-Accession Commitment Index – Tariff Commitments

Not all commitments undertaken during the negotiations are fully implemented upon accession. An example is the implementation of tariff commitments. As shown in Table 3, there are substantial differences among Article XII members in terms of implementation periods of final bindings.<sup>25</sup> On average, 26% of the final bound duties are not implemented upon accession. Instead, bindings are progressively lowered according to an implementation period previously agreed with members.<sup>26</sup>

<sup>25</sup> Average Bound Duties and Average Applied MFN Rates were calculated based on HS-6 digit tariff lines obtained from the WTO Data Portal.

<sup>26</sup> For more information on implementation periods consult the document WT/ACC/10/Rev.4/Add.1.

**TABLE 3 –ARTICLE XII IMPLEMENTATION PERIODS AND BOUND DUTIES**

| Country                                   | Implementation of Final Bound |              | Average Bound Duty (%) |               |             | Average Applied MFN Rate (%) |               |            |
|-------------------------------------------|-------------------------------|--------------|------------------------|---------------|-------------|------------------------------|---------------|------------|
|                                           | Max years                     | Immediate    | Accession              | Accession + 5 | 2017        | Accession                    | Accession + 5 | 2017       |
| Afghanistan                               | 3                             | 99.8%        | 13.3                   | 13.3          | 13.3        |                              |               |            |
| Albania                                   | 9                             | 63.6%        | 10.5                   | 7.6           | 7.0         | 10.6                         | 3.8           | 3.8        |
| Armenia                                   | 4                             | 98.1%        | 8.6                    | 8.3           | 8.3         | 2.9                          | 6.1           | 6.1        |
| Bulgaria                                  | 14                            | 41.0%        | 23.8                   | 19.2          | 17.1        | 15.4                         | 9.6           | 9.0        |
| Cabo Verde                                | 10                            | 38.4%        | 18.6                   | 16.4          | 15.9        | 10.2                         | 9.8           | 9.8        |
| Cambodia                                  | 10                            | 99.4%        | 19.9                   | 19.9          | 19.9        | 16.4                         | 11.1          | 11.1       |
| China                                     | 9                             | 45.3%        | 13.6                   | 9.8           | 9.8         | 16.0                         | 10.0          | 10.0       |
| Chinese Taipei                            | 9                             | 55.3%        | 8.7                    | 6.8           | 6.8         | 7.6                          | 5.6           | 5.5        |
| Croatia                                   | 7                             | 79.4%        | 7.6                    | 5.9           | 5.9         | 6.5                          | 4.5           | 4.5        |
| Ecuador                                   | 11                            | 98.2%        | 21.0                   | 21.0          | 21.0        | 12.0                         | 10.2          | 10.2       |
| Estonia                                   | 6                             | 91.8%        | 10.7                   | 10.0          | 10.0        | 1.6                          | 1.7           | 1.7        |
| Georgia                                   | 6                             | 53.1%        | 9.9                    | 6.6           | 6.6         | 10.4                         | 7.0           | 1.3        |
| Jordan                                    | 10                            | 69.5%        | 19.9                   | 17.4          | 16.3        | 14.9                         | 10.0          | 10.0       |
| Kazakhstan                                | 5                             | 63.5%        | 7.3                    | 5.7           | 6.6         | 7.0                          |               | 6.2        |
| Kyrgyzstan                                | 7                             | 43.7%        | 11.8                   | 7.4           | 7.3         | 4.9                          | 4.6           | 4.6        |
| Lao People's DR                           | 10                            | 99.6%        | 18.2                   | 18.2          | 18.2        | 9.5                          | 8.2           | 8.2        |
| Latvia                                    | 9                             | 82.3%        | 13.9                   | 12.8          | 12.8        | 4.1                          | 3.1           | 3.1        |
| Liberia                                   | 3                             | 95.8%        | 26.9                   | 26.7          | 26.9        | 10.0                         |               | 10.0       |
| Lithuania                                 | 8                             | 94.5%        | 9.6                    | 9.3           | 9.3         | 3.4                          | 3.3           | 3.3        |
| Republic of Moldova                       | 4                             | 64.5%        | 11.3                   | 6.5           | 6.5         | 4.9                          | 5.2           | 5.2        |
| Mongolia                                  | 8                             | 83.6%        | 19.3                   | 18.5          | 17.8        | 15.0                         | 5.2           | 5.2        |
| Montenegro                                | 10                            | 82.8%        | 7.6                    | 6.5           | 6.5         | 3.8                          | 3.5           | 3.5        |
| Nepal                                     | 10                            | 7.5%         | 40.9                   | 26.2          | 26.2        | 13.3                         | 11.6          | 11.6       |
| Oman                                      | 9                             | 64.2%        | 16.6                   | 13.6          | 13.6        | 5.7                          | 5.6           | 5.6        |
| Panama                                    | 14                            | 51.1%        | 20.7                   | 18.9          | 14.3        | 11.2                         | 6.7           | 6.7        |
| Russian Federation                        | 8                             | 42.7%        | 11.3                   | 8.0           | 8.0         | 8.1                          | 6.6           | 6.6        |
| Samoa                                     | 10                            | 99.2%        | 21.2                   | 21.2          | 21.2        | 10.8                         | 10.8          | 10.8       |
| Saudi Arabia                              | 10                            | 88.7%        | 10.8                   | 10.3          | 10.3        | 5.7                          | 5.1           | 5.1        |
| Seychelles                                | 8                             | 99.9%        | 9.6                    | 9.6           | 9.6         | 2.6                          |               | 2.3        |
| Tajikistan                                | 7                             | 46.6%        | 10.7                   | 8.1           | 8.2         | 7.6                          | 7.4           | 7.4        |
| North Macedonia                           | 9                             | 63.2%        | 11.2                   | 7.9           | 7.8         | 10.1                         | 6.6           | 6.6        |
| Tonga                                     | 1                             | 100%         | 17.6                   | 17.6          | 17.6        | 11.8                         | 12.1          | 11.4       |
| Ukraine                                   | 5                             | 97.2%        | 6.0                    | 5.9           | 5.9         | 4.9                          | 4.6           | 4.5        |
| Vanuatu                                   | 3                             | 99.1%        | 40.4                   | 39.7          | 39.7        | 9.0                          | 8.8           | 8.8        |
| Viet Nam                                  | 12                            | 59.4%        | 17.2                   | 13.7          | 13.4        | 16.8                         | 9.4           | 9.5        |
| Yemen                                     | 0                             | 100.0%       | 20.4                   | 20.4          | 20.4        | 7.0                          |               | 7.0        |
| <hr/>                                     |                               |              |                        |               |             |                              |               |            |
| <b>Article XII members</b>                | <b>7.7</b>                    | <b>73.9%</b> | <b>15.7</b>            | <b>13.7</b>   | <b>13.5</b> | <b>8.9</b>                   | <b>7.0</b>    | <b>6.8</b> |
| <i>of which LDCs</i>                      | <b>6.6</b>                    | <b>82.1%</b> | <b>24.4</b>            | <b>22.4</b>   | <b>22.4</b> | <b>10.8</b>                  | <b>10.0</b>   | <b>9.7</b> |
| <i>of which non-LDCs</i>                  | <b>8.1</b>                    | <b>71.2%</b> | <b>12.8</b>            | <b>10.8</b>   | <b>10.5</b> | <b>8.3</b>                   | <b>6.3</b>    | <b>5.9</b> |
| <i>of which accession year &lt;= 2000</i> | <b>8.8</b>                    | <b>66.3%</b> | <b>14.8</b>            | <b>12.4</b>   | <b>11.5</b> | <b>9.2</b>                   | <b>6.0</b>    | <b>5.5</b> |
| <i>of which accession year &gt; 2000</i>  | <b>7.2</b>                    | <b>77.3%</b> | <b>16.2</b>            | <b>14.3</b>   | <b>14.3</b> | <b>8.8</b>                   | <b>7.6</b>    | <b>7.3</b> |

Note that higher bound rates were agreed with the nine LDCs that acceded after 1995 (24.4% vs 12.8%).<sup>27</sup> As a consequence, most of their bound rates were directly implemented at the final levels. Cabo Verde and Nepal stand out as exceptions.

In contrast, European countries have much lower rates than other non-LDCs, possibly in preparation for their subsequent accession to the European Union (EU). As noted by Richtering et al. (2015), average bound duties vary significantly, from 5% (Montenegro) to almost 40% (Vanuatu). Finally, the implementation period for final bound duties has shortened with time. Accessions before 2000, such as Bulgaria and Panama, had an average implementation time of 8.8 years in comparison to only 7.2 years for subsequent accessions.

<sup>27</sup> Some countries have bound their tariffs at a level that was higher than the applied tariffs. For example, when Cambodia acceded they convinced WTO members that to protect its development objectives, it had to commit to bound tariffs higher than or equal to its actual applied tariffs for all goods (Prasidh, 2015).



We use the share of bound HS-6 digit tariff lines that have reached their final bound level, as our second index of WTO post-accession commitments. Figure 10 plots the index for selected Article XII territories. The index captures interesting features of the data, such as the immediate transition of most LDCs and the longer implementation periods for earlier accessions. Since we use the proportion of bound lines at their final level, and not tariff levels themselves, we avoid correlation with development status and other factors relevant for growth. The Post-Accession Index is given as:

$$Post - Accession Commitment Index_{i,t} = \frac{Implemented\ Final\ Bound\ Rates_{i,t}}{Total\ Number\ of\ Final\ Bound\ Rates_i}$$

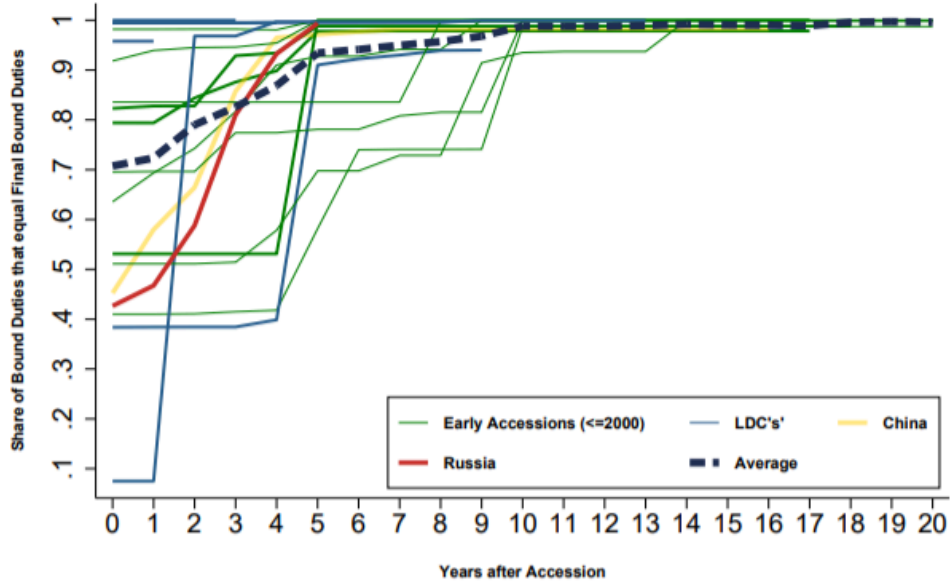
It should not be forgotten that the applied tariff rates will often have already been on a downward trend in anticipation of, and as preparation for, the expected accession requirements (Richtering et al., 2015). Nonetheless, countries continue this decreasing trajectory after accession. As Table 3 shows, after 5 years tariffs were reduced by almost 2 percentage points (15.7 to 13.7), on average.<sup>28</sup>

Because of the way it is constructed, our index also captures policy uncertainty reductions. In terms of predictability, bound tariffs are important because they give importers, exporters and investors more certainty about future tariff rates, thus facilitating trade and investment and hence boosting growth.<sup>29</sup>

#### FIGURE 10 – POST ACCESSION INDEX

<sup>28</sup> We deal with binding duties and not applied tariffs. Therefore, on Table 3 it is possible to indicate the average binding in "Accession + 5" even for the latest accessions.

<sup>29</sup> Beshkar et. al (2015) shows that 69% of the applied MFN tariffs are below the negotiated bindings, indicating that countries value the ability to respond unilaterally to preference shocks. Maggi and Rodriguez-Clare (1998, 2007) show that the decrease in tariff flexibility derived from trade agreements helps countries avoid protectionist temptations. Jakubik and Piermartini (2019) demonstrate that WTO commitments tame uncertainty since the likelihood of responding to import shocks by raising tariffs is reduced.



The number of tariff lines subject to Initial Negotiation Rights (INR) could also reflect directly the importance of the applicant's market for exporters in existing WTO members. Unfortunately, two reasons prevent us from selecting this variable as an index of tariff commitment. First, accession terms are driven by the domestic export interests of existing members (Pelc, 2011) and this positive correlation with global exports representativeness would create an endogeneity problem. China, for instance, had 100% of their tariff lines tied to INRs. Second, INR concessions do not vary over time.

#### 4 EMPIRICAL RESULTS

##### DATA AND EMPIRICAL SPECIFICATION

Our sample consists of yearly observations for 150 developing and transition economies<sup>30</sup> covering the period 1951-2017. Table A1, in the appendix, lists all countries in the sample. 88 of the 150 countries are either Article XII or Article XXVI members, and an additional 37 members and 28 non-members complete the sample. Only accessions that occurred during the sample period are assessed. We exclude from the sample advanced economies that were original GATT/WTO members, to guarantee that our control group is similar to the treatment group, i.e. acceded countries (see e.g. Besley and Case, 2000). Including developed countries, which experienced low growth rates in recent years, in the control group would likely increase our estimated coefficients. However, we believe they are not an appropriate comparator group because of output volatility and higher risk to collapses in developing countries and the different growth paths and socio-economic characteristics between the groups (Barro and Sala-i-Martin, 1990).

We estimate the following regression:

$$\Delta \log \log Y_{i,t} = \beta_0 + \beta_1 \log \log (Y_{i,t-1}) + \beta_2 GATT/WTO_{i,t} + \beta_3 Pre - Accession Index_{i,t} + \beta_4 Post - Accession Index_{i,t}$$

<sup>30</sup> The only WTO developed countries included are Bulgaria, Croatia, Estonia, Latvia and Lithuania. All these countries acceded through Article XII and were still considered developing countries at the time of accession.

$Y_{i,t}$  is GDP per capita of country  $i$  at year  $t$ . Following the growth literature (McMillan and Rodrik, 2011; Barro and Sala-i-Martin, 1992), we adopt the first difference in log GDP as our dependent variable to avoid stationarity. GATT/WTO serves as a difference-in-difference estimator, capturing post-intervention periods of all members, i.e., without distinguishing between accession processes. Next,  $\beta_3$  and  $\beta_4$  are coefficients for the indices presented above, which take positive values only for Article XII members. The third variable used to calculate the overall effect of Article XII accessions on growth is the 'Article XII Post-Full Implementation', which equals one after final tariff bindings are implemented, therefore capturing a long-term effect of accession after full implementation of commitments.

The terms  $\alpha_i$  and  $\gamma_t$  are country and year fixed effects respectively (see e.g. Mankiw, Romer and Weil, 1992).<sup>31</sup> Global cyclical factors lead growth rates to have a common component which is controlled for by these fixed effects. On the other hand, the case for country fixed-effects is not straight-forward and must be made with care, as argued by Barro (1997), Temple (1999), Pritchett (2000a) and Wacziarg (2002). Individual effects are of great interest to us, since they are a fundamental source of persistent income differences. Yet, their use comes at the expense of ignoring between-variation and increasing standard errors: a trade-off between robustness and efficiency. We opt for retaining them in our estimation, because the long time dimension of our sample minimises the loss of efficiency.

The vector  $\mathbf{X}$  represents other covariates used. As Durlauf, Johnson, and Temple (2005) point out, there is an absence of consensus in the literature as to which growth determinants should be included.<sup>32</sup> To minimise the risk of omitted variable bias, we selected three controls: Gross Fixed Capital Formation share of GDP (as a proxy for investment), Trade Openness, measured as the summed share of GDP from imports and exports, and the incidence of armed conflicts.<sup>33</sup> The shares are in logarithmic form so that resulting regression coefficients can be interpreted as elasticities of growth with respect to the different factors. We also test the robustness of our results by including the human capital index, which is based on years of education.

As in any time series analysis, our model suffers from the presence of first-order autocorrelation in the residual term as per a standard Wooldridge test for autocorrelation in panel data (Wooldridge 2002, 2010). We include as a control the first lag of GDP in logs, which addresses this issue and also acts as a control by proxying for domestic business cycles (Bertrand, Duflo, and Mullainathan (2004)).

Another problem faced by most growth research is cross-sectional dependence. Our study is no different. As firstly noted by DeLong and Summers (1991) and subsequently by Durlauf, Johnson, and Temple (2005), failure to account for cross-sectional dependence can lead to incorrect calculation of standard errors and consequently incorrect inferences. Thus, not selecting an adequate error has

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<sup>31</sup> As the vast majority of growth papers, we opt to use fixed effect estimators instead of random effects given that the latter require individual effects to be distributed independently from the explanatory variables, a requirement that is clearly violated.

<sup>32</sup> See Durlauf, Johnson, and Temple (2005, pp.83-86).

<sup>33</sup> We use the variable *onset1* from the UCDP Onset Database, which equals one in case of a new intrastate armed conflict with more than 25 deaths or zero if more than one year has passed since the last observation of conflict.

important implications on the asymptotic of the estimator. In an interdependent world, international agreements have effects which spill over to third countries. Accession may increase growth in one country, which in turn may influence a neighbouring country's growth rate. Pesaran (2004) CD Test confirm this issue in our sample.<sup>34</sup> Two potential solutions exist. The first one would be the adoption of spatial correlation between errors. Many researchers follow such a strategy (see Anselin, 2001; Conley and Ligon, 2002), but its use raises the greater challenge of quantifying the actual space between countries and its respective influence on growth. Besides, many reasons other than distance (technological spillovers, political linkages, etc.) explain correlations between countries' outcomes as well. In fact, it is evident that microeconomic data is likely to exhibit all sorts of cross-sectional and temporal dependencies. Thus, we opted instead to use Driscoll and Kraay (1998)'s spatial correlation consistent standard errors, as is common in panel time series in macroeconomics. These standard errors are well calibrated in the presence of cross-sectional dependencies.<sup>35</sup> Furthermore, these standard error estimates are robust to disturbances being also heteroskedastic or autocorrelated with moving averages process of different lag lengths. In fact, heteroskedasticity is also an issue in our data. A Kolmogorov-Smirnov test points to strong rejections of the null hypothesis that errors are evenly distributed either between countries that acceded before and after the Uruguay Round or between members and non-members. To the best of our knowledge, we are the first to control for spatial spillover effects investigating the growth effects of GATT/WTO. It is important to emphasize that other types of standard errors, such as the ones from White (1980) or Rogers (1993) do not tackle all these problems at once.

Macroeconomic data is sourced from the Penn World Tables (PWT). We look for post-accession structural improvements, which leads us to use expenditure-side GDP which is adjusted for trade balance and ideal to compare relative living standards across countries at a given point in time. GDP used here is calculated in chained PPP (USD 2011, millions). GATT/WTO membership such as application and accession dates, tariff bindings, and Q&A documents were obtained from WTO online databases and the website. Data on conflicts is from the UCDP Onset Dataset.

## RESULTS

**TABLE 4 – BENCHMARK RESULTS**

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<sup>34</sup> Pesaran (2004) provides a test for cross-sectional dependence that do not rely on any prior ordering and has good finite sample properties for panels with different combinations of N and T. Pesaran(2004b) note that this problem is very common in growth models.

<sup>35</sup> "Driscoll and Kraay's methodology applies a Newey-West type correction to the sequence of cross-sectional averages of the moment conditions. Adjusting the standard error estimates in this way guarantees that the covariance matrix estimator is consistent, independently of the cross-sectional dimension N (i.e. also for  $N \rightarrow \infty$ ). Therefore, Driscoll and Kraay's approach eliminates the deficiencies of other large T consistent covariance matrix estimators such as the Parks-Kmenta or the PCSE approach which typically become inappropriate when the cross-sectional dimension N of a microeconomic panel gets large." (Hoechle, 2007)

|                                                                                                         | (1)                  | (2)                     | (3)                              | (4)                         |
|---------------------------------------------------------------------------------------------------------|----------------------|-------------------------|----------------------------------|-----------------------------|
| <i>Dependent Variable: <math>\log[(GDP pc)_t - (GDP pc)_{t-1}]</math></i>                               |                      | <i>+Article XII DID</i> | <i>+Coefficients of Interest</i> | <i>+Human Capital Index</i> |
| <b>GATT/WTO DID</b><br><i>=1 for post accession periods of all members</i>                              | 0.007*<br>(0.004)    | -0.001<br>(0.003)       | -0.001<br>(0.003)                | 0.005<br>(0.004)            |
| <b>Article XII DID</b><br><i>=1 for post accession periods of Article XII members</i>                   |                      | 0.031***<br>(0.012)     |                                  |                             |
| <b>Pre Accession Index</b><br><i>Share of questions already answered</i>                                |                      |                         | 0.028*<br>(0.015)                | 0.025*<br>(0.014)           |
| <b>Post Accession Index</b><br><i>Share of final tariff bindings implemented</i>                        |                      |                         | 0.039***<br>(0.013)              | 0.026**<br>(0.011)          |
| <b>Article XII Post-Full Implementation Dummy</b><br><i>=1 after member implemented all commitments</i> |                      |                         | 0.050***<br>(0.018)              | 0.024**<br>(0.012)          |
| <b>Human Capital Index</b>                                                                              |                      |                         |                                  | 0.023<br>(0.014)            |
| <b><math>\log(GDP pc)_{t-1}</math></b>                                                                  | -0.033***<br>(0.006) | -0.034***<br>(0.006)    | -0.034***<br>(0.006)             | -0.033***<br>(0.007)        |
| <b><math>\log(Investment/GDP)</math></b><br><i>Gross Fixed Capital Formation</i>                        | 0.011***<br>(0.003)  | 0.011***<br>(0.003)     | 0.011***<br>(0.003)              | 0.012***<br>(0.004)         |
| <b><math>\log(Trade Openness/GDP)</math></b><br><i>Imports+Exports/GDP</i>                              | 0.005*<br>(0.003)    | 0.003<br>(0.002)        | 0.003<br>(0.002)                 | 0.001<br>(0.003)            |
| <b>Conflicts</b><br><i>Incidence of armed conflicts in a given year</i>                                 | -0.015**<br>(0.006)  | -0.016**<br>(0.006)     | -0.015**<br>(0.006)              | -0.010*<br>(0.006)          |
| <b>Constant</b>                                                                                         | 0.327***<br>(0.048)  | 0.332***<br>(0.047)     | 0.334***<br>(0.047)              | 0.292***<br>(0.047)         |
| <b>Observations</b>                                                                                     | 7,848                | 7,848                   | 7,848                            | 6,208                       |
| <b>Country F.E.</b>                                                                                     | Yes                  | Yes                     | Yes                              | Yes                         |
| <b>Year F.E.</b>                                                                                        | Yes                  | Yes                     | Yes                              | Yes                         |
| <b>R-squared</b>                                                                                        | 9.4%                 | 9.6%                    | 9.8%                             | 11.3%                       |
| <b>Number of countries</b>                                                                              | 150                  | 150                     | 150                              | 112                         |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Our benchmark results are displayed at Table 4. Here we quantify the effects of GATT/WTO accessions, and specifically Article XII accession, on growth rates. Column (1) tests the significance of GATT/WTO DID as a mean to estimate a general diff-in-diff estimator without differentiating by accession mode. At first glance, the coefficient is positive and significant. Growth rates of acceded members increased by 0.7 percentage points, on average, in post-accession periods. The sign of the other coefficients are consistent with the predictions of growth theory.

Column (2) presents results including a dummy capturing post-accession periods of Article XII members. As our theory predicts, we find that most of the variation observed in Column (1) was explained by Article XII members. The coefficient of the Article XII dummy is highly significant whereas the GATT/WTO DID turns insignificant.

As the next step, in Column (3), the model is enriched by substituting this dummy with our three variables of interest, that capture the timing of Article XII accession reforms. Column (3) is our baseline result. All three coefficients are significant. The coefficient of our Pre-Accession Index indicates that in the period from the MFTR release to the accession date, i.e., when the index increased incrementally from 0 to 1, growth rates were in each year the value of the index times 2.8 percentage points higher due to accession. The coefficient of the Post-Accession Index indicates that

in the period from accession date until the year when all final bindings are fully implemented, growth rates were the value of the index times 3.9 percentage points higher due to accession. Last, the Post-Full Implementation dummy indicates that on average acceded countries that have fully implemented their commitment grow at a rate that is 5 percentage points higher than had they not acceded. The results are robust to substituting the year fixed effects by a time trend. Using this specification, we predict growth rates for Article XII accessions, WTO members and non-members, for each year starting from five years before accessions until five years after accession. We find an average effect of WTO on GDP cumulated over this period of 44% for Article XII economies compared to had they not acceded. We do not estimate a significant average effect of GATT/WTO.

One could argue our results capture technical changes in productivity or technological progress. To this purpose, the regression reported in Column (4) tests the robustness of our estimates to the inclusion of the Human Capital Index.<sup>36</sup> However, adding this extra control comes at the expense of losing more than 20% of our observations. 38 countries are dropped from the sample, including 6 Article XII members. Note that the coefficient of human capital is insignificant, and its inclusion does not alter the significance of our coefficients of interest, which are only slightly smaller in magnitude.

#### TABLE 5 – ROBUSTNESS TO EXCLUDING OUTLIERS

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<sup>36</sup> The human capital index from the Penn World Tables is based on the average years of schooling from Barro and Lee (2013) and an assumed rate of return to education, based on Mincer equation estimates around the world (Psacharopoulos, 1994). For more information see: [rug.nl/ggdc/docs/human\\_capital\\_in\\_pwt\\_90.pdf](http://rug.nl/ggdc/docs/human_capital_in_pwt_90.pdf)

|                                                                                                         | (1)                  | (2)                  | (3)                  | (4)                  |
|---------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|
| <i>Dependent Variable: <math>\log[(GDP\ pc)_t - (GDP\ pc)_{t-1}]</math></i>                             |                      | -China               | -EU Enlargements     | -Outliers            |
| <b>GATT/WTO DID</b><br><i>=1 for post accession periods to all members</i>                              | -0.001<br>(0.003)    | -0.000<br>(0.003)    | -0.000<br>(0.003)    | -0.000<br>(0.003)    |
| <b>Post Accession Index</b><br><i>Share of final tariff bindings implemented</i>                        | 0.039***<br>(0.013)  | 0.038***<br>(0.014)  | 0.039***<br>(0.011)  | 0.041***<br>(0.012)  |
| <b>Pre Accession Index</b><br><i>Share of questions already answered</i>                                | 0.028*<br>(0.015)    | 0.028*<br>(0.015)    | 0.030*<br>(0.016)    | 0.033**<br>(0.014)   |
| <b>Article XII Post-Full Implementation Dummy</b><br><i>=1 after member implemented all commitments</i> | 0.050***<br>(0.018)  | 0.050***<br>(0.019)  | 0.050***<br>(0.018)  | 0.047***<br>(0.017)  |
| <b><math>\log(GDP\ pc)_{t-1}</math></b>                                                                 | -0.034***<br>(0.006) | -0.034***<br>(0.006) | -0.034***<br>(0.006) | -0.033***<br>(0.006) |
| <b><math>\log(Investment/GDP)</math></b><br><i>Gross Fixed Capital Formation</i>                        | 0.011***<br>(0.003)  | 0.011***<br>(0.003)  | 0.012***<br>(0.003)  | 0.012***<br>(0.004)  |
| <b><math>\log(Trade\ Openness/GDP)</math></b><br><i>Imports+Exports/GDP</i>                             | 0.003<br>(0.002)     | 0.003<br>(0.002)     | 0.003<br>(0.002)     | 0.002<br>(0.002)     |
| <b>Conflicts</b><br><i>Incidence of armed conflicts in a given year</i>                                 | -0.015**<br>(0.006)  | -0.015**<br>(0.006)  | -0.015**<br>(0.006)  | -0.014**<br>(0.007)  |
| <b>Constant</b>                                                                                         | 0.334***<br>(0.047)  | 0.335***<br>(0.047)  | 0.335***<br>(0.047)  | 0.328***<br>(0.046)  |
| <b>Observations</b>                                                                                     | 7,848                | 7,848                | 7,848                | 7,848                |
| <b>Country F.E.</b>                                                                                     | Yes                  | Yes                  | Yes                  | Yes                  |
| <b>Year F.E.</b>                                                                                        | Yes                  | Yes                  | Yes                  | Yes                  |
| <b>R-squared</b>                                                                                        | 9.8%                 | 9.8%                 | 9.5%                 | 9.2%                 |
| <b>Number of countries</b>                                                                              | 150                  | 150                  | 150                  | 150                  |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5 analyses whether or not our results are robust once we exclude outliers. Column (1) repeats the baseline results from Table 4. Column (2) excludes China given the outstanding performance of the Chinese economy over the last decades.<sup>37</sup> Since our results might be biased by membership in other institutions, Column (3) excludes the five European countries that were involved in the eastern enlargement of the European Union in 2004 and 2007. Column (4) excludes six outliers<sup>38</sup> in terms of changes in growth (5 years pre vs 5 years post), three from either end of the spectrum. None of these exclusions altered our results quantitatively or qualitatively.

## 5 ROBUSTNESS CHECKS AND ADDRESSING ENDOGENEITY CONCERNS

Difference-in-difference estimators, as well as other intervention assessment techniques, assume that no unobserved variables affect the dependent variable over time in a different manner between treatment and control units, i.e. the parallel trends and common shocks assumptions (Besley and Case, 2000). The violation of either is more likely if sample countries are too heterogeneous and thus prone to being differently affected by exogenous forces, such as technological progress or globalization. These time-invariant differences between countries are to be corrected by country

<sup>37</sup> It is important to highlight that even though China has enjoyed 30 years of explosive growth, they are not one of the best performers in terms of change in growth over accession.

<sup>38</sup> Bulgaria, Republic of Moldova and Kyrgyzstan (best performers) and Yemen, Russia and Ukraine (worst performers).

fixed effects. The potential presence of endogenous time varying characteristics may still leave room for discussion. This section aims to address these issues by presenting some economic arguments, by using an instrumental variable approach, and by employing falsification tests on our treated sample.

### 5.1 ACCESSION OR PRO-GROWTH GOVERNMENT EFFECT?

In the literature on structural reforms, the concern is raised of the possibility of capturing a government effect, i.e. the possibility that only governments pursuing pro-growth reforms apply for WTO membership. An argument against this is made in TW, who point to the existence of a long lag between application and accession, so that the timing of accession *per se* does not suffer from a selection problem. The duration of the process indicates that the same government is unlikely to remain in power from application until accession. Using the Database on Political Institutions (DPI), we provide evidence in support of this argument by looking at how many governments remained in power the entire period between the application date and the WTO accession date. We find that out of 34 Article XII members present in the sample, only 12 had the same Chief Executive at application and accession years. Moreover, six of these governors had been already in power for more than 10 years before the year of application, meaning the government effect would have been constant over this period of time. In our view, therefore, we are not likely to suffer from pro-growth government bias.

### 5.2 SELF-SELECTION INTO ACCESSION?

The accession date must be exogenous for the estimates to be valid. Even if countries can unilaterally decide when to apply, they cannot determine when to accede without the agreement of existing members. The application timing of China and Russia, for example, do reflect some domestic considerations since both had demonstrated their intention to open up their economies. However, by analysing accession documents, one can notice that the length of negotiations was driven by the particularities and interests of other members. The accession year is actually decided by the WP members.<sup>39</sup> The bilateral negotiations on market access with Mexico and the US, respectively, were the most demanding made on the Chinese and Russian accessions.<sup>40</sup>

Another issue we address is whether the length of the accession process might be linked to the political power of governments carrying out political reforms. Maggi and Rodriguez-Claire (2007) demonstrate that politics is at the centre of trade agreements. Parties with more domestic political power could accelerate the process and intervene in when they accede, and at the same time carry out other growth enhancing reforms. With the help of the DPI, we generate a variable that captures the average share in vote from the governing party and its allies between application and accession dates for 23 Article XII members. On average, governing parties won most of the votes during this period. Their average share during the whole process was 14 percentage points higher than the average for 1980-2017. However, we do not find any significant relationship between length of negotiations and the share of votes won. In addition to this, there is no correlation between the

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<sup>39</sup> As shown before, LDC status and date of application (before or after 2000) has historically influenced the length of accession. However, it must be emphasized that in the end it is a matter of how stringent WP members will be.

<sup>40</sup> This information can be found at the "Register of Bilateral Market Access Agreements" in the webpage of the WTO Accessions Division.



process length and growth according to TW. We also tried to split Article XII members into two halves: short and long accessions. However, there is no significant difference in the coefficients of interest.

### 5.3 INSTRUMENTAL VARIABLES

Our methodological approach as well as the inclusion of country and year fixed effects limits the scope for omitted variable bias. In order to address remaining concerns of endogeneity, we use also an instrumental variable approach.

The evolution of an applicant's accession negotiations as captured by our indices may itself be endogenous, yet these factors are unlikely to influence the accessions of other members. Therefore, we use different weighted combinations of other members' indices as instrumental variables. We instrument the Pre-Accession Index and the Post-Accession Index simultaneously by the respective indices of the closest Article XII accession in distance<sup>41</sup>, in time (in terms of accession date), the average between closest in distance and closest in time, and average indices weighted by distance or time. These instruments are relevant because distance and timing of accession are likely to matter in determining patterns of accession. Accession that occurred in similar periods or for countries that are close to each other are likely to follow similar patterns because, for example, neighbouring countries look at each other performance more closely, they are likely to be similar or simply because the same negotiators in the WTO are working on several accession in a certain period. Since accession dates differ across countries, we build our instrument by matching by year- from-accession (that is, we instrument the observation for country  $i$  at time accession plus or minus  $t$  with that of the geographically closest acceded country at the time of its accession plus or minus  $t$ ). The instrument takes non-zero values only for the length of time the instrumented indices do, i.e. between the MFTR release and accession for the Pre-Accession Index and between accession and implementation of final bindings for the Post-Accession Index of the acceding country that is being instrumented.

### TABLE 5 – INSTRUMENTAL VARIABLES RESULTS

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<sup>41</sup> The distances between Article XII members were taken from the CEPII Geodist Database.

| Dependent Variable: $\log[(GDP\ pc)_t - (GDP\ pc)_{t-1}]$                                        | (1)                     | (2)                  | (3)                             | (4)                      | (5)                  |
|--------------------------------------------------------------------------------------------------|-------------------------|----------------------|---------------------------------|--------------------------|----------------------|
|                                                                                                  | <i>Closest Distance</i> | <i>Closest Time</i>  | <i>Avg. Time &amp; Distance</i> | <i>Weighted Distance</i> | <i>Weighted Time</i> |
| <b>GATT/WTO DID</b><br>=1 for post accession periods to all members                              | -0.002<br>(0.005)       | -0.000<br>(0.005)    | -0.001<br>(0.005)               | -0.000<br>(0.005)        | -0.001<br>(0.005)    |
| <b>Pre Accession Index</b><br><i>Share of questions already answered</i>                         | 0.020<br>(0.013)        | 0.025<br>(0.016)     | 0.022*<br>(0.012)               | 0.024*<br>(0.012)        | 0.024*<br>(0.013)    |
| <b>Post Accession Index</b><br><i>Share of final tariff bindings implemented</i>                 | 0.041***<br>(0.015)     | 0.037**<br>(0.016)   | 0.040***<br>(0.013)             | 0.037***<br>(0.011)      | 0.037***<br>(0.011)  |
| <b>Article XII Post-Full Implementation Dummy</b><br>=1 after member implemented all commitments | 0.050**<br>(0.020)      | 0.049**<br>(0.022)   | 0.050**<br>(0.020)              | 0.049**<br>(0.020)       | 0.049**<br>(0.020)   |
| <b><math>\log(GDP\ pc)_{t-1}</math></b>                                                          | -0.034***<br>(0.004)    | -0.034***<br>(0.004) | -0.034***<br>(0.004)            | -0.034***<br>(0.004)     | -0.034***<br>(0.004) |
| <b><math>\log(Investment/GDP)</math></b><br><i>Gross Fixed Capital Formation</i>                 | 0.011***<br>(0.004)     | 0.011***<br>(0.004)  | 0.011***<br>(0.004)             | 0.011***<br>(0.004)      | 0.011***<br>(0.004)  |
| <b><math>\log(Trade\ Openness/GDP)</math></b><br><i>Imports+Exports/GDP</i>                      | 0.003<br>(0.003)        | 0.003<br>(0.003)     | 0.003<br>(0.003)                | 0.003<br>(0.003)         | 0.003<br>(0.003)     |
| <b>Conflicts</b><br><i>Incidence of armed conflicts in a given year</i>                          | -0.015**<br>(0.008)     | -0.015*<br>(0.008)   | -0.015*<br>(0.008)              | -0.015*<br>(0.008)       | -0.015*<br>(0.008)   |
| <hr/>                                                                                            |                         |                      |                                 |                          |                      |
| <b>Weak Identification Test (Kleibergen-Paap Wald rk F-stat)</b>                                 | 106.75                  | 81.51                | 647.31                          | 845.51                   | 743.24               |
| <b>Sanderson-Windmeijer multivariate F test of excluded instruments</b>                          |                         |                      |                                 |                          |                      |
| <i>Pre-Accession Index</i>                                                                       | 677.46                  | 404.50               | 1174.64                         | 1700.54                  | 1879.12              |
| <i>Post-Accession Index</i>                                                                      | 280.74                  | 167.97               | 1025.27                         | 1941.14                  | 1503.54              |
| <b>Observations</b>                                                                              | 7,848                   | 7,848                | 7,848                           | 7,848                    | 7,848                |
| <b>Number of countries</b>                                                                       | 150                     | 150                  | 150                             | 150                      | 150                  |
| <b>Country F.E.</b>                                                                              | Yes                     | Yes                  | Yes                             | Yes                      | Yes                  |
| <b>Year F.E.</b>                                                                                 | Yes                     | Yes                  | Yes                             | Yes                      | Yes                  |
| <b>R-squared</b>                                                                                 | 3.0%                    | 3.0%                 | 3.0%                            | 3.0%                     | 3.0%                 |

Robust standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The first-stage relationship between the instruments and the indices, displayed in the Appendix, is strongly positive: all combinations are significantly related to the original variables at over 95% confidence levels and this relationship is robust to the inclusion of country controls and fixed effects. Table 5 presents the second stage results of the IV estimation. The weak identification tests corroborate the strength of our instruments. Apart from the Pre-Accession Index on Columns (1) and (2), every other coefficient is significant at a 10% significance level. Moreover, the size of the coefficients is quite similar, confirming the efficiency of our variables at estimating the evolution of the implementation of structural and tariff commitments before and after accession to the WTO.

## 5.4 FALSIFICATION TESTS

As an identification check, we estimate a “false experiment” specification in which we randomize the country that we use as instrument or the year of accession. This method is a powerful way to evaluate the validity of a key assumption. One might argue that the indices only capture a global growth trend and that the results obtained with the instruments could have been reached using any other country or accession year. A table listing the countries and years randomly selected as placebos can be found in the Appendix.

Table 6 below shows the results of this exercise. Each column randomizes one of the indices by accession year or by the country which the index will be assigned to. Hence, it is important to highlight that we only analyse the coefficient that is being falsified. We find that the significant positive effects of our indices disappear in the falsification sample, indicating that the results of this study do not hold, if we change the way the country or the reference year are identified for the construction of the instrument.

**TABLE 6 – RESULTS FALSIFICATION TESTS**

| <i>Dependent Variable: <math>\log[(GDP\ pc)_t - (GDP\ pc)_{t-1}]</math></i>                             | <b>(1)</b>                 | <b>(2)</b>                  | <b>(3)</b>                 | <b>(4)</b>                  |
|---------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|
| <i>Randomized by:</i>                                                                                   | <i>Country</i>             | <i>Country</i>              | <i>Year</i>                | <i>Year</i>                 |
| <i>Variable: Pre-Accession Index</i>                                                                    | <i>Pre-Accession Index</i> | <i>Post-Accession Index</i> | <i>Pre-Accession Index</i> | <i>Post-Accession Index</i> |
| <b>GATT/WTO DID</b><br><i>=1 for post accession periods of all members</i>                              | -0.001<br>(0.003)          | 0.008*<br>(0.004)           | -0.001<br>(0.003)          | 0.007*<br>(0.004)           |
| <b>Pre Accession Index</b><br><i>Share of questions already answered</i>                                | 0.008<br>(0.006)           | 0.022<br>(0.014)            | -0.021**<br>(0.008)        | 0.021<br>(0.015)            |
| <b>Post Accession Index</b><br><i>Share of final tariff bindings implemented</i>                        | 0.034***<br>(0.011)        | -0.002<br>(0.006)           | 0.034***<br>(0.012)        | -0.007<br>(0.009)           |
| <b>Article XII Post-Full Implementation Dummy</b><br><i>=1 after member implemented all commitments</i> | 0.045***<br>(0.017)        | 0.032**<br>(0.014)          | 0.046***<br>(0.017)        | 0.033**<br>(0.014)          |
| <b><math>\log(GDP\ pc)_{t-1}</math></b>                                                                 | -0.034***<br>(0.006)       | -0.033***<br>(0.006)        | -0.034***<br>(0.006)       | -0.033***<br>(0.006)        |
| <b><math>\log(Investment/GDP)</math></b><br><i>Gross Fixed Capital Formation</i>                        | 0.011***<br>(0.003)        | 0.012***<br>(0.004)         | 0.011***<br>(0.003)        | 0.012***<br>(0.004)         |
| <b><math>\log(Trade\ Openness/GDP)</math></b><br><i>Imports + Exports/GDP</i>                           | 0.003<br>(0.002)           | 0.004*<br>(0.003)           | 0.003<br>(0.002)           | 0.004<br>(0.003)            |
| <b>Conflicts</b><br><i>Incidence of armed conflicts in a given year</i>                                 | -0.016**<br>(0.006)        | -0.015**<br>(0.006)         | -0.015**<br>(0.006)        | -0.015**<br>(0.006)         |
| <b>Constant</b>                                                                                         | 0.333***<br>(0.047)        | 0.330***<br>(0.048)         | 0.333***<br>(0.047)        | 0.331***<br>(0.048)         |
| <b>Observations</b>                                                                                     | 7,848                      | 7,848                       | 7,848                      | 6,208                       |
| <b>Country F.E.</b>                                                                                     | Yes                        | Yes                         | Yes                        | Yes                         |
| <b>Year F.E.</b>                                                                                        | Yes                        | Yes                         | Yes                        | Yes                         |
| <b>R-squared</b>                                                                                        | 9.7%                       | 9.5%                        | 9.7%                       | 9.5%                        |
| <b>Number of countries</b>                                                                              | 150                        | 150                         | 150                        | 150                         |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 6 CONCLUSIONS

Compared to accessions under the GATT, reforms required to join the WTO have become more demanding in several policy areas, including for agriculture, structural reforms, binding tariffs, and others. Our study concludes that these efforts pay off by helping countries develop. By introducing two novel indices that proxy for the incremental nature of accession-related reforms, we confirm that the effect of WTO membership on growth begins before the actual accession date and continues as commitments are fully implemented after the accession date. The increasing number of Working Party questions answered prior to accession and the speed at which tariff bindings are implemented afterwards are significantly and positively correlated with growth rates, and more demanding WTO accessions have an added benefit over GATT accessions.

We also provide robust evidence in favour of a causal interpretation of our estimates. The potential for unobserved variables acting concomitantly is addressed by fixed effects and standard errors robust to spatial correlation and heteroskedasticity. We argue that pre-accession effects cannot be attributed to pro-growth governments, and no correlation exists between changes in government and growth rates. We also provide instrumental variable estimates to support our results.

Our results call for further research to help identify the specific types of reforms undertaken during WTO accession which have the greatest impact on growth. This would require further work aimed at creating a detailed mapping of Article XII accession commitments and pieces of legislation enacted, and their dates of implementation.

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## APPENDIX

### 8.1 Tang and Wei (2009) Tables

|                                                                                  |               | (1)                  | (2)                  |              |
|----------------------------------------------------------------------------------|---------------|----------------------|----------------------|--------------|
| <i>Dependent Variable: <math>\log[(GDP\ pc)_t - (GDP\ pc)_{t-1}]</math></i>      |               | <i>High</i>          | <i>Low</i>           | <i>Upper</i> |
| <b>Time Profile</b>                                                              |               |                      |                      |              |
|                                                                                  | -2            | 0.017<br>(0.022)     | -0.013<br>(0.014)    |              |
|                                                                                  | -1            | 0.021<br>(0.027)     | 0.018*<br>(0.011)    |              |
|                                                                                  | 0             | 0.035**<br>(0.017)   | -0.027**<br>(0.013)  |              |
|                                                                                  | 1             | 0.029*<br>(0.018)    | -0.018<br>(0.014)    |              |
|                                                                                  | 2             | 0.013<br>(0.014)     | 0.020<br>(0.016)     |              |
|                                                                                  | 3             | 0.029<br>(0.021)     | -0.008<br>(0.014)    |              |
|                                                                                  | 4             | 0.004<br>(0.024)     | -0.021<br>(0.019)    |              |
|                                                                                  | 5             | 0.021<br>(0.015)     | -0.003<br>(0.017)    |              |
|                                                                                  | <b>Beyond</b> | 0.014<br>(0.013)     | -0.036***<br>(0.009) |              |
| <b><math>\log(GDP\ pc)_{t-1}</math></b>                                          |               | -0.033***<br>(0.006) | -0.035***<br>(0.006) |              |
| <b><math>\log(Investment/GDP)</math></b><br><i>Gross Fixed Capital Formation</i> |               | 0.011***<br>(0.003)  | 0.011***<br>(0.003)  |              |
| <b><math>\log(Trade\ Openness/GDP)</math></b><br><i>Imports+Exports/GDP</i>      |               | 0.005*<br>(0.003)    | 0.005**<br>(0.003)   |              |
| <b>Conflicts</b><br><i>Incidence of armed conflicts in a given year</i>          |               | -0.016**<br>(0.006)  | -0.015**<br>(0.006)  |              |
| <b>Constant</b>                                                                  |               | 0.329***<br>(0.048)  | 0.348***<br>(0.047)  |              |
| <b>Observations</b>                                                              |               | 7,848                | 7,848                |              |
| <b>Country F.E.</b>                                                              |               | Yes                  | Yes                  |              |
| <b>Year F.E.</b>                                                                 |               | Yes                  | Yes                  |              |
| <b>R-squared</b>                                                                 |               | 9.4%                 | 9.6%                 |              |
| <b>Number of countries</b>                                                       |               | 150                  | 150                  |              |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

|                                                                                  |               | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  |
|----------------------------------------------------------------------------------|---------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <i>Dependent Variable: <math>\log[(GDP\ pc)_t - (GDP\ pc)_{t-1}]</math></i>      |               | <i>Africa</i>        | <i>Asia</i>          | <i>Europe</i>        | <i>Latin America</i> | <i>Oceania</i>       |
| <b>Time Profile</b>                                                              |               |                      |                      |                      |                      |                      |
|                                                                                  | -2            | 0.008<br>(0.012)     | 0.029**<br>(0.014)   | 0.032<br>(0.026)     | 0.004<br>(0.016)     | -0.017<br>(0.011)    |
|                                                                                  | -1            | 0.029***<br>(0.009)  | 0.017<br>(0.013)     | 0.034<br>(0.027)     | 0.024*<br>(0.013)    | 0.053***<br>(0.011)  |
|                                                                                  | 0             | 0.009<br>(0.009)     | 0.009<br>(0.014)     | 0.020<br>(0.026)     | 0.014*<br>(0.008)    | 0.014<br>(0.011)     |
|                                                                                  | 1             | 0.029***<br>(0.011)  | 0.012<br>(0.015)     | 0.022<br>(0.031)     | 0.009<br>(0.009)     | 0.034***<br>(0.011)  |
|                                                                                  | 2             | 0.043***<br>(0.009)  | 0.023*<br>(0.013)    | 0.035*<br>(0.019)    | 0.011<br>(0.011)     | -0.006<br>(0.011)    |
|                                                                                  | 3             | 0.002<br>(0.009)     | 0.033**<br>(0.016)   | 0.058**<br>(0.023)   | -0.005<br>(0.009)    | 0.001<br>(0.011)     |
|                                                                                  | 4             | -0.010<br>(0.011)    | 0.015<br>(0.015)     | 0.048*<br>(0.025)    | 0.011*<br>(0.006)    | -0.071***<br>(0.011) |
|                                                                                  | 5             | 0.014<br>(0.009)     | 0.036***<br>(0.011)  | 0.043**<br>(0.022)   | -0.001<br>(0.007)    | -0.011<br>(0.011)    |
|                                                                                  | <b>Beyond</b> | -0.013*<br>(0.007)   | 0.037***<br>(0.012)  | 0.051***<br>(0.016)  | -0.011***<br>(0.003) | -0.017<br>(0.014)    |
| <b><math>\log(GDP\ pc)_{t-1}</math></b>                                          |               | -0.034***<br>(0.006) | -0.035***<br>(0.006) | -0.032***<br>(0.006) | -0.032***<br>(0.006) | -0.032***<br>(0.006) |
| <b><math>\log(Investment/GDP)</math></b><br><i>Gross Fixed Capital Formation</i> |               | 0.012***<br>(0.003)  | 0.011***<br>(0.003)  | 0.011***<br>(0.003)  | 0.011***<br>(0.003)  | 0.011***<br>(0.003)  |
| <b><math>\log(Trade\ Openness/GDP)</math></b><br><i>Imports+Exports/GDP</i>      |               | 0.005*<br>(0.003)    | 0.003<br>(0.003)     | 0.005*<br>(0.003)    | 0.005*<br>(0.003)    | 0.005*<br>(0.003)    |
| <b>Conflicts</b><br><i>Incidence of armed conflicts in a given year</i>          |               | -0.015**<br>(0.006)  | -0.016**<br>(0.006)  | -0.016***<br>(0.006) | -0.016***<br>(0.006) | -0.016***<br>(0.006) |
| <b>Constant</b>                                                                  |               | 0.340***<br>(0.046)  | 0.344***<br>(0.047)  | 0.324***<br>(0.047)  | 0.321***<br>(0.047)  | 0.324***<br>(0.047)  |
| <b>Observations</b>                                                              |               | 7,848                | 7,848                | 7,848                | 7,848                | 7,848                |
| <b>Country F.E.</b>                                                              |               | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <b>Year F.E.</b>                                                                 |               | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <b>R-squared</b>                                                                 |               | 9.7%                 | 9.8%                 | 9.4%                 | 9.4%                 | 9.3%                 |
| <b>Number of countries</b>                                                       |               | 150                  | 150                  | 150                  | 150                  | 150                  |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

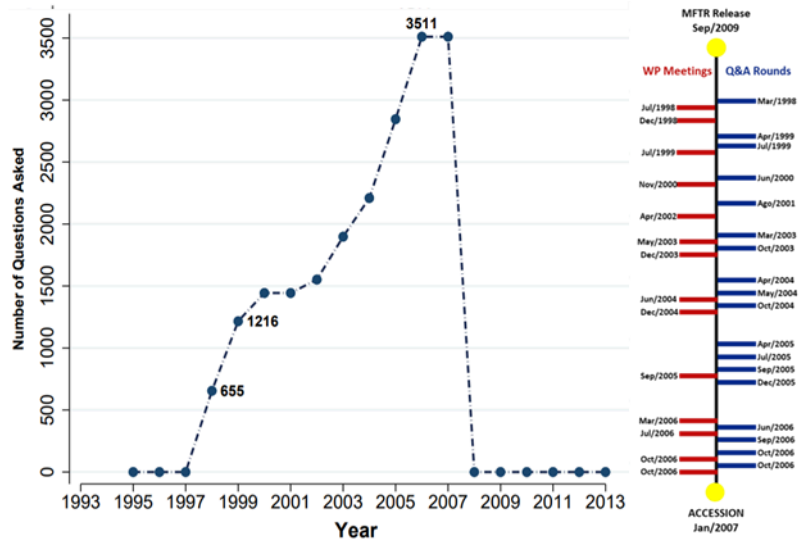
|                                                                                  |               | (1)                  | (2)                  | (3)                   |
|----------------------------------------------------------------------------------|---------------|----------------------|----------------------|-----------------------|
| <i>Dependent Variable: <math>\log[(GDP\ pc)_t - (GDP\ pc)_{t-1}]</math></i>      |               | <i>Article XII</i>   | <i>Article XXVI</i>  | <i>Article XXXIII</i> |
| <b>Time Profile</b>                                                              |               |                      |                      |                       |
|                                                                                  | -2            | 0.034**<br>(0.014)   | 0.000<br>(0.013)     | 0.018<br>(0.014)      |
|                                                                                  | -1            | 0.020<br>(0.014)     | 0.033***<br>(0.011)  | 0.007<br>(0.009)      |
|                                                                                  | 0             | 0.015<br>(0.016)     | 0.005<br>(0.010)     | 0.011<br>(0.012)      |
|                                                                                  | 1             | 0.016<br>(0.018)     | 0.019<br>(0.013)     | 0.017<br>(0.018)      |
|                                                                                  | 2             | 0.028*<br>(0.016)    | 0.033***<br>(0.008)  | 0.024*<br>(0.012)     |
|                                                                                  | 3             | 0.040***<br>(0.014)  | 0.010<br>(0.010)     | -0.007<br>(0.012)     |
|                                                                                  | 4             | 0.033**<br>(0.014)   | -0.012<br>(0.007)    | 0.011<br>(0.014)      |
|                                                                                  | 5             | 0.039***<br>(0.014)  | 0.016***<br>(0.006)  | -0.004<br>(0.011)     |
|                                                                                  | <b>Beyond</b> | 0.039***<br>(0.013)  | -0.012**<br>(0.006)  | 0.007<br>(0.005)      |
| <b><math>\log(GDP\ pc)_{t-1}</math></b>                                          |               | -0.034***<br>(0.006) | -0.033***<br>(0.006) | -0.032***<br>(0.006)  |
| <b><math>\log(Investment/GDP)</math></b><br><i>Gross Fixed Capital Formation</i> |               | 0.011***<br>(0.003)  | 0.012***<br>(0.003)  | 0.011***<br>(0.003)   |
| <b><math>\log(Trade\ Openness/GDP)</math></b><br><i>Imports+Exports/GDP</i>      |               | 0.003<br>(0.002)     | 0.004*<br>(0.003)    | 0.005*<br>(0.003)     |
| <b>Conflicts</b><br><i>Incidence of armed conflicts in a given year</i>          |               | -0.016**<br>(0.006)  | -0.015**<br>(0.006)  | -0.015**<br>(0.006)   |
| <b>Constant</b>                                                                  |               | 0.334***<br>(0.048)  | 0.333***<br>(0.045)  | 0.328***<br>(0.046)   |
| <b>Observations</b>                                                              |               | 7,848                | 7,848                | 7,848                 |
| <b>Country F.E.</b>                                                              |               | Yes                  | Yes                  | Yes                   |
| <b>Year F.E.</b>                                                                 |               | Yes                  | Yes                  | Yes                   |
| <b>R-squared</b>                                                                 |               | 9.7%                 | 9.8%                 | 9.4%                  |
| <b>Number of countries</b>                                                       |               | 150                  | 150                  | 150                   |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 8.2 DETAILS OF THE PRE-ACCESSION INDEX

Figure A1 below illustrates the pattern of questions answered by Vietnam together with a timeline of its Q&A Rounds and WP meetings. Although our index refers to the share of questions asked, the absolute number of questions reflect the same patterns and makes it easier to grasp the features of it. As shown below, it assumes the form of a step function as the number of answers grows each year. The Vietnamese representatives answered 3511 questions and attended 14 WP meetings between 1998 and 2006. Before the first meeting on July 1998, 655 questions had been answered, all corresponding to the document released on March in the same year. By the time of the third meeting (July 1999), two other Q&A documents had been released - April (463 questions) and July 1999 (68 questions) - as illustrated in the timeline below. The index accumulates all questions answered, adding up to 1216 replies (655+463+68). The same dynamic is followed for all years, however, three remarks should be made. First, the index only varies in WP meeting years. For instance, Vietnam released a set of answers on August 2001, but since there was no meeting held in 2001, they will be considered only in 2002. Second, only answers released before the meeting are considered. For Vietnam this impacts the indices in 2005 and 2006. The answers released in December 2005 will not be accounted for in 2005 because the three meetings of that year occurred before, but rather in 2006 when the next meeting (March 2006) took place. Third, in the years after accession (2007, for Viet Nam) the pre-accession index ends and the post-accession index begins.

**FIGURE A1 – VIET NAM'S EXAMPLE**



### 8.3 COUNTRIES IN THE SAMPLE

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|                                     |                       |                         |                           |                                   |
|-------------------------------------|-----------------------|-------------------------|---------------------------|-----------------------------------|
| Albania <sup>1</sup>                | Chad <sup>2</sup>     | Honduras                | Morocco                   | State of Palestine                |
| Algeria                             | Chile                 | Hungary                 | Mozambique <sup>2</sup>   | St. Kitts and Nevis <sup>2</sup>  |
| Angola <sup>2</sup>                 | China <sup>1</sup>    | India                   | Myanmar                   | St. Lucia <sup>2</sup>            |
|                                     | Chinese               |                         |                           | St. Vincent and the               |
| Anguilla                            | Taipei <sup>1</sup>   | Indonesia <sup>2</sup>  | Namibia <sup>2</sup>      | Grenadines <sup>2</sup>           |
| Antigua and<br>Barbuda <sup>2</sup> | Colombia              | Iraq                    | Nepal <sup>1</sup>        | Sudan                             |
| Argentina                           | Comoros               | Iran                    | Nicaragua                 | Suriname <sup>2</sup>             |
| Armenia <sup>1</sup>                | Costa Rica            | Jamaica <sup>2</sup>    | Niger <sup>2</sup>        | Syria                             |
| Aruba                               | Croatia <sup>1</sup>  | Jordan <sup>1</sup>     | Nigeria <sup>2</sup>      | São Tomé and Príncipe             |
|                                     | Côte                  |                         | North                     |                                   |
| Azerbaijan                          | d'Ivoire <sup>2</sup> | Kazakhstan <sup>1</sup> | Macedonia                 | Tajikistan <sup>1</sup>           |
| Bahrain <sup>2</sup>                | Curacao               | Kenya <sup>2</sup>      | Oman <sup>1</sup>         | Tanzania <sup>2</sup>             |
|                                     | Czech                 |                         |                           |                                   |
| Bangladesh                          | Republic              | Kuwait <sup>2</sup>     | Pakistan                  | Thailand                          |
|                                     |                       | Kyrgyz                  |                           |                                   |
| Barbados <sup>2</sup>               | D.R. Congo            | Republic                | Panama <sup>1</sup>       | The Bahamas                       |
| Belarus                             | Djibouti <sup>2</sup> | Lao P.D.R. <sup>1</sup> | Paraguay                  | The Gambia <sup>2</sup>           |
| Belize <sup>2</sup>                 | Dominica <sup>2</sup> | Latvia <sup>1</sup>     | Peru                      | Togo <sup>2</sup>                 |
|                                     | Dominican             |                         |                           |                                   |
| Benin <sup>2</sup>                  | Republic              | Lebanon                 | Philippines               | Trinidad and Tobago <sup>2</sup>  |
| Bermuda                             | Ecuador <sup>1</sup>  | Lesotho <sup>2</sup>    | Poland                    | Tunisia                           |
| Bhutan                              | Egypt                 | Liberia <sup>1</sup>    | Qatar <sup>2</sup>        | Turkey                            |
|                                     |                       |                         | Republic of               |                                   |
| Bolivia                             | El Salvador           | Lithuania <sup>1</sup>  | Congo <sup>2</sup>        | Turkmenistan                      |
| Bosnia and<br>Herzegovina           | Equatorial            |                         |                           | Turks and Caicos                  |
| Botswana <sup>2</sup>               | Guinea                | Madagascar <sup>2</sup> | Romania                   | Islands                           |
| Brazil                              | Estonia <sup>1</sup>  | Malawi <sup>2</sup>     | Russia <sup>1</sup>       | Uganda <sup>2</sup>               |
| British Virgin<br>Islands           | Eswatini <sup>2</sup> | Malaysia <sup>2</sup>   | Rwanda <sup>2</sup>       | Ukraine <sup>1</sup>              |
| Brunei                              | Ethiopia              | Maldives <sup>2</sup>   | Saudi Arabia <sup>1</sup> | United Arab Emirates <sup>2</sup> |
| Darussalam <sup>2</sup>             | Fiji <sup>2</sup>     | Mali <sup>2</sup>       | Senegal <sup>2</sup>      | Uruguay                           |
| Bulgaria <sup>1</sup>               | Gabon <sup>2</sup>    | Malta <sup>2</sup>      | Serbia                    | Uzbekistan                        |
| Burkina Faso <sup>2</sup>           | Georgia <sup>1</sup>  | Mauritania <sup>2</sup> | Seychelles <sup>1</sup>   | Venezuela                         |
| Burundi <sup>2</sup>                | Ghana <sup>2</sup>    | Mauritius <sup>2</sup>  | Sierra Leone <sup>2</sup> | Viet Nam <sup>1</sup>             |
| Cabo Verde <sup>1</sup>             | Grenada <sup>2</sup>  | Mexico                  | Sint Marteen              | Yemen <sup>1</sup>                |
|                                     |                       |                         | Slovak                    |                                   |
| Cambodia <sup>1</sup>               | Guatemala             | Moldova <sup>1</sup>    | Republic                  | Zambia <sup>2</sup>               |

|                                       |                            |                         |              |          |
|---------------------------------------|----------------------------|-------------------------|--------------|----------|
| Cameroon <sup>2</sup>                 | Guinea <sup>2</sup>        | Mongolia <sup>1</sup>   | Slovenia     | Zimbabwe |
| Cayman Islands                        | Guinea-Bissau <sup>2</sup> | Montenegro <sup>1</sup> | South Africa |          |
| Central African Republic <sup>2</sup> | Haiti                      | Montserrat              | Sri Lanka    |          |

<sup>1</sup>Article XII

<sup>2</sup>Article XXVI 5(c)

## 8.4 FIRST STAGE IV RESULTS

| Dependent Variable                                                                        | (1)<br>Pre           | (2)<br>Post           | (3)<br>Pre           | (4)<br>Post           | (5)<br>Pre           | (6)<br>Post           | (7)<br>Pre           | (8)<br>Post           | (9)<br>Pre           | (10)<br>Post          |
|-------------------------------------------------------------------------------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|
| Instrument Used                                                                           | Closest Distance     | Closest Distance      | Closest Time         | Closest Time          | Avg. Time & Distance | Avg. Time & Distance  | Weighted Distance    | Weighted Distance     | Weighted Time        | Weighted Time         |
| IV Pre Accession Index                                                                    | 0.8526***<br>(0.030) | -0.0842***<br>(0.030) | 0.7517***<br>(0.040) | -0.0551*<br>(0.030)   | 0.9189***<br>(0.027) | -0.0398**<br>(0.019)  | 0.9931***<br>(0.024) | -0.0076<br>(0.013)    | 0.9789***<br>(0.025) | -0.0119<br>(0.013)    |
| IV Post Accession Index                                                                   | -0.0377**<br>(0.017) | 0.6973***<br>(0.047)  | -0.0284<br>(0.026)   | 0.660***<br>(0.053)   | -0.0320*<br>(0.019)  | 0.891***<br>(0.028)   | -0.0393**<br>(0.018) | 0.9714***<br>(0.022)  | -0.0276<br>(0.018)   | 0.9676***<br>(0.023)  |
| GATT/WTO DID<br>=1 for post accession periods to all members                              | -0.0080*<br>(0.004)  | 0.0789***<br>(0.078)  | -0.0158**<br>(0.007) | 0.0285***<br>(0.008)  | -0.0035<br>(0.003)   | 0.0344***<br>(0.008)  | -0.0070<br>(0.004)   | 0.0050*<br>(0.002)    | -0.0059<br>(0.004)   | 0.0046*<br>(0.002)    |
| Article XII Post-Full Implementation Dummy<br>=1 after member implemented all commitments | -0.0068<br>(0.026)   | -0.6994***<br>(0.699) | -0.0238<br>(0.030)   | -0.8932***<br>(0.032) | -0.0001<br>(0.025)   | -0.8334***<br>(0.046) | 0.0273<br>(0.027)    | -0.9529***<br>(0.022) | 0.0235<br>(0.019)    | -0.9492***<br>(0.022) |
| log(GDP pc) <sub>t-1</sub>                                                                | 0.0020<br>(0.003)    | 0.0106<br>(0.007)     | 0.0021<br>(0.004)    | 0.0141*<br>(0.007)    | 0.0008<br>(0.002)    | 0.0036<br>(0.003)     | 0.0035<br>(0.004)    | 0.0002<br>(0.001)     | 0.0025<br>(0.004)    | 0.0001<br>(0.001)     |
| log(Investment/GDP)<br>Gross Fixed Capital Formation                                      | -0.0019<br>(0.003)   | 0.0022<br>(0.007)     | -0.0000<br>(0.003)   | 0.0035<br>(0.006)     | -0.0002<br>(0.002)   | -0.0011<br>(0.005)    | 0.0023<br>(0.001)    | -0.0004<br>(0.001)    | 0.0029*<br>(0.001)   | -0.0006<br>(0.001)    |
| log(Trade Openness/GDP)<br>Imports+Exports/GDP                                            | 0.0035<br>(0.002)    | 0.0169**<br>(0.006)   | 0.0025<br>(0.002)    | 0.0175***<br>(0.007)  | 0.0014<br>(0.002)    | 0.0094**<br>(0.004)   | 0.0026<br>(0.002)    | 0.0031**<br>(0.001)   | 0.0016<br>(0.001)    | 0.0030**<br>(0.001)   |
| Conflicts<br>Incidence of armed conflicts in a given year                                 | -0.0031<br>(0.002)   | -0.0023<br>(0.004)    | -0.0059<br>(0.004)   | -0.0035<br>(0.006)    | -0.0026<br>(0.002)   | -0.0038<br>(0.003)    | -0.0056<br>(0.005)   | -0.0020<br>(0.002)    | -0.0047<br>(0.004)   | -0.0021<br>(0.002)    |
| Observations                                                                              | 7,848                | 7,848                 | 7,848                | 7,848                 | 7,848                | 7,848                 | 7,848                | 7,848                 | 7,848                | 7,848                 |
| Number of countries                                                                       | 150                  | 150                   | 150                  | 150                   | 150                  | 150                   | 150                  | 150                   | 150                  | 150                   |
| Country F.E.                                                                              | Yes                  | Yes                   | Yes                  | Yes                   | Yes                  | Yes                   | Yes                  | Yes                   | Yes                  | Yes                   |
| Year F.E.                                                                                 | Yes                  | Yes                   | Yes                  | Yes                   | Yes                  | Yes                   | Yes                  | Yes                   | Yes                  | Yes                   |

Robust standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 8.5 FALSIFICATION TESTS DESCRIPTION

| Article XII     | Placebo Country          | Placebo Year |
|-----------------|--------------------------|--------------|
| Albania         | Madagascar               | 1987         |
| Armenia         | Dominican Republic       | 2016         |
| Bulgaria        | Bahrain                  | 1965         |
| China           | Azerbaijan               | 1966         |
|                 | U.R. of Tanzania:        |              |
| Cabo Verde      | Mainland                 | 1952         |
| Ecuador         | D.R. of the Congo        | 1966         |
| Estonia         | Barbados                 | 1971         |
| Georgia         | Gabon                    | 1985         |
| Croatia         | Central African Republic | 1991         |
| Jordan          | Kuwait                   | 1973         |
| Kazakhstan      | Trinidad and Tobago      | 2010         |
| Kyrgyzstan      | Fiji                     | 1975         |
| Cambodia        | Brunei Darussalam        | 1977         |
| Lao People's DR | Brazil                   | 1994         |
| Liberia         | Costa Rica               | 1995         |

|                 |               |      |
|-----------------|---------------|------|
| Lithuania       | Pakistan      | 2009 |
| Latvia          | Ghana         | 2014 |
| Republic of     |               |      |
| Moldova         | India         | 1980 |
| North Macedonia | Uruguay       | 1962 |
| Montenegro      | Guinea-Bissau | 1998 |
| Mongolia        | Côte d'Ivoire | 1975 |
| Nepal           | Mexico        | 1988 |
| Oman            | Paraguay      | 1962 |
| Panama          | Algeria       | 1954 |
| Russian         |               |      |
| Federation      | Haiti         | 1978 |
| Saudi Arabia    | Namibia       | 1982 |
| Seychelles      | Zimbabwe      | 2007 |
| Tajikistan      | Djibouti      | 1985 |
| Taiwan          | Bangladesh    | 2009 |
| Ukraine         | Bolivia       | 1956 |
| Viet Nam        | Ethiopia      | 1966 |
| Yemen           | Venezuela     | 1962 |

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