

Committing to Grow

The Full Impact of WTO Accessions

André Brotto, Adam Jakubik, Roberta Piermartini, Fulvio Silvy

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Committing to Grow: The Full Impact of WTO Accessions
Prepared by André Brotto, Adam Jakubik, Roberta Piermartini, and Fulvio Silvy*

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ABSTRACT: This paper studies the impact of the process of accession to the WTO on growth rates in a sample of 150 economies. Unlike GATT-era accessions, WTO accessions involve reforms that extend beyond conventional trade liberalization measures. Using information on the pace of negotiations and requests in the working party's meetings, we construct an index that tracks the progress of reforms in the pre-accession period. We estimate that economies that implemented reforms and made deeper commitments during their WTO accession negotiations grew on average 1.5 percentage points faster than they otherwise would have. These results are robust to instrumental variable estimation and falsification tests.

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Introduction

Accession to the WTO is the outcome of negotiations (Williams, 2008). It entails a series of reforms that can fundamentally transform the economy of the acceding member and serve as catalysts for institutional improvements by imposing changes and overcoming domestic political pressures.¹ WTO members aspire to encourage job creation, enhance competition, improve product quality and reduce consumer prices, and to build a business-friendly and growth-conducive regulatory environment (González, 2017). To this end, governments commit to legal, institutional, and economic reforms. These commitments are reflected in their Protocols of Accession and are enforceable under the Dispute Settlement Mechanism. The implementation of such reforms often starts years ahead of the accession date, which is not set until a candidate has met all necessary conditions. The announcements of the reforms may also serve as signals of the government's intentions. Negotiations can take several years during which parties meet, discuss outstanding issues, and progressively make and implement commitments. Each applicant's accession process differs in the number of meetings, length and set of issues discussed. In this study, we exploit this rich source of heterogeneity in accession proceedings to explore the relationship between reforms and economic growth.

The central question we ask in this paper is whether commitments undertaken during WTO accessions lead to greater economic growth. With this aim, we build a new index that captures the timing of reform commitments undertaken during the pre-accession period, since the bulk of necessary reforms must be in place prior to accession. Using detailed data on the progress of each negotiation—e.g., the timing of meetings, number of issues raised by existing members and answered by the applicant—we build a pre-accession index of commitments and reforms. We find that economies that undertook more significant reforms during the negotiations to accede to WTO grew faster than those that did not and that they continue to grow faster after accession.

There are strong economic arguments behind why WTO accession would increase growth. First, the WTO reduces trade barriers and boosts trade, which is associated with higher growth. The strength of this channel has been shown in the literature. A study by Larch et. al (2024) finds that joining GATT/WTO increases trade by 140%. A consistent finding of the literature is that trade reforms that reduce import tariffs boost economic growth, and that lower tariffs on intermediate goods increased productivity of domestic final good producers (Estevadeordal and Taylor, 2013, and Amiti et al. 2020). A survey of the literature by Irwin (2024) found that economic growth is roughly 1.0–1.5 percentage points higher than a benchmark after trade reforms implemented by developing economies, cumulating to 10–20 percent higher income after a decade. There is also robust econometric evidence that trade raises the level of national income. Feyrer (2019) shows that an exogenous increase in trade has a significant and sizable impact on income: a 10 percent increase in trade leads to a 5 percent increase in national income, implying that trade can explain 17 percent of the variation in growth rates across economies between 1960 and 1995.

Second, the WTO can also foster growth through promoting good governance and institutional quality. Prospective members often undertake extensive domestic economic reforms as part of their membership negotiations and make legally binding commitments in a wide range of policy areas, including in subsidies,

¹ For example, China made commitments related to its state-owned enterprise sector that went beyond other WTO members' commitments in the area, given this was an area of specific concern to existing members.

agriculture, textile and clothing, trade-related investment, services, and intellectual property.² Accession commitments may also require a prospective member to limit export duties, the elimination of fees and charges other than tariffs on imports, impose strict limits on industrial subsidies geared towards exporters, and limit price controls.³ 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). Governments may use WTO commitments to lock in reforms that are beneficial to the business environment, upgrade and modernize their institutions, and to signal to others their commitment to reform, demonstrating a desire for global cooperation (Cattaneo and Primo Braga, 2009). Such institutional upgrading has a strong association with growth, with possible channels including lowering the cost of doing business and promoting investment by securing property rights, although establishing causality is challenging (Acemoglu and Robinson, 2008; Glaeser et al., 2004). We find that the pace of reform commitments undertaken during accession is positively correlated with some institutional quality indicators.

Third, the WTO can promote growth by underpinning a more predictable trading environment. Uncertainty has a detrimental impact on growth because it causes delays to investment and thus slows down capital accumulation (Leahy and Whited, 1996; Guiso and Parigi, 1999). Suggestive 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. Moreover, Jakubik and Piermartini (2023) show that WTO commitments can reduce trade policy uncertainty directly.

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 (2004) calls into question the effectiveness of the GATT/WTO in promoting trade in a way that low-income economies can benefit from, subsequent studies have shown that failing to account for the heterogeneous impact of the WTO across members leads to underestimating its effects. For example, Subramanian and Wei (2007) show that while WTO membership causes trade to increase, it does so unevenly, disproportionately benefiting developed economies. Tomz et al. (2007) show the importance of considering formal and informal membership in the GATT, specifically the *de facto* membership of many former colonies, many of which had rights and obligations under the agreement. This misclassification creates a downward bias in estimates of the impact of membership. They find that *de facto* GATT/WTO membership substantially increases trade for developing economies. Eicher and Henn (2011) find that WTO membership boosts trade when controlling for PTA formation and increases trade among geographically closer developing economies at the expense of more distant ones. More recently, Dutt (2020) also finds that the strongest effect of WTO on trade over time is for developing economies that underwent rigorous accession procedures. In sum, the lesson from this literature is that merely looking at membership status is insufficient, and that the quality and circumstances of membership matter. In this paper, we apply this reasoning to the analysis of WTO membership and growth.

² Financial services are also included (banking, insurance, accounting). Viet Nam, for example, granted access for accountancy services directly upon accession.

³ "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)

While there is an extensive literature on the impact of WTO membership on trade, the literature on the impact of GATT/WTO accession on growth is limited. One notable exception is Tang and Wei (2009), who use an event study specification and find that GATT/WTO membership promotes growth, but only for those members that undertake commitments to accede. While the increase in growth rates is typically sustained only during the first five years after accession, the economy of an acceded member is on average permanently 20% larger if it undertook commitments as part of the accession process. Put differently, members that were not required to make commitments—mostly former colonies or overseas territories of GATT members that acceded under GATT Article XXVI 5(c)—did not benefit. Brotto, Jakubik, and Piermartini (2021) update their analysis by extending the analysis to the full sample of members that acceded to the WTO under Article XII up to 2017, and find that on average, joining the WTO resulted in a 30% permanent increase in GDP.⁴ While this effect appears large, Grassi (2024) finds a similar effect in the context of the 2004 EU enlargement. Using the synthetic control method, he estimates that joining the EU in 2004 led to an increase in GDP per capita of 32% for new members by 2019, which equates to half of the overall growth these economies experienced over that period. Countries joining the EU in 2004 were required to make substantial reforms to domestic policies, regulations, and trade barriers, allowing for some parallels to be drawn to the commitments of the WTO accession process. Nevertheless, while the overall effect on growth of joining either the WTO or the EU has been found to be large, especially when the process entailed reforms, the extent to which reforms drive this effect remains unclear. In this paper we not only differentiate between the GATT and WTO modes of accession, but we also introduce a new index which provides a more granular measure of commitments undertaken over the pre-accession period.

This is the first study to attempt to capture the time and the pace of trade reforms undertaken during the accession process to the WTO to estimate WTO impact on growth. We focus on the 36 economies that acceded to the WTO under Article XII of the Marrakesh Agreement between 1995 and 2023, which entails more stringent accession modalities than the GATT, and we construct an index that tracks the pattern of commitments undertaken over time. With this approach, we go beyond the typical identification strategy in the literature on trade reforms and growth that uses a binary indicator to identify reform episodes.

We estimate that negotiating WTO accession is associated with a 1.5 percentage points higher growth than it would have occurred otherwise. This is nearly 30% of the overall growth that the new acceding economies experienced during the negotiations, equal to 5.2 percentage points. These new WTO members also grew faster than others after accession. Finally, by using instrumental variables and falsification tests, we present quantitative and qualitative evidence for the consistency and robustness of the estimates.

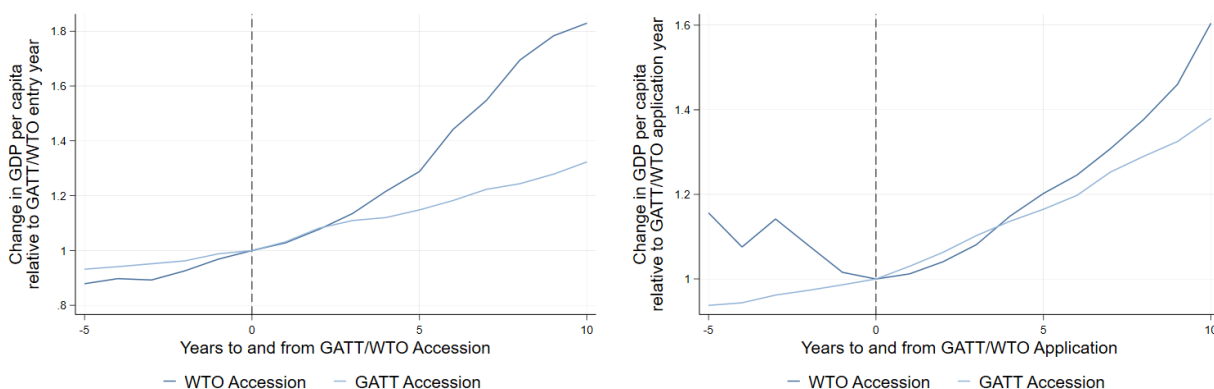
The paper is organized as follows. Section 2 describes the patterns of growth around the date of accessions and application that motivate our work. Section 3 outlines important features of the accession process and presents our two commitment indices. Section 4 describes our empirical specification and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

⁴ Brotto, Jakubik, and Piermartini (2021) analyse 146 developing economies over the period 1981–2017; Tang and Wei (2009) cover the period 1981–2003. Compared to Tang and Wei (2009) who cover 42 accessions, Brotto, Jakubik, and Piermartini (2021) include a further 17 acceded economies, all of which joined the WTO under Article XII.

GATT and WTO Accessions: The Evolving Nature of Accessions

In this section we highlight several key facts about heterogeneous accession effects across members and over time. We find that members that underwent a thorough negotiation process to accede WTO experienced higher growth rates, and that this occurs even prior to accession. In the subsequent sections, we explain this observation using data on the heterogeneous patterns of reforms and commitments undertaken during the negotiating process. To explore the heterogeneous impact of WTO accessions on growth, we use a sample of 150 developing and transition economies over the period 1951–2019. We do not include advanced economies (at the time of accession) in our sample, since we want the control group to closely match the treatment group. Figure 1 shows the evolution in the average rate of GDP per capita growth around the dates on which the economies in our sample acceded (left panel) and applied to accede (right panel) to the GATT/WTO. From this purely descriptive chart, we already observe a clear difference between the members that acceded to the WTO after 1995 and thus had a more rigorous accession process (Article XII) and the rest, which acceded during GATT (non-Article XII). The difference in growth trajectories is most noticeable following the date of accession, but it also appears to a lesser degree following the date of application. The outperformance of Article XII members following their accession date is consistent with the improved market access linked to WTO membership allowing for improved growth. The difference between GATT and WTO accessions following the application date and before the date of accession, however, suggests that the negotiation process itself, and the associated reforms taken in view of attaining membership, may enhance economic growth.

Figure 1: Growth Around GATT/WTO Entry Over Time, by Accession Mode

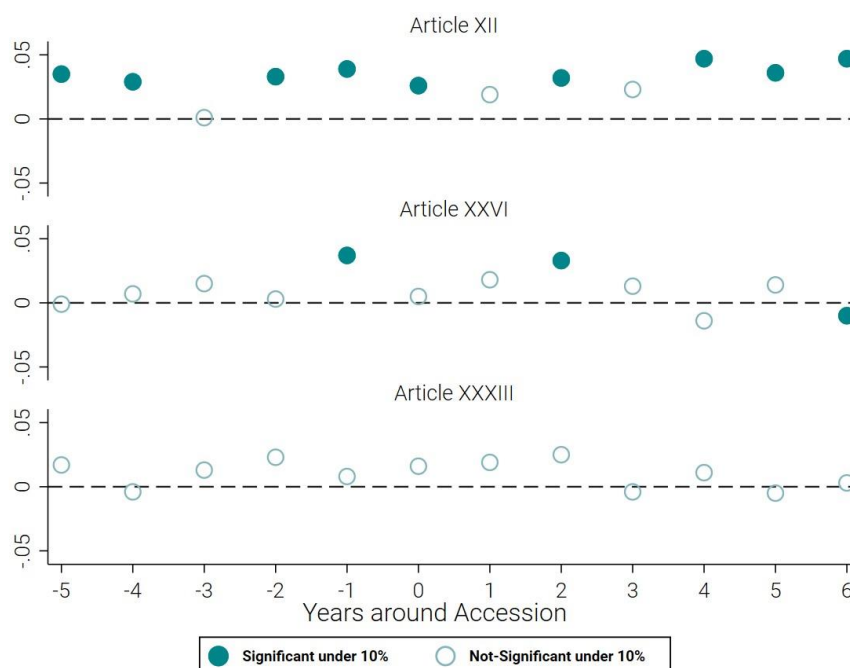


Note: WTO Accession refers to countries that acceded to the WTO since 1995. GATT Accession refers to developing countries that acceded before 1995. The right-hand panel tracks growth following the date of application to the GATT/WTO but still selects the two groups based on their accession date. GDP in chained PPPs (mil. 2017 US\$) is sourced from Penn World Table version 10.01.

Motivated by the descriptive evidence presented in Figure 1, a key dimension of heterogeneity that we explore is that related to the mode of accession. Figure 2 shows the time profile of our estimated coefficients by the mode

of accession⁵. Results support the view that accession modes are a major source of heterogeneity. Members that acceded to the WTO (Article XII) not only have more significant coefficients already prior to their accession but are also the only group with positive coefficients several years after accession.

Figure 2: GATT/WTO Effect on Growth Over Time, by Accession Mode



Note: Article XII refers to countries that acceded to the WTO since 1995. Article XXVI refers to developing countries (former colonies) that acceded to the GATT by notification and hence did not undertake reforms as part of their accession, and Article XXXIII refers to developing countries that acceded to the GATT through a less demanding process than WTO accessions.

The literature has already pointed to differences in modalities of accession playing a role. Studying the impact on trade flows, Subramanian and Wei (2007) show that qualitative differences between pre- and post-Uruguay Round accessions drive a greater impact of the WTO on trade for the latter group: on average, post-Uruguay Round members trade about 30% more. Turning to growth rates, Tang and Wei (2009) find that members that joined the WTO under Article XII experienced greater growth after accession, while those that joined through earlier modalities did not. While the increase in growth rates is typically sustained only during the first five years, these economies are permanently larger by 20% as a result. Haddad et. al (2015) also finds considerable improvements in risks indicators of Article XII accessions compared to non-Article XII accessions.

⁵ We follow an event study methodology also used by Tang and Wei (2009), using dummy variables for the years around accession for the treatment group to estimate a set of β_s as follows: $\Delta \log Y_{it} = \alpha \log(GDP \text{ per capita})_{it-1} + \sum_s \beta_s D_{it}^s + \gamma X_{it} + \delta_i + \delta_t + \varepsilon_{it}$. D_{it}^s equals one in years around accession. To estimate long-run effects, they include D_{it}^{beyond} which equals one for 5 or more years after accession. The regression tables associated with the results shown in Figure 2 can be found in Annex 1.

The accession modality (whether to the WTO through Article XII, or to the GATT through Article XXVI or Article XXXIII) had bearing on the terms of commitments undertaken, tariff cuts, implementation periods, agreements covered at accession and legislations enacted.

Article XII Members are the group of 38 members that, as of 2024, have acceded since 1995. This is a heterogeneous group of economies in terms of governance, population, and geography. A quarter are least developed countries (LDCs). Geographically large economies such as China (2001) and Russia (2012) are also in this group. 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.⁶ As of now, there have been more than 50 applications to accede under these new procedures.

Article XXVI Members are the group of 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 a notification. As of 1994, almost all eligible economies, mostly from Africa (60%) had requested *de facto* membership.⁷ 17 small islands and 2 "Asian Tigers", Singapore and Hong Kong, also invoked Article XXVI 5(a) or 5(c) in order to join.⁸

Two other groups of members are the **founding members** and **Article XXXIII Members**. The former is composed by the 23 original members that signed the agreement to create the GATT in 1948 and the latter more than 40 members that joined the GATT upon completion of requirements set by existing members, through a process chiefly focused on the negotiation of tariff concessions and commitments rather than comprehensive economic reforms.

The process for developing economies joining the GATT differed greatly from WTO accessions in the breadth and depth of commitments undertaken. 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 by Article XII applicants are broader and more comprehensive.

As shown in Table 1, on average, all economies tend to grow faster after entering the GATT/WTO. That said, economies that negotiated their entry to the WTO under Article XII stand out in terms of their performance and experience on average larger increases in GDP per capita post-accession than those that acceded under less stringent modalities. Article XII entrants are also more likely to experience a positive change to their economic growth post-accession than other groups, since around 63% of them grew faster. Finally, central to the subsequent analysis, Article XII economies experienced a much larger increase in growth already after application, relative to those that acceded to the GATT. The difference in GDP growth before and after application for Article XII economies is above 5.1 percentage points, well above the 1.8 percentage points increase on average across all developing economies.

⁶ 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.

⁷ 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 them also had LDC status. A detailed description of Article XXVI can be found in Tomz et al. (2007).

⁸ The small islands are 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.

Table 1: Trends in Economic Growth (%) by Accession Mode

	I WTO Accession	II GATT Accession	III GATT Accession	IV GATT Accession	V GATT/WTO Accession
	Article XII	Article XXVI 5 (c)	Article XXVI 5 (c)	Article XXXIII	All economies
	1995-2019	1957-1995	1990-1994	1950-1994	1948-2019
Application					
Average 5 years before	-2.04%	2.08%	1.20%	2.18%	1.11%
Average 5 years after	3.11%	3.05%	2.91%	2.39%	2.87%
Difference	5.15p.p.	0.98p.p.	1.71p.p.	0.21p.p.	1.76p.p.
faster than before (share)	65.6%	50.9%	61.1%	27.3%	47.0%
Accession					
Average 5 years before	4.03%	2.16%	1.48%	2.15%	2.79%
Average 5 years after	4.77%	2.91%	2.57%	2.26%	3.16%
Difference	0.74p.p.	0.75p.p.	1.10p.p.	0.11p.p.	0.37p.p.
faster than before (share)	62.5%	45.6%	44.4%	27.3%	42.7%
Sample size	32	57	18	33	117

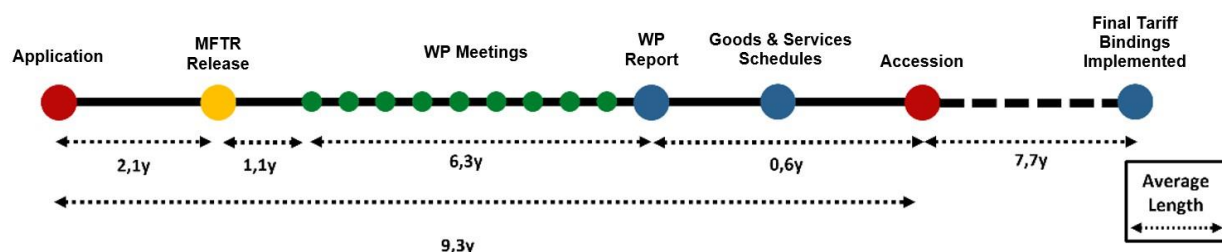
Table 1 therefore strongly suggests the existence of pre-accession effects in the data, the focus of our empirical analysis. Equally noteworthy is the strong heterogeneity of these effects across members. Our working hypothesis in this paper is that this is the effect of the timing and the depth of the commitments undertaken during the negotiations. Our index will attempt to capture these dynamics, and we will address potential issues of endogeneity in our regressions (see Section 5).

Tracking commitments and reforms during WTO accession negotiations

We now turn to analysing the differences across WTO accessions that may help explain the stylised facts from the previous section. The most notable such difference is the length of accessions negotiations, which normally spans several years. On average, it takes 9.3 years for prospective WTO members to get from application to accession, but the length of negotiations varies significantly between members. Seychelles and Kyrgyz Republic recorded, respectively, the longest and shortest accessions at 19.9 and 2.8 years. During this time, applicants must complete their commitments and notify the WTO Secretariat. Figure 3 summarises the main steps of the accession process.⁹

⁹ All documents referring to the negotiations, commitments and schedules are available online from WTO. For a detailed exposé of the accession and negotiation process please see the Handbook on Accession to the WTO (Williams, 2008).

Figure 3: WTO Accession Timeline



After the formal application, the first step 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 members¹⁰) and is highly correlated with the size of the applicant's economy (Williams, 2008).

Before starting the negotiations, applicants are requested to provide a full description of their trade regime, known as the Memorandum on the 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.¹¹ 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). The initial meeting of the WP 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.¹² Normally only one set of replies is needed before the first meeting. This takes on average around one year.

The primary goal of the "questions and answers" process which provides the basis for holding meetings of the Working Party 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 questions and answers 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 (the applicant and WP members) reach an agreement on the accession conditions, i.e., the commitments. All these commitments will then be included in the WP Report. Work goes on in parallel to the WP process, on a bilateral basis, to negotiate market access commitments on goods and services. 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

¹⁰ Australia, Canada, the European Community/European Union, Japan and the United States have been members of every WP.

¹¹ 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 in Annex 6 of the *Handbook on Accession to the WTO*. The commitments included in the Working Party Report will be arranged under these same headings. The Goods Schedule with all tariff commitments and the Schedule of Specific Commitments on Services with services liberalization commitments, will form part of the Protocol of Accession.

¹² 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.

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 on 31 different occasions.¹³

The applicant's terms of entry form a single package which must be agreed by all members and by the applicant. Accession packages normally contain two types of measures. The first affects trade through market access (import tariffs and quantitative restrictions, services liberalization commitments).¹⁴ It sets the pace of trade liberalisation after membership is completed. That is the set of measures typically analysed in this literature. The second group includes measures not related to market access. Adopting international best practices helps governments to create a better environment for business and trade. These include the commitments decided on a multilateral basis at the WP meetings: price controls, intellectual property rights, domestic support, trading rights, export subsidies, tariff exemptions, anti-dumping duties, ensuring a level playing field with domestic goods, 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). In this regard, WTO accession can result in more policy alignment and standardization, facilitating access to foreign markets.¹⁵ These commitments must be implemented or be on track before accession. It is for this reason that we expect to observe their potential impacts already prior to accession, and we attempt to measure their effect by building a pre-accession index that captures these commitments.

Pre-Accession Commitment Index

The official announcement of all economic reforms to be implemented is made in the final Draft of the WP Report, which is adopted "ad referendum" at the final WP meeting. However, applicants make and start implementing their respective commitments progressively as the meetings and Q&A rounds unfold.

To create a pre-accession commitment index which proxies for the progress made with pre-accession reforms, we use the share of questions that have already been answered by an applicant in a given year, out of the total number of questions answered at the conclusion of the accessions process. To this purpose, we have manually reviewed the hundreds of Q&A documents reported by the WP and extracted the number of questions answered. The index ranges from 0 to 1 as it has been normalised by the total number of questions.¹⁶ Our index captures how closely the applicant is aligned with the WTO framework as negotiations progress.

Formally, our index is defined as:

$$\text{Pre-Accession Commitment Index}_{i,t} = \frac{\sum_{n=0}^t \text{Questions Answered in WP}_{i,n}}{\sum_{n=0}^T \text{Questions Answered in WP}_{i,n}}$$

where T refers to the year of country i 's accession, and $t \leq T$ to a given year during the accession process. Our identification strategy assumes that the number of questions answered during the Q&A evolves at approximately the same pace as the number of multilateral or plurilateral commitments agreed during WP meetings, regardless

¹³ We find our regression results to be robust to differing lengths of accession negotiations.

¹⁴ "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)

¹⁵ Regulatory differences are often associated to higher trade costs for businesses and higher prices for consumers. Hence, improved regulatory coherence tend to bring positive impacts on trade flows and economic growth.

¹⁶ Nevertheless, we perform a robustness test in which we distinguish the effect of the index for countries with a total number of questions above and below the median.

of the area of reform.¹⁷ We believe this approach captures the impact of reforms as it proxies for convergence by different applicants, each addressing those areas in which they are behind. Rodrik (2007) explains that “...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 (2013) add to the discussion by showing that, in the past decades, structural reforms undertaken by developing economies varied depending on their income level. Low-income economies focused on reducing trade barriers and price controls, reforming the banking sector and improving basic education, lower-middle-income economies focused on maintaining productivity growth and increasing competition, whereas upper-middle-income economies focused on a more skilled labour force and invested in the development of new technologies.

Figure 4: Pre-Accession Commitment Index

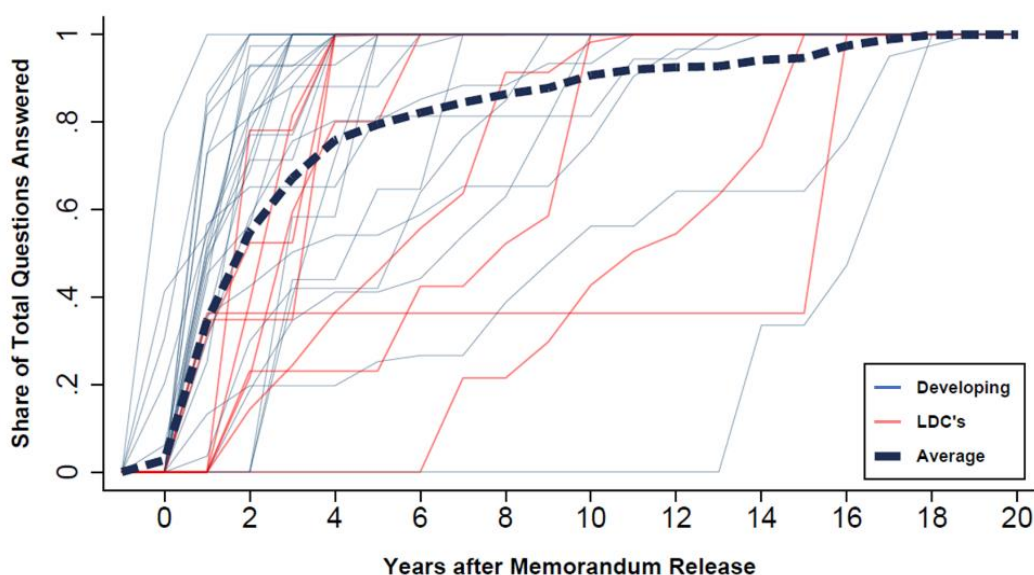


Figure 4 shows our pre-accession index for all new WTO members. On average, an applicant answers 80% of all questions 5 years after the MFTR is released. The evolution of the questions answered varies significantly from one member to another, and this heterogeneity is essential for the empirical validation of our 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 policies¹⁸ as well as the type of requests for reforms from WTO members that differ member-by-member. Vanuatu (16 years), Seychelles (18 years) and Kazakhstan (19 years) took the longest time to complete the Q&A phase, while Ecuador (1 year), Armenia, Georgia, and Kyrgyz Republic (2 years) were the fastest. We include a technical description of the construction of the pre-accession index in Annex 2.¹⁹

¹⁷ This index is quite different than the weighted and time-invariant index of Chemutai and Escaith (2017), which assumes that commitments taken by fewer acceded members were less important than commitments taken by many. We capture evolution over time whereas they capture static differences between various areas of reform.

¹⁸ The obstacles faced by some LDCs in this regard are mentioned in Christoffersen (2007) and Allee and 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.

¹⁹ Figure 4 starts at year -1 as some applicants answer their first round of Q&A before the completion of one year from MFTR release.

The hypothesis on which we build our index is that questions by members represent requests that eventually lead to commitments or reforms by the acceding country. Although the information available makes it very hard to match all requests for reforms with actual subsequent legislative changes, we provide here two examples that illustrate the causal link between the questions by members and the enacted reforms by the acceding member.

One illustrative example relates to Viet Nam's new Law on Investment which was passed by its National Assembly in 2005 and took full effect in July 2006, prior to Viet Nam's accession to the WTO in 2007. This law addressed concerns the WP had about restrictions on foreign investment, such as marking certain industries as prohibited, subjecting foreign owned enterprises to minimum export requirements, or obliging for foreign investment to take the form of joint ventures or business cooperation contracts. In response to further questions from the WP, Viet Nam also established Decree 108/2006/ND-OP in September 2006, which introduced details and guidelines relating to the new investment law.

Another example is that of Comoros, which is one of the two new member that acceded to the WTO in 2024. Following multiple questions from WTO members during the accession process, the government of Comoros decided to discontinue the state import monopoly on rice (granted to ONICOR), and to fully liberalize the importation and sale of rice. Leading up to the liberalization of rice imports, the WP expressed concern about the presence of state monopolies in Comoros, and the rice import monopoly ONICOR in particular. The discussion spanned an initial cycle of questions and replies following the circulation of the MFTR, and then a series of additional questions and replies until the government decided to end the state monopoly. This sequence shows the initial reluctance of the government of Comoros to implement changes to the rice import monopoly, and how, after repeated questioning from the WP, it eventually decided to implement a reform in June 2023 by means of Presidential decree No. 23-060/PR, prior to its accession to the WTO.

Another example of a reform in Comoros is the commitment to replace internal taxes with a VAT system, in accordance with an action plan presented in the Report of the Working Party. In this case, the WTO accession requirements along with pressure from the WP, helped incentivize a future taxation reform. In the last round of questions and replies from the 6th of December 2023, Comoros reaffirmed its commitment to see through the implementation of VAT after accession.²⁰ A specific commitment related to the introduction of a VAT system was included in the final version of the Report of the Working Party.

Table 2 below shows the overall number of questions answered, commitments undertaken, legislation enacted²¹ and WP meetings held during the accession process. The positive correlation between questions and commitments (0.69) and questions and legislation enacted (0.77) supports our assumption that questions can be used as proxy for commitment and reforms. For example, LDCs, that ended with fewer commitments than non-LDCs (27 vs 46), are also asked fewer questions (589 vs 1208) and hold fewer meetings with the WP (6 vs 10). Note also that the timeline of the accession process has lengthened since the establishment of the WTO and the average number of commitments and legislations has been growing accordingly (Evenett and Primo Braga, 2005). For instance, Ecuador and Bulgaria, which acceded in 1996 but started the process already prior to the

²⁰ See Annex 3 for detailed citations of questions and answers in Viet Nam's and Comoros' accession negotiations.

²¹ 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. This makes it difficult to build an index on the bases of changes in the legislation during the negotiations.

creation of the WTO also answered the fewest questions. The length of accession documents has since increased substantially. Kazakhstan's accession documents reached 30,760 pages whereas Bulgaria's only had 1,700 pages. 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). This is in line with the view that accession negotiations have become increasingly more rigorous and that the negotiations for accession are a tool to request reforms as a condition to accede to WTO and that the bargaining power is in the hands of members (Basu, 2008).

Additional evidence linking the requests by WTO members for commitments and reforms with reforms undertaken by the acceding member is presented in Figure 5. This figure shows that our pre-accession commitments index is correlated with certain measures of structural reforms and institutional quality taken from the IMF Structural Reform Database Indices (Alesina et al., 2023) and World Bank Worldwide Governance Indicators (Kaufmann et al., 2011). The key finding is that over the pre-accession period, reforms in trade, domestic and external finance, and product markets, as well as regulatory quality, correlate with progress in accessions negotiations; reforms in labour markets and other measures of governance are uncorrelated. Although this does not necessarily prove causality, it does provide additional evidence in this direction. Overall, the evidence that countries undergoing the WTO accession process have made simultaneous progress in improving their governance in several trade-related areas of good governance sheds light on potential mechanisms through which WTO accession might promote growth, since the association of many of these indicators with growth have been extensively studied (Acemoglu and Robinson, 2008).

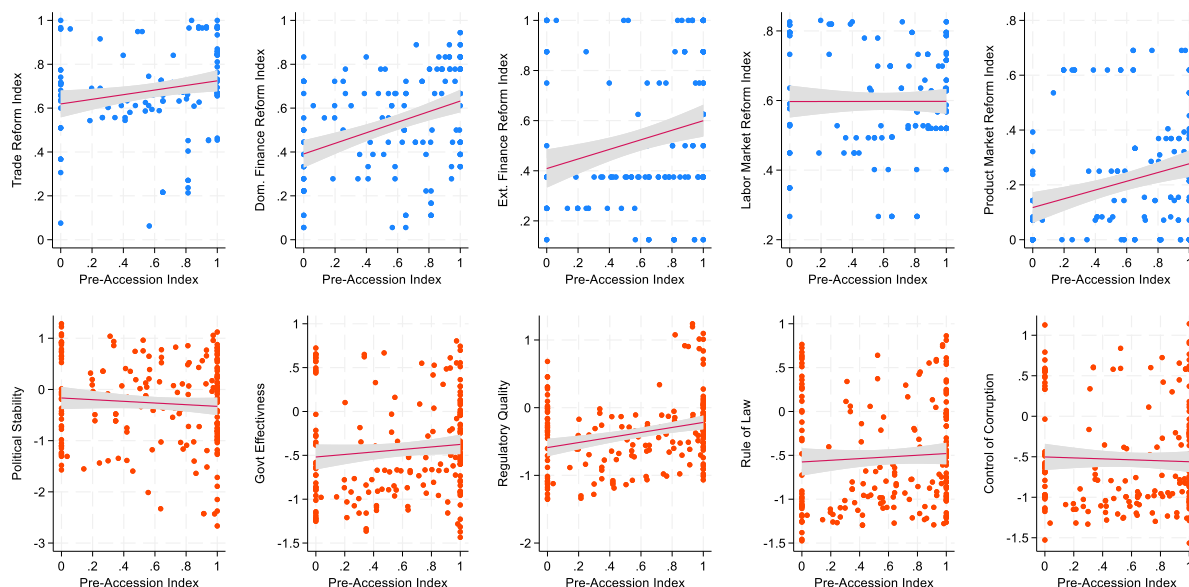
Table 2: Accession Details Article XII

Economy	Accession Year	Years to accede	Questions	WP Meetings	Legislations	Commitments
Albania	2000	8	607	8	66	29
Armenia	2003	9	434	5	87	39
Bulgaria	1996	10	276	9	26	26
Cabo Verde	2008	9	888	6	73	26
Cambodia	2004	10	460	5	85	29
China	2001	15	3029	38	441	82
Croatia	2000	7	919	6	111	27
Ecuador	1996	3	111	10	69	21
Estonia	1999	6	490	9	77	24
Georgia	2000	4	512	3	53	29
Jordan	2000	6	929	5	52	29
Kazakhstan	2015	20	1900	20	412	118
Kyrgyz Republic	1998	3	952	6	155	29
Lao PDR	2013	16	1224	10	159	26
Latvia	1999	5	396	6	77	22
Liberia	2016	9	264	4	102	31
Lithuania	2001	7	640	5	167	28
Moldova	2001	8	861	6	124	28
Mongolia	1997	6	146	5	33	17
Montenegro	2012	7	1015	8	114	35
North Macedonia	2003	8	829	5	132	24
Nepal	2004	15	466	3	24	25
Oman	2000	5	808	6	55	26
Panama	1997	5	502	5	45	24
Russia	2012	19	2566	31	529	163
Saudi Arabia	2005	13	1218	14	95	59
Seychelles	2015	20	1043	7	287	40
Chinese Taipei	2002	10	960	11	96	63
Tajikistan	2013	12	1296	9	137	40
Ukraine	2008	14	3810	17	385	64
Viet Nam	2007	12	3511	14	184	70
Yemen	2014	14	1164	11	58	28
Article XII members			1070	10	141	41
<i>of which LDCs</i>			744	7	84	28
<i>of which non-LDCs</i>			1145	10	154	44
<i>of which accession year ≤ 2000</i>			554	7	68	25
<i>of which accession year > 2000</i>			1379	11	185	51

Source: WTO Secretariat.

Note: Legislations refer to enacted WTO-related legislations as documented in the Legislative Action Plan. Commitments refer to the specific obligations negotiated as part of the accession process and are documented in the Accessions Commitments Database. Calculations refer to the sample of economies in our regression sample (Afghanistan, Samoa, Tonga, Vanuatu, Comoros and Timor-Leste are not included).

Figure 5: Pre-Accession Commitment Index Correlates with Structural Reforms
(in the period between application and accession)



Source: IMF Structural Reforms Database (blue), World Bank Worldwide Governance Indicators (red), and authors' calculations.

Empirical Results

Data and empirical specification

Our sample consists of yearly data for 150 economies covering the period 1951-2019. Annex 4 lists all members in the sample. 88 of the 150 members acceded through either Article XII or Article XXVI, 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 members, to guarantee that our control group is similar to the treatment group, i.e., acceded members (see also Besley and Case, 2000)²².

We estimate the following regression:

$$\Delta \log Y_{i,t} = \beta_0 + \beta_1 \log(Y_{i,t-1}) + \beta_2 \text{GATT/WTO}_{i,t} + \beta_3 \text{WTO Accession}_{i,t} + \beta_4 \text{WTO Pre-Accession Index}_{i,t} + \beta_5 \mathbf{X}_{i,t} + \alpha_i + \gamma_t + \varepsilon_{i,t}$$

$Y_{i,t}$ is GDP per capita of country i in year t . Following the growth literature, we adopt the first difference in log GDP as our dependent variable to avoid stationarity (McMillan and Rodrik, 2011; Barro and Sala-i-Martin, 1992). The $\text{GATT/WTO}_{i,t}$ variable is a dummy denoting a GATT or WTO member regardless of the specific accession process; $\text{WTO Accession}_{i,t}$ is a dummy for members that have acceded to the WTO through Article XII. The

²² Including advanced economies in the control group, which have experienced low growth rates in recent years, would likely positively bias our estimated coefficients on the impact of accessions. Additionally, we believe they are not an appropriate comparator group because of higher output volatility and risk of recession in developing economies, different growth paths and socio-economic characteristics (Barro and Sala-i-Martin, 1990).

Pre Accession Index $_{i,t}$ is a variable that takes values between 0 and 1, with positive values only for acceding members to the WTO (the Article XII members) in the period of their accession negotiations.

The terms α_i and γ_t are country and year fixed effects respectively (see e.g. Mankiw, Romer and Weil, 1992).²³ 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 (Barro, 1997; Temple, 1999; Pritchett, 2000; 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 $\mathbf{X}_{i,t}$ represents the other covariates used. As Durlauf, Johnson and Temple (2005) point out, there is no consensus in the literature as to which growth determinants should be included.²⁴ To minimise the risk of omitted variable bias, we select two controls: gross fixed capital formation as share of GDP (as a proxy for investment), and trade openness, measured as imports plus exports as share of GDP. These variables are in logarithmic form so that resulting regression coefficients can be interpreted as elasticities. We also test the robustness of our results by including the human capital index, which is based on years of education, and the incidence of armed conflicts²⁵.

Macroeconomic variables are sourced from the Penn World Tables (PWT). We look for post-accession structural improvements and therefore adopt the use of expenditure-side GDP which is adjusted for trade balance and ideal to compare relative living standards across economies at a given point in time. GDP 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. Data on conflicts is from the UCDP Onset Dataset.

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 the first lag of GDP in logs as a regressor, 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 regressions is cross-sectional dependence. Our study is no different²⁶. Thus, we opt for Driscoll and Kraay (1998) 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.²⁷ Furthermore, they are

²³ Like most 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.

²⁴ See Durlauf, Johnson, and Temple (2005, pp. 83–86).

²⁵ 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.

²⁶ As first 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 standard errors and consequently incorrect inferences. Thus, selecting an adequate error has important implications for the asymptotics of the estimator. In an interdependent world, international agreements have effects which spill over to third countries. Accession may increase growth in one economy, which in turn may influence a neighbour's growth rate. The Pesaran (2004) CD test confirms this issue in our sample. Two potential solutions exist. The first one is the adoption of spatial correlation between errors. Many researchers follow such a strategy (Anselin, 2001; Conley and Ligon, 2002), but its use raises the greater challenge of quantifying the distance between countries and its respective influence on growth. Besides, reasons other than distance (technological spillovers, political linkages, etc.) can also explain correlations between outcomes. In fact, it is evident that our data is likely to exhibit a variety of cross-sectional and temporal dependencies.

²⁷ "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)

robust to disturbances being heteroskedastic or autocorrelated with moving average processes 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 members 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 in the growth effects of GATT/WTO accessions. It is important to emphasize that other types of standard errors, such as by White (1980) or Rogers (1993), are not able to simultaneously address all these issues.

Benchmark results

Our benchmark results are reported in Table 3. Here we quantify the effects of accession to the GATT/WTO on growth rates, differentiating between WTO accessions and the earlier GATT accessions. Column (1) tests the significance of the $GATT/WTO_{it}$ dummy variable as a general difference-in-difference estimator which does not differentiate between accession modes. The coefficient is positive and significant, implying growth rates of acceded members increase by 0.8 percentage points, on average, in post-accession periods. The signs of the other coefficients are consistent with the predictions of growth theory.

Column (2) presents results including a WTO accession dummy which takes the value one in the post-accession periods of WTO accessions. As our theory predicts, we find that most of the variation observed in Column (1) is explained by WTO accessions, rather than GATT accessions. The coefficient of the WTO accession dummy is highly significant whereas the coefficient of the $GATT/WTO_{it}$ dummy turns insignificant.

As the next step, in Column (3), the model is enriched by including our newly created WTO Pre Accession Index $_{it}$, which captures the timing of WTO pre-accession reforms. Column (3) is our benchmark result. We estimate that at the mean value of the index across economies and years (equal to 0.56), the average effect of WTO entry negotiations is of 1.5 percentage points.²⁸

The regression's results reported in Column (4) test the robustness of our estimates to the inclusion of the Human Capital Index.²⁹ However, adding this extra control comes at the expense of losing more than 20% of our observations. 38 economies are dropped from the sample, including 6 WTO accessions. Note that the coefficient of human capital is insignificant, and its inclusion does not alter the significance of our coefficients of interest. In a similar fashion, Column (5) tests the robustness of our results to controlling for the incidence of armed conflicts. The coefficients of our variable of interest are reduced by a marginal amount whereas the coefficient for conflicts is insignificant and negative. We therefore keep Column (3) as our benchmark.

Table 3: Benchmark Results

²⁸ We calculate it as the value of the index times 2.7 percentage points, taking into account that the mean value of the index across economies and years is equal to 0.56.

²⁹ 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 on how this index is constructed, see the description (rug.nl/ggdc/docs/human_capital_in_pwt_90.pdf).

	(1)	(2)	(3)	(4)	(5)
<i>Dependent Variable: $[\log(Y)_{it} - \log(Y)_{it-1}]$</i>					
	General Accession Dummy	+Article XII DID	+Pre Accession Index	+Human Capital Index	+Conflicts
WTO Pre-Accession Index_{it}			0.027*	0.026*	0.025*
<i>Share of questions already answered</i>			(0.015)	(0.014)	(0.014)
WTO Accession_{it}		0.033***	0.036***	0.026**	0.020**
<i>=1 for post accession periods of Article XII members</i>		(0.011)	(0.012)	(0.010)	(0.010)
GATT/WTO_{it}	0.008*	-0.002	-0.001	0.005	0.009*
<i>=1 for post accession periods of all members</i>	(0.004)	(0.003)	(0.003)	(0.005)	(0.005)
log(GDP pc)_{t-1}	-0.031***	-0.032***	-0.032***	-0.029***	-0.033***
	(0.006)	(0.006)	(0.006)	(0.008)	(0.008)
log(Investment/GDP)_{it}	0.017***	0.017***	0.017***	0.018***	0.019***
<i>Gross Fixed Capital Formation</i>	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
log(Trade Openness/GDP)_{it}	0.004	0.003	0.003	0.002	0.003
<i>Imports+Exports/GDP</i>	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)
Human Capital Index_{it}				0.010	0.010
				(0.014)	(0.014)
Conflicts_{it}					-0.007
<i>Incidence of armed conflicts in a given year</i>					(0.007)
Constant	0.324***	0.330***	0.332***	0.292***	0.305***
	(0.049)	(0.049)	(0.049)	(0.050)	(0.053)
Observations	8,147	8,147	8,147	6,431	6,153
Country F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
R-squared	9.2%	9.5%	9.6%	10.9%	11.2%
Sample size	150	150	150	112	111

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

We also tried to control for tariffs using the most comprehensive data available, but unfortunately this data covers only about a quarter of our sample. Most importantly, the data is largely missing information for tariffs before accession. Introducing tariffs as a control, we can therefore no longer identify the impact of accession negotiations.³⁰

Table 4: Robustness to Excluding Outliers

<i>Dependent Variable: $[\log(Y)_{it} - \log(Y)_{it-1}]$</i>	(1)	(2) -China	(3) -EU enlargements	(4) -Outliers
WTO Pre-Accession Index_{it} <i>Share of questions already answered</i>	0.027* (0.015)	0.027* (0.015)	0.028* (0.015)	0.030** (0.013)
WTO Accession_{it} <i>=1 for post accession periods of members that joined after the formation of the WTO</i>	0.036*** (0.012)	0.035*** (0.013)	0.037*** (0.011)	0.039*** (0.011)
GATT/WTO_{it} <i>=1 for post accession periods of all members</i>	-0.001 (0.003)	-0.000 (0.003)	-0.001 (0.003)	-0.001 (0.003)
log(GDP pc)_{it-1}	-0.032*** (0.006)	-0.032*** (0.006)	-0.032*** (0.006)	-0.031*** (0.006)
log(Investment/GDP)_{it} <i>Gross Fixed Capital Formation</i>	0.017*** (0.005)	0.017*** (0.005)	0.016*** (0.005)	0.017*** (0.005)
log(Trade Openness/GDP)_{it} <i>Imports+Exports/GDP</i>	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)	0.002 (0.002)
Constant	0.332*** (0.049)	0.333*** (0.049)	0.329*** (0.048)	0.323*** (0.047)
Observations	8,147	8,080	7,982	7,952
Country F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
R-squared	9.6%	9.6%	9.3%	9.2%
Sample size	150	149	145	144

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

³⁰ World Bank's World Development Indicators data contain estimates based on data from United Nations Conference on Trade and Development's Trade Analysis and Information System (TRAINS) database and the WTO's Integrated Data Base and Consolidated Tariff Schedules database spanning 1988-2021.

Table 4 analyses whether our results are robust to excluding outliers. Column (1) repeats the benchmark results from Table 3. Column (2) excludes China given the outstanding performance of the Chinese economy over the last decades.³¹ Since our results might be biased by membership in other institutions, Column (3) excludes the five countries that were part of the eastern enlargement of the European Union in 2004 and 2007. Column (4) excludes six outliers in terms of growth (5 years pre- vs 5 years post-), the three slowest and three fastest growing economies.³² None of these exclusions alter our results quantitatively or qualitatively.

In order to support our hypothesis that the trade-enhancing effect of WTO negotiations is linked to the extent of the reforms and the commitments that acceding members had to undertake to respond to the requests of existing WTO members. Table 5 presents the results of our regressions on various sub-groups of acceding members. Columns (1), (2), and (3) interact our WTO Pre-accession Index with a dummy variable taking the value 1 for only a subgroup of Article XII economies. Column (1) does so for the economies that took the shortest amount of time to complete their negotiation process. Hence, the interaction term indicates that members that acceded to the WTO through Article XII in a period shorter than the median (9 years in our sample) saw a much smaller benefit from the negotiations, or conversely that the effect is primarily driven by accessions that took longer than the median duration. This could be explained by differences in how many reforms members had to undertake before entering WTO. Fewer reforms imply WTO negotiations took less time but also had a smaller effect on growth in these economies. Column (2) looks at the economies that received a total number of questions throughout their negotiation process below the median value of 875. This allows us to assess the possibility that a higher number of questions, meaning additional scrutiny during the negotiation process, could translate into additional reforms and drive the additional growth linked to the Pre-accession Index. As expected, we estimate a negative coefficient (which implies that economies that had to respond to more requests benefit more from the negotiations to enter the WTO), although this is significant only at the 15% significance level. Column (3) distinguishes the economies that acceded earlier (before the median year of 2003). The highly significantly negative interaction term for older accessions is consistent with the finding of Basu (2008) that more recent accessions involved more substantial reforms. In columns (1)-(3), we find pre-accession effects ranging from 0.5 percentage points, in the case of the 16 economies with the shortest accession negotiations, to 2.2 percentage points for the 16 economies that acceded most recently.³³

In Column (4) we account for the fact that article XXVI accessions should be treated differently, since they pertain to ex-colonies acceding to the GATT after gaining independence from their metropole which was itself previously a GATT member. To address this concern, we change the date of accession of these economies to that of the metropole to which they were attached. The results remain robust. Finally, in column (5) we investigate the impact of the pre-accession period for GATT accessions in column (5) by adding a dummy variable taking the value of 1 over the negotiation period for GATT economies, i.e., between their application and accession dates.³⁴ We also observe a smaller but still significant GATT pre-accession effect on growth.

³¹ 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.

³² Bulgaria, Republic of Moldova and Kyrgyzstan (best performers) and Yemen, Russia and Ukraine (worst performers).

³³ We interpret the coefficients by multiplying them with the average values of the index for each subsample as follows. Column (1): $0.039 \times 0.53 = 2.1$ percentage points (pp) for economies with an above-median negotiation duration, and $(0.039 - 0.03) \times 0.61 = 0.5$ pp for economies with a below median duration. Column 2: $0.037 \times 0.57 = 2.1$ pp for economies with above the median number of questions, $(0.037 - 0.022) \times 0.54 = 0.8$ pp for those below. Column 3: $0.043 \times 0.50 = 2.2$ pp for the 16 economies with the most recent accessions, $(0.043 - 0.033) \times 0.68 = 0.7$ pp for the 16 other Article XII economies.

³⁴ We use a dummy variable since we are not able to construct an equivalent index for GATT accessions, given that they did not follow the same process as Article XII accessions.

Table 5: Robustness: Exploring the Drivers of the Pre-Accession Effect

	(1)	(2)	(3)	(4)	(5)
<i>Dependent Variable: $[\log(Y)_{it} - \log(Y)_{it-1}]$</i>					
	+Negotiation duration	+Total questions	+Recency of accession	+Art. XXVI accession with metropole	+GATT negotiation
WTO Pre-Accession Index_{it}	0.039***	0.037**	0.043**	0.028*	0.027*
<i>Share of questions already answered</i>	(0.014)	(0.018)	(0.018)	(0.015)	(0.014)
WTO Pre-Accession Index_{it} Interaction	-0.030**	-0.022	-0.033***		
<i>=Index*1 if shortest duration (1), fewest questions (2), oldest accession (3)</i>	(0.012)	(0.015)	(0.012)		
WTO Accession_{it}	0.036***	0.036***	0.017	0.029***	0.035***
<i>=1 for post accession periods of members that joined after the formation of the WTO</i>	(0.012)	(0.012)	(0.013)	(0.010)	(0.012)
GATT/WTO_{it}	-0.000	-0.001	-0.001	0.007	0.001
<i>=1 for post accession periods of all members</i>	(0.003)	(0.003)	(0.003)	(0.006)	(0.003)
GATT Pre-Accession Indicator_{it}					0.013*
<i>=1 for years between application and accession for members that acceded to the GATT</i>					(0.007)
log(GDP pc)_{t-1}	-0.032***	-0.032***	-0.032***	-0.033***	-0.032***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
log(Investment/GDP)_{it}	0.017***	0.017***	0.017***	0.017***	0.017***
<i>Gross Fixed Capital Formation</i>	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
log(Trade Openness/GDP)_{it}	0.003	0.003	0.003	0.003	0.003
<i>Imports+Exports/GDP</i>	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	0.333***	0.333***	0.330***	0.333***	0.331***
	(0.049)	(0.048)	(0.048)	(0.048)	(0.048)
Observations	8,147	8,147	8,147	8,147	8,147
Country F.E.	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
R-squared	9.7%	9.7%	9.7%	9.7%	9.7%
Sample size	150	150	150	150	150

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

Robustness Checks and Endogeneity Concerns

As discussed above, the existing members have more bargaining power than the acceding member in accessions negotiations. They dictate the requests for reforms as well as the timing of accession. This is a strong argument for the exogeneity of our Pre-Accession Index. The difference-in-difference approach and country-fixed effects further reduce endogeneity issues. This section aims to further address endogeneity concerns by presenting economic arguments, by using an instrumental variable approach, and by employing falsification tests on our treated sample.

Endogeneity Concerns Related to Political Economy

In the literature on structural reforms, the possibility of capturing instead the effect of other governments policies or behaviours, i.e., the possibility that the types of governments which typically apply for WTO membership have an independent positive effect on growth. An argument against this is made in Tang and Wei (2009), 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 in the typical acceding member the same government is unlikely to be in power from application until accession. Using the variable *onset1* from the Database on Political Institutions, which captures conflict episodes with more than 25 deaths in a given year, we provide evidence in support of this argument by counting how many governments remained in power the entire period between application and accession. We find that of 34 Article XII members in our sample, only 12 had the same chief executive at application and accession. Moreover, six of these 12 had been in power for more than 10 years before the year of application, implying that any potential government effect would not have been associated with application nor accession dates. In our view, therefore, are unlikely to suffer from a bias due to a government effect.

Self-Selection into Accession

The accession date must be exogenous for the estimates to be valid. Even if governments 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 their economies. However, by analysing accession documents, one can argue that the length of these negotiations was mainly driven by the interests of existing WTO members. While the responsiveness of acceding governments has a role to play in determining the length of accession negotiations, applicants cannot decide on the conclusion of accession negotiations without the unanimous consent of the WP members.

Another issue we address is whether the length of the accession process might be linked to the domestic political power of governments carrying out reforms. Maggi and Rodriguez-Clare (2007) argue that such considerations are at the centre of trade agreements. Parties with more domestic political power can accelerate the process and therefore accede sooner, and at the same time carry out other growth enhancing reforms.

With the help of the Database on Political Institutions, we generate a variable that captures the average vote share of 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 1980-2019. We do not find any significant

relationship between length of negotiations and the share of votes won. However, as shown in column (1) of Table 5, we find that most of the pre-accession effect we observe occurs for members that took longer to complete their negotiation process, which goes against the idea that powerful domestic governments that accede quickly are driving the results.

Instrumental Variables

Table 6 presents the second stage results of the IV estimation. We instrument the Pre-Accession Index using the index of the closest acceding member as identified by either their geographic distance³⁵, or their accession date. We also use additional instruments calculated as the average Pre-accession Index between the index of the acceding economies closest in distance and closest in time or taking the average value of the index for other economies weighted by distance or by proximity in their time of accession. In order to check the exogeneity of our results, in Column 6 we test an overidentified model which uses a combination of the instruments from the first two columns.³⁶ These instruments are relevant because distance and timing of accession are likely to matter in determining patterns of accession. Accessions that occurred in similar periods or for members that are neighbours or from the same region are likely to follow similar patterns because, for example, neighbours look at each other's performance more closely, are likely to be similar, or simply because the same negotiators of existing members are working on several accessions simultaneously. Since accession dates differ, the accession date of our instrument is matched to the accession date of the instrumented observation. The instrument is allowed to take non-zero values only for the period between the MFTR release and accession.

The first-stage relationship between the instruments and the index, displayed in Annex 5, 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-level controls and fixed effects. The weak identification tests corroborate the strength of our instruments. Every coefficient is significant at a 10% significance level. Moreover, the size of the coefficients is similar, confirming the efficiency of our variables at estimating the evolution of the implementation of structural commitments before accession to the WTO.

³⁵ The distances were taken from the CEPII Geodist Database.

³⁶ Other combinations of instruments were also tested and yield similar results.

Table 6: Instrumental Variables Results

<i>Dependent Variable: $[\log(Y)_{it} - \log(Y)_{it-1}]$</i>	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Closest Distance</i>	<i>Closest Time</i>	<i>Avg. Time and Distance</i>	<i>Weighted Distance</i>	<i>Weighted Time</i>	<i>Closest Time + Closest Distance</i>
WTO Pre-Accession Index_{it}	0.022*	0.026**	0.024**	0.026**	0.025**	0.024**
<i>Share of questions already answered</i>	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
WTO Accession_{it}	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***
<i>=1 for post accession periods of members that joined after the formation of the WTO</i>	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
GATT/WTO_{it}	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
<i>=1 for post accession periods of all members</i>	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
log(GDP pc)_{it-1}	-0.032***	-0.032***	-0.032***	-0.032***	-0.032***	-0.032***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
log(Investment/GDP)_{it}	0.017***	0.017***	0.017***	0.017***	0.017***	0.017***
<i>Gross Fixed Capital Formation</i>	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
log(Trade Openness/GDP)_{it}	0.003	0.003	0.003	0.003	0.003	0.003
<i>Imports+Exports/GDP</i>	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Weak Identification Test (Kleibergen-Paap Wald rk F-stat)	788.7	508.7	1148.6	1712.8	1481.1	1358.2
Observations	8,147	8,147	8,147	8,147	8,147	8,147
Country F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%
Robust standard errors in parentheses						
*** p<0.01, **p<0.05, * p<0.1						

As a final identification check, we estimate a “false experiment” specification in which we randomize the member 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 Pre-Accession Index only captures a global growth trend and that the results obtained with the instruments could have been reached using any other member or any accession year. A table listing the members and years randomly selected as placebos can be found in Annex 6.

Table 7 shows the results of this exercise. Each column randomizes the pre-accession index by accession year or by the member which the index is assigned to. We find that the significant positive effects of our index disappear in the falsification sample, indicating that the results do not hold if we change the way the member or the reference year are identified to construct the instrument.

Table 7: Results Falsification Tests

<i>Dependent Variable: $[\log(Y)_t - \log(Y)_{t-1}]$</i>	(1)	(2)
<i>Randomized by: Member Year</i>		
WTO Pre-Accession Index_{it}	-0.001	-0.020*
<i>Share of questions already answered</i>	(0.007)	(0.010)
WTO Accession_{it}	0.033***	0.041
<i>=1 for post accession periods of members that joined after the formation of the WTO</i>	(0.012)	(0.031)
GATT/WTO_{it}	-0.002	-0.001
<i>=1 for post accession periods of all members</i>	(0.003)	(0.003)
log(GDP pc)_{t-1}	-0.032***	-0.030***
	(0.006)	(0.006)
log(Investment/GDP)_{it}	0.017***	0.018***
<i>Gross Fixed Capital Formation</i>	(0.005)	(0.005)
log(Trade Openness/GDP)_{it}	0.003	0.001
<i>Imports+Exports/GDP</i>	(0.002)	(0.002)
Constant	0.330***	0.315***
	(0.049)	(0.047)
Observations	8,147	7,430
Country F.E.	Yes	Yes
Year F.E.	Yes	Yes
R-squared	9.5%	8.2%
Number of groups	150	146

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

Conclusions

Compared to accessions under the GATT, reforms required to join the WTO have become more demanding in several policy areas, including agriculture, structural reforms, tariff bindings, and many others. Our study concludes that these efforts pay off and help acceding members develop their economies. By introducing a novel index that proxies for the incremental nature of accession-related reforms, we use a difference-in-difference methodology to show that the WTO accession process is associated with faster growth before accession, and that members that acceded to the WTO continued to grow faster after their accession date. To address potential concerns of endogeneity, we run several robustness tests, including instrumental variable estimations.

Our results call for further research to identify the specific types of reforms undertaken during WTO accession which have the greatest impact on growth. This would require mapping the specific reforms to commitments undertaken during negotiations, and promises to be an original means of comparing the effectiveness of different types of reforms for growth.

Annexes

Annex 1: Figure 2 regression results (a replication of Tang and Wei, 2009)

<i>Dependent Variable: $[\log(Y)_t - \log(Y)_{t-1}]$</i>	(1)	(2)	(3)
	Article XII	Article XXVI	Article XXXIII
Time Profile			
-5	0.035** (0.016)	-0.001 (0.015)	0.017 (0.021)
-4	0.029* (0.016)	0.007 (0.015)	-0.004 (0.021)
-3	0.001 (0.016)	0.015 (0.014)	0.013 (0.021)
-2	0.033** (0.016)	0.003 (0.013)	0.023 (0.020)
-1	0.039** (0.016)	0.037*** (0.013)	0.008 (0.020)
0	0.026* (0.016)	0.005 (0.013)	0.016 (0.019)
1	0.019 (0.016)	0.018 (0.013)	0.019 (0.019)
2	0.032** (0.016)	0.033*** (0.013)	0.025 (0.019)
3	0.023 (0.016)	0.013 (0.013)	-0.004 (0.017)
4	0.047*** (0.016)	-0.014 (0.013)	0.011 (0.017)
5	0.036** (0.017)	0.014 (0.013)	-0.005 (0.017)

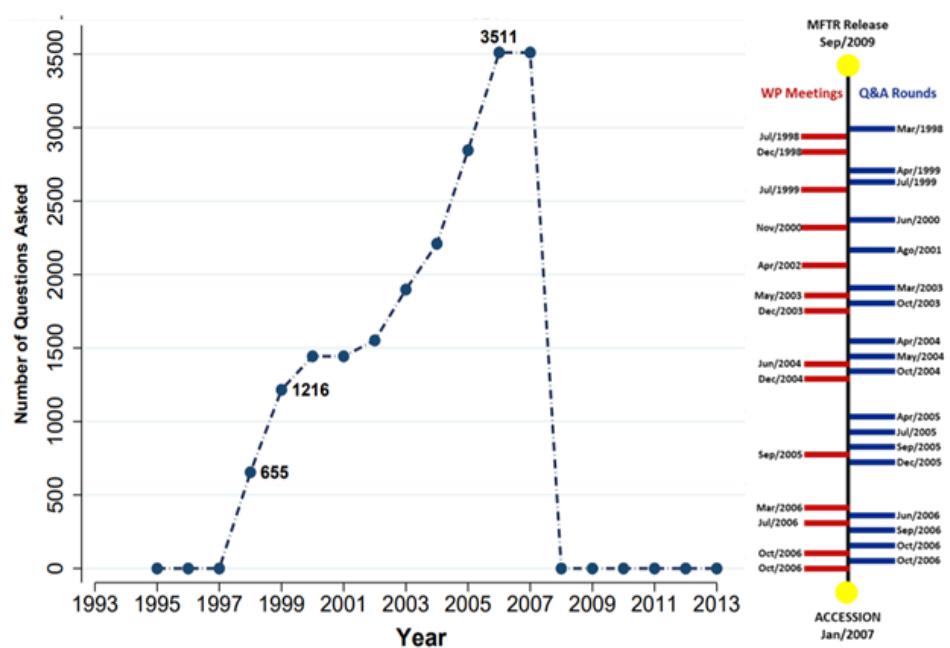
Beyond	0.047*** (0.007)	-0.010* (0.005)	0.003 (0.006)
log(Y)_{t-1}	-0.034*** (0.003)	-0.032*** (0.003)	-0.031*** (0.003)
log(Investment/GDP)_{it} <i>Gross Fixed Capital Formation</i>	0.017*** (0.002)	0.017*** (0.002)	0.016*** (0.002)
log(Trade Openness/GDP)_{it} <i>Imports+Exports/GDP</i>	0.002 (0.001)	0.004*** (0.001)	0.004*** (0.001)
Constant	0.341*** (0.026)	0.332*** (0.026)	0.325*** (0.026)
Observations	8,022	8,022	8,022
Country F.E.	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes
R-squared	9.8%	9.6%	9.3%
Number of groups	150	150	150

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

Annex 2: Details of the Pre-Accession Index

Figure A1 below illustrates the pattern of questions answered by Viet Nam together with a timeline of its Q&As and WP meetings. As shown below, the index assumes the form of a step function as the number of answers can only increase in every consecutive year. The Vietnamese representatives answered a total of 3511 questions and attended 14 WP meetings between 1998 and 2006. Before the first meeting in July 1998, 655 questions had been answered, all corresponding to those in the document released in March of 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 sums all questions answered in a given year, reaching 1216 replies (655+463+68) in 1999. Three additional points should be noted. First, the index can only change in WP meeting years. For instance, Viet Nam released a set of answers on August 2001, but since there was no meeting held in 2001, they are counted only in 2002. Second, only answers released prior to meetings are considered. For Viet Nam this impacts the index in 2005 and 2006. The answers released in December 2005 will not be counted in 2005 because the three meetings of that year occurred before their release, but rather at the time of the next meeting (March 2006). Third, in the years after accession (2007, for Viet Nam) the pre-accession index ends, once again taking the value 0, i.e. there is an implicit interaction with a dummy for the pre-accession period.

Figure A1: Example of Viet Nam



Annex 3: Examples of Questions and Answers Leading to Reforms

Example 1: Viet Nam

The following section contains excerpts from the questions and replies by Viet Nam during its WTO accession negotiations concerning the treatment of domestic and foreign investment. The Investment Law cited in the questions was passed by Viet Nam's National Assembly in 2005 and entered into force in 2006, prior to accession. The questions and replies are slightly edited for brevity and to keep the focus on the reforms we mention. The original documents can be accessed using the document number provided (WT/ACC...) at docs.wto.org.

Additional questions and replies from the 30th of October 2003 (WT/ACC/VNM/29):

Question: *We welcome Viet Nam's efforts to simplify procedures relating to investment, and to increase transparency and the predictability of the legal and policy system (...). However, there still remain some problems, such as the necessity to go through more than 2 procedures involving different Ministries in order to carry out investment in Viet Nam, and the existence of many ambiguous matters regarding requirements and procedures. We, therefore, continue to urge Viet Nam to introduce a "one-stop" service and to make the relevant system clearer. A uniform application of an investment-related regime should also be secured throughout the entire region. (b) We also consider that stock-holding companies should be allowed as one form of investment. Since Viet Nam has not yet provided a response to this question, please explain in detail Viet Nam's position in this regard.*

Reply: (a) Viet Nam has been carrying out administrative reforms towards establishing "one-stop" mechanism for foreign investments. According to Decree No. 61/2003/ND-CP issued by the Government dated 6 June 2003 specifying competence, responsibilities, authority and organisation of Ministry of Planning and Investment, Department of Foreign Investment was set up in order to uniformly administer foreign investment activities throughout the country. On 19 March 2003, the Government issued Decree No. 27/2003/ND-CP on the amendment of and addition to some articles of Decree No. 24/2003/ND-CP guiding the implementation of the Law on Foreign Investment. This Decree extends the list of projects subject to registration for investment licence, narrows the list of sectors in which investment licensing is conditional, and clarifies the criteria for issuing or rejecting licence. Ministry of Planning and Investment is studying plans to further decentralize the authority to issue investment licenses to provincial people's committees and industrial zones' management boards. Together with decentralizing the authority to grant investment licenses and to administer investment activities in order to simplify administrative procedures and lower costs for foreign investors, Viet Nam has developed close coordination among license issuing agencies to ensure the consistency of foreign investment policies. Besides, in order to ensure the effective and uniform enforcement of the legal system, the Ministry of Planning and Investment, in cooperation with concerned Ministries and Agencies, is reviewing existing regulations aiming at abolishing those provisions, procedures and licenses which are out-dated, overlapping or impeding the operation of FDI enterprises. (b) On 15 April 2003, the Government of Viet Nam issued Decree No. 38/2003/ND-CP allowing the transformation of FDI enterprises into stock-holding companies. Viet Nam is also considering a uniformly applied enterprise law governing both domestic and foreign investments with a view to creating a common legal framework regulating the establishment, organization and operation of domestic and foreign invested enterprises.

Additional questions and replies from the 13th of October 2004 (WT/ACC/VNM/33):

Question: (...) it is indicated that foreign investment in some sectors is only allowed in the form of joint venture or business cooperation contract. Viet Nam also states that the government had abolished most regulations discriminating between domestic and foreign investment, and there were generally no differences between the two categories of investment. - We would like to see Viet Nam adopt commitments to end discrimination between foreign and domestic investment. - Could Viet Nam please provide a timetable for the elimination of all remaining discrimination between foreign and domestic investment?

Reply: Viet Nam is gradually eliminating the differences between the law on domestic investment and the law on foreign direct investment in Viet Nam towards the building of a stable and fair environment for the enterprises of all economic sectors. The unified Law on Investment and the Law on Enterprise applied to both domestic and foreign investors are being drafted for this purpose and shall be submitted to the National Assembly for approval in 2006.

Additional questions and replies from the 7th of April 2005 (WT/ACC/VNM/36):

Question: We note that (...) Viet Nam still indicates that foreign investment in some sectors is only allowed in the form of joint venture or business cooperation contract. (...) Viet Nam states that the Government had abolished most regulations discriminating between domestic and foreign investment and there were generally no substantial differences between these two categories of investment. Viet Nam notes that differences in the fees and charges rates applied had been eliminated, except for electricity where dual pricing would be abolished by 31 December 2005. Viet Nam also states that the scope of other discriminatory regulations, which concerned establishment procedures and management organisation, would be reduced progressively and eliminated under the unified Law on Investment and the Law on Enterprises, which were expected to be submitted to the National Assembly in 2006. These two laws were being drafted towards applying uniformly to domestic and foreign investors and to all enterprises irrespective of economic sector and form of ownership in compliance with WTO rules. We would be grateful for further advice on the new Law on Investment and the Law on Enterprises, and when a copy of the draft laws will be made available to the Working Party.

Reply: A common Investment Law and a uniform Enterprise Law are currently being drafted and scheduled to be submitted to the National Assembly's 8th Session in October 2005 for consideration in accordance with the National Assembly's Program for Enacting Laws and Ordinances in 2005 provided in the Resolution No.35/2004/QH11 dated 25 November 2004 of the National Assembly. The Government of Viet Nam has requested the National Assembly to pass, instead of consider, these two laws at its 8th Session in October 2005 (i.e. requested an earlier approval). The draft Laws planned for submission to the National Assembly shall be submitted to the Working Party as soon as they are ready.

Additional questions and replies from the 20th of December 2005 (WT/ACC/VNM/41):

Question: Conditional investment sectors: We would urge Viet Nam to set up an exclusive list of conditional investment sectors and to incorporate it into the investment law. Also the procedures of granting an investment licence in these sectors should be clearly set out in the law. Could Viet Nam

confirm what will be the maximum foreign shareholding in the conditional sectors? According to [prior statements] it appears to be 49 per cent?

Reply: The Draft Investment Law cannot set out specifically exclusive list of conditional investment sectors since this draft Law will be applied in a stable and long-term manner while the above-mentioned list may be adjusted from time to time. To that end, in line with the above principle, the Government will issue a Decree (taking effect concurrently with the Investment Law) to provide in detail for this list and specific conditions for each sector. Procedures for granting Investment Registration Certificate to the projects that fall into the list of conditional investment sectors is provided for very clearly in Article 48 of the 16th draft of the Investment Law. The provisions of Article 27 of the 13th draft of the Investment Law (i.e. Article 29 of the 16th draft Investment Law) are not designed to determine the capped equity capital (49 per cent) of foreign investors investing in conditional investment sectors. The maximum foreign shareholding is subject to Viet Nam's commitments in services.

Example 2: Comoros

The following section contains excerpts from the various cycles of questions and replies by Comoros during its WTO accession negotiations concerning the liberalization of the state monopoly on rice imports, and one question and reply about the implementation of a VAT system in Comoros. The questions and replies are slightly edited for brevity and to keep the focus on the reforms we mention. The original documents can be accessed using the document number provided (WT/ACC...) at docs.wto.org.

Additional questions and replies from the 23rd of June 2020 (WT/ACC/COM/27):

Question: We are very concerned by Comoros' apparent restrictions on competition to import ordinary rice. If an objective of the Competition Law is, according to Article 1, "to promote the operation of market forces by controlling or eliminating any practice aimed at, or having the effect of, restricting competition in a manner detrimental to the development of the national economy and to the interests of consumers", why does Comoros only allow one company – ONICOR – to import ordinary rice? While we understand that ordinary rice is a staple of the Comorian diet, we do not understand why this necessitates permitting only one enterprise to import the product. In recent successful accessions where the number of enterprises importing rice have been restricted by the acceding government, the restrictions were not nearly so severe. With more competition among importers, the price charged to distributors and retailers would tend to fall.

Reply: Ordinary rice is a staple of the Comorian diet. The Government therefore wishes to maintain this monopoly so that it can ensure a continuous supply, guarantee quality and stabilize market prices.

Additional questions and replies from the 21st of June 2021 (WT/ACC/COM/30):

Question: We request that Comoros eliminate, prior to accession, the exclusive right of the SOE ONICOR to import rice. We recognize that rice is a staple commodity, but the importance of rice does not justify permitting only one enterprise to import the product. Comoros states that the government has an interest in ensuring continuous supply, quality, and stable prices. None of these interests require permitting only one enterprise to import the product, particularly given Comoros' heavy regulatory hand on prices. In fact, these interests would be better achieved by allowing more competition, not less. We stress that we

are not asking Comoros to privatize ONICOR, the SOE, nor are we asking Comoros to prevent it from competing with other market participants.

Reply: Comoros is considering opening the rice market to competition. Currently, ONICOR has put in place the following plan of action: – Adoption of the necessary legal instruments to enable the establishment of a Board of Directors (instruments of appointment of members, etc.). – Study on the socioeconomic impact of opening up the market (2022), – Review of the law of 1982 establishing a State monopoly for the import and distribution of staple rice.

Additional questions and replies from the 5th of May 2022 (WT/ACC/COM/34):

Question: Could Comoros please give an update about work on the liberalization of imports of ordinary rice?

Reply: The Ministry of the Economy requested the World Bank to conduct an impact assessment on the subject. (...) Two solutions may be considered regarding the strategic reorientation of ONICOR over the short and medium term: 1. Role as a central procurement agency (during a transition period); and 2. Management of strategic rice stocks. ONICOR could help the country maintain sufficient rice stocks on the market – particularly in response to economic shocks.

Additional questions and replies from the 14th of October 2022 (WT/ACC/COM/38):

Question: (...) We reiterate our previous request that Comoros eliminate, prior to accession, ONICOR's exclusive right to import rice, given that Comoros' objectives with respect to supply, quality, and stable prices do not require permitting only one enterprise to import a product. In this regard, as we stated at the Working Party meeting in September 2021, we are prepared to work with Comoros. If Comoros will revise and adopt its law prior to the date of accession, to eliminate the exclusive right, we are ready to work with Comoros to establish an appropriate implementation date. We also reiterate our previous request that Comoros eliminate the practice of ONICOR making proposals to the government on the administered prices, and to consider other forms of price regulation that would allow for greater competition in rice.

Reply: A review of ONICOR's exclusive right is under consideration. An impact assessment on the liberalization of ONICOR has been finalized with the support of the World Bank and makes relevant recommendations. The impact assessment report will be shared with the Working Party.

Additional questions and replies from the 6th of September 2023 (WT/ACC/COM/42):

Question: Please provide a timeline of Comoros' review and decision making regarding the elimination of ONICOR's exclusive right to import rice.

Reply: Comoros has decided to end the State monopoly on rice pursuant to Article 25 of Decree No. 23/60/PR "On the new statutes for ONICOR" of 30 June 2023. As a result, the importation and sale of ordinary rice has been liberalized. Accordingly, the practice of the government validating administered prices has been discontinued.

Concerning the VAT law, from Questions and Replies of the 7th of December 2023 (WT/ACC/COM/49):

Question: (...) the internal taxes would be replaced by a new value added tax (VAT). A draft VAT law would be prepared with the support of the IMF. VAT implementation was also provided for in the Interim Development Plan 2020-2024 ...and in an action plan by the Ministry of Finance. VAT implementation was foreseen in 2026.” Could Comoros give a state of play on the work of the planned new value added tax?

Reply: The Government of the Union of the Comoros has scheduled the implementation of VAT for 2027. A request for technical assistance will shortly be addressed to the IMF so that it can support the Union of the Comoros in implementing VAT. In this regard, a detailed action plan for VAT implementation will be submitted to WTO Members as soon as possible (see document WT/ACC/COM/47).

Annex 4: Economies in the estimation sample

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

¹Article XII

²Article XXVI 5(c)

Annex 5: First Stage IV Results

<i>Dependent Variable: $[\log(Y)_{it} - \log(Y)_{it-1}]$</i>	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Closest Distance</i>	<i>Closest Time</i>	<i>Avg. Time and Distance</i>	<i>Weighted Distance</i>	<i>Weighted Time</i>	<i>Closest Time + Closest Distance</i>
WTO Pre-Accession Index_{it}	0.022*	0.026**	0.024**	0.026**	0.025**	0.024**
<i>Share of questions already answered</i>	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
WTO Accession_{it}	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***
<i>=1 for post accession periods of members that joined after the formation of the WTO</i>	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
GATT/WTO_{it}	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
<i>=1 for post accession periods of all members</i>	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
log(GDP pc)_{t-1}	-0.032***	-0.032***	-0.032***	-0.032***	-0.032***	-0.032***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
log(Investment/GDP)_{it}	0.017***	0.017***	0.017***	0.017***	0.017***	0.017***
<i>Gross Fixed Capital Formation</i>	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
log(Trade Openness/GDP)_{it}	0.003	0.003	0.003	0.003	0.003	0.003
<i>Imports+Exports/GDP</i>	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	8,147	8,147	8,147	8,147	8,147	8,147
Country F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%
Robust standard errors in parentheses						
*** p<0.01, **p<0.05, * p<0.1						

Annex 6: Falsification Tests Description

Article XII	Placebo Economy	Placebo Year
Albania	Madagascar	1987
Armenia	Dominican Republic	2016
Bulgaria	Bahrain	1965
China	Azerbaijan	1966
Cabo Verde	U.R. of Tanzania: 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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