IS BITTER MEDICINE GOOD FOR YOU?
THE ECONOMIC CONSEQUENCES OF
WTO/GATT ACCESSIONS

Man-Keung Tang
International Monetary Fund

Shang-Jin Wei
International Monetary Fund

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Man-Keung Tang[*]   Shang-Jin Wei[*]

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ABSTRACT

Accessions to the WTO/GATT often entail reforms that go beyond narrowly defined trade regime liberalization. Many such reforms have to overcome fierce resistance in the acceding countries as reflected in protracted negotiations. We study the growth and investment consequences for countries acceding to the WTO/GATT during and after the Uruguay Round when the requirements for accession became more demanding (though with exceptions). We show that those countries that were subject to more rigorous accession procedures had a higher increase in growth and investment/GDP ratio around the time of accessions. Those that were required to make more substantial policy commitments experienced bigger improvement in economic performance, especially among countries with poorer governance. Over all, the results support the view that WTO/GATT accessions, if they require rigorous reforms, spur growth and investment.

Key Words: trade, growth, economic reforms
JEL Codes: F1

"Beneficial Medicine is bitter in your mouth."

Chinese proverb

"WTO accession provides a predictable business environment and gives a powerful guarantee to investors that there will be no policy reversals."

Mamo Mihretu, advisor to the Ethiopian government on WTO accession
International Development Research Center, 2005

"… it is surprisingly hard to demonstrate convincingly that the GATT and the WTO have encouraged trade."

Andrew Rose
American Economic Review, 2004

1. Introduction

Accession to the World Trade Organization (WTO) (or its predecessor the General Agreement on Tariff and Trade, GATT) is sometimes reported with fanfare as was the case for China in 2001. In recent years, the applicant countries are typically required by existing members to undertake a wide range of policy changes before membership can be granted and to promise to do more within a certain timeframe after the start of the membership. Many of these policy changes would have to overcome fierce resistance within the acceding countries. This is reflected in lengthy and often contentious negotiations between the acceding countries and the existing members. For example, for countries that acceded to the WTO during 1995-2001, the median time it took between the initial application and the final accession was 71 months. In the case of China, the premier who signed off on the final accession protocol was strongly criticized in domestic Internet chat rooms for making too many concessions.

Do these politically difficult policy changes do any good to the acceding countries in terms of delivering better economic outcomes? There are three diverse views on the consequences of the WTO/GATT membership, ranging from it being highly beneficial to basically irrelevant or even harmful.

- Some recognize that WTO/GATT accessions induce acceding countries to engage in trade reforms and provide them a guarantee of MFN treatment in the markets of other WTO/GATT member countries. To the extent that greater trade is beneficial to economic development, WTO accession is economically beneficial. Indeed, the accession promotes not only trade openness but also reforms in an array of areas. For example, as the second quote above indicates, WTO membership is thought to make it less likely for governments to reverse market-oriented reforms. This view can be summarized by the Chinese adage that beneficial medicine (of policy reforms) may be bitter in one's mouth.

- However, some think that the membership is irrelevant. For example, Rose (2004) finds that WTO/GATT member countries do not appear to trade any more than non-

members do. If WTO membership does not lead to a more open trade regime, then it is hard to see how it could deliver significant benefits to acceding countries. So if the medicine is bitter, it is also useless.

- Yet still, there are others who hold an extreme view that accession could even be harmful to developing countries as the reforms demanded by existing members of the WTO/GATT could narrow the "policy space," forcing the acceding country to choose inferior policies that it otherwise would not have chosen. In a book entitled, "Behind the scenes at the WTO: the real world of international trade negotiations," the authors Fatoumata Jawara and Aileen Kwa suggested that WTO negotiations place the interests of powerful developed countries ahead of everyone else and often bully and coerce developing countries into signing something that they profoundly disagree with. By this view, the medicine is not only bitter but also poisonous.

In the first four decades of the GATT, developing countries were not asked to do much reform if they wanted to join the club. Indeed, many of them retained very high bound tariff rates even after becoming GATT members. The Uruguay Round of the GATT negotiations and the WTO have toughened up the accession requirements on new members. Subramanian and Wei (2005) document that these new members tend to be systematically more open than old developing country members of the GATT. On average, new (i.e., post-Uruguay) developing country members of the WTO/GATT trade about 30% more than the old developing members. In this paper, we exploit this change in the accession requirements since the Uruguay Round and evaluate the impact of WTO/GATT accession from a different perspective. Since the main purpose of a country joining the world trade body is to promote its development, we take a direct route in testing the value of WTO/GATT membership by exploring whether and through what possible channels accessions affect a country's growth and investment.

This paper studies whether/how WTO/GATT accession since 1990 alters a country's investment climate and growth trajectory. We take a view that trade might not be the only channel through which WTO/GATT accession can spur a country's development. A country's growth potential could also be enhanced through a series of policy reforms the country has to commit to before being granted WTO/GATT membership. The implied policy changes are often binding, and the governments might have otherwise lacked incentives to implement them if not for the dangling "carrot" in the form of secured access to foreign markets.[1] Besides lowering trade barriers, those policy reforms committed in the accession process might also generate positive spillovers to other economic areas that are not immediately related to international trade.

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[1] Alternatively, the government could use the guarantee of improved foreign market access as currency to "buy" political support from the interest groups that would otherwise oppose reforms.

Moreover, the WTO/GATT serves as a potent enforcer of the member countries' policy promises. In effect, WTO/GATT enables the policy commitments to become credible and reduces the chance of a future reversal by the governments. This reduction in policy risks faced by the investors could play a key role in prompting investment and capital accumulation.[2]

The empirical method of the paper is in spirit a difference-in-differences strategy: comparing the change in the growth rate of the acceding countries before and after accessions with the change in the growth rate of other non-acceding developing countries. The "treatment" sample of countries in our empirical analyses includes countries that joined the WTO/GATT between 1990 and 2001. Of the countries in the treatment group, we pay particular attention to those that acceded to the WTO in or after January 1995. The establishment of WTO in that month brought about a significant change in the accession procedures. Under the new WTO rules, an existing member could threaten not to extend its WTO-related benefits to the new member even if they have held bilateral negotiations. Such an arrangement might strengthen the leverage of existing members over the acceding country, and thus enable them to extract more concessions from the new members.[3] [4] It is therefore often believed that countries joining the WTO in and after 1995 are required to commit to wider and deeper policy reforms than the countries that joined the GATT during 1990-94 (which were already asked to do more than those acceding pre-Uruguay Round). If accession does enhance a country's growth by committing it to more extensive policy reforms, the effects should more readily be detected among the countries that acceded after WTO's formation.[5] In addition, the standardization of accession documents filed with the WTO enables a more systematic comparison across different acceding countries. Our results show that, relative to other

[2] WTO membership is also often viewed as a seal of approval recognized by international investors and thus promotes inward foreign direct investment ("*Investing: Vietnam on the Brink of Measured Success*," International Herald Tribune, March 23, 2006).

[3] For example, in order to make the countries comply to its emigration requirement, the United States had invoked the non-application clause against Kyrgyzstan. The US would not have been allowed to exercise non-application in such a situation in the GATT era. (Drabek and Bacchetta, 2004)

[4] More fundamentally, one of the objectives of the Uruguay Round was to bridge the gap between the developed and developing countries in terms of their degree of liberalization and obligations. This hardening attitude toward the developing countries carries over to the WTO's negotiations with the new acceding countries.

[5] For example, Ecuador, which joined WTO in 1996, had to agree to eliminate all state subsidies before accession and never reintroduce them. This commitment goes well beyond what is required of the WTO founding members.

developing countries, countries that became WTO members did generally grow faster than before, and the increments in their investment/GDP ratios were greater as well.

Any good economist would instinctively ask whether there is any endogeneity bias in this result. Specifically, is it possible that only countries that wish to pursue pro-growth open-trade policies would apply for GATT/WTO membership? Researchers might find a positive association between accession and increase in growth rate even though the former may not cause the latter. This is a legitimate question for which we do not have a silver-bullet answer in terms of an obviously exogenous instrumental variable strategy.

In some sense, we are just as happy with the possible result that reforms designed to promote trade openness rather than WTO accession per se have increased growth. In this scenario, application for GATT/WTO membership is simply a demonstration of a government's resolve to switch to a more open trade regime. Our exercise can be seen simply as a new angle to check the consequence of reforms for economic growth.

However, there are a number of features in the data we explore and document that enhance our confidence that the drive to become a WTO/GATT member per se has focused some governments' mind and induced them to pursue reforms that improve investment climate and generally help to raise the growth rate.

1. Application vs. actual accession. There is usually a long and variable lag between the time a country first applies for the WTO membership and the eventual date of accession. We exploit this time lapse to help us isolate the effects of accession apart from other effects that are correlated with the government's resolve to join the WTO, which is reflected by its membership application. We find that there is a (temporary) pick-up in the growth rate subsequent to the initial application. However, even after accounting for this effect, we continue to find a distinct growth spur after the actual accession.

2. Accessions with and without extensive reforms. If accession involves no reforms that the acceding countries would not want to do on their own, then the endogeneity bias is highly plausible. However, plenty of evidence shows that the accession negotiations can be very demanding on the acceding countries, with many resisting strenuously the reform requirements from the existing members. The long accession negotiations (with an average of about 5 years) indicate the deep reluctance many acceding countries have in implementing various reforms required of them. In fact, an interesting difference among the accession countries is informative about whether accession-related reforms have helped to change the domestic investment climate. Up to the end of 1994, a subset of developing countries were eligible to join the GATT under Article XXVI 5(c) by essentially sending a notification to the GATT without having to promise reforms. Existing members could not block the accession and therefore could not impose demands that the acceding countries would feel reluctant to fulfill. In contrast, the rest of the developing countries would have to undergo rigorous negotiations with existing members as any of the latter countries could block the

accession. Almost all Article XXVI 5(c)-eligible countries joined the GATT by 1994 without making extensive reform commitments.[6] We will show that the positive impact of WTO/GATT accession comes entirely from countries that were required to undergo more rigorous accession negotiations.

3. Excluding the selection effect. One could also explicitly test for and quantify the effects of self-selection on economic performance. We employ a 2-stage procedure a la Heckman (1979) and show that there is little evidence that our results are driven by selection bias. Specifically, the unobserved factors that (partially) determine a country's WTO/GATT membership status do not appear to correlate with the omitted variables in our regressions of main interest.

4. Effects of reform commitments on countries of different governance quality. If accession indicates nothing but a government's intention to do reforms, then the effects of the accession on growth need not vary with the quality of public governance. We look at whether and how accession-induced policy reforms have differential impacts on countries of different governance quality. Consistent with the idea that WTO accession benefits countries through required policy reforms, there is evidence that the beneficial effects of policy commitments are stronger among countries that can potentially benefit more from them (i.e., countries with poorer governance), than among countries that already possess relatively good institutions.

To summarize, these four features taken together suggests that for those countries that had to undergo rigorous accession negotiations, accessions usually have led them to engage in a wide range of trade-related reforms, many of which have improved the general investment climate beyond narrowly defined trade areas. Through this channel, the WTO/GATT accessions have led to an acceleration of their growth rates around the time of the accession.

We might note that the accession may only lead to a one-off increase in the income level (though with a transition period of several years), not necessarily a permanent increase in the growth rate. Given that WTO accession cases are relatively recent, available data would not allow us to discriminate between these possibilities.

This paper contributes to the growing literature on the effects of the WTO/GATT. Rose (2004), Subramanian and Wei (2005) and Tomz, Goldstein and Rivers (2005), among others, study the trade effects of WTO. Besides trade volume, we also focus on another potential aspect of WTO benefits, namely improvement in institutions. In this regard, this paper is related to Li and Wu (2004) and Ferrantino (2005). Li and Wu explore the average effects of WTO/GATT accessions on growth for all accession cases happening between 1960 and 1998. In contrast, we draw on institution details and make explicit distinctions among countries according to the degree of requirements associated with their accessions (namely,

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[6] The only exception is Cambodia, which was eligible for Article XXVI 5(c), but didn't join the GATT probably due to the in-fighting (literally) in the government at the time.

pre-1990 vs. post-1990 accessions, Article XXVI 5(c) vs. non-Article XXVI 5(c) countries, and countries that made more accession commitments vs. those that made fewer commitments). Our focus on these distinctions allows us to affirm the benefits of WTO/GATT accessions, whereas Li and Wu yield little evidence that developing countries gained from entry to the organization. Moreover, our results make explicit the timing of the effects by tracing out the trajectories of a country's changes in performance before and after accession.

Ferrantino (2005) investigates whether WTO accessions and FTAs lead to better governance. Using various governance indices as the dependent variable, he finds little significant impact of WTO accession and FTA on the policy environment. However, Ferrantino's findings do not necessarily contradict ours. It is highly unlikely that the published governance indices fully capture all aspects of a country's policies that are important for production and investment decisions. Moreover, by tying their hands and subjecting themselves to WTO arbitration, the acceding countries effectively commit against future policy reversal. The strengthening of investor confidence due to the reduction in future policy risks is not likely to show up in the contemporaneous measures of governance quality. The significant and favorable effects found in our more direct approach point to the importance of policy requirements.

In analyzing the differential effects of accessions, this paper is related to the literature on the importance of policy regime for a country's economic performance. Following the lead of La Porta et al. (1997, 1998 and 1999), Hall and Jones (1999), and Acemoglu et al. (2000), many studies in the literature use legal origins, geographical and demographic variables, or settler mortality to instrument for quality of institutions in cross-section analyses. In contrast, we focus on the incidence of discrete episodes of policy reforms induced by WTO accessions, and study their *marginal* impacts on growth and investment in a panel-regression setting that controls for unobserved country characteristics with country fixed effects.[7] Similar to Wacziarg and Welch (2003) who find significant pickup in growth following a country's trade liberalization, our results indicate favorable effects of WTO/GATT accessions on growth.

In the following section, we briefly describe the data and our empirical methodology before presenting our results. We conclude in the third section.

2. Empricial Evidence

2.1 Data and Empirical Specifications

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[7] The choice of instrumental variables for institutions is not without controversies. For instance, Glaeser et al. (2004) show that settler mortality is highly correlated with human capital accumulation, whose effects on growth are independent of those of institutions.

The main variables employed in our regressions include per capita GDP, private investment, total investment, exports and imports of all the developing countries between 1981 and 2003. All these data, at annual frequency, are obtained from the IMF's World Economic Outlook. The panels are not always balanced since some smaller countries might not have data for earlier years. The years the countries formally acceded to WTO/GATT are taken from WTO's website. We exclude all OPEC and industrial countries. Table 1 lists all the countries in our treatment and control groups.[8] In most regressions, we also exclude 10 outliers from the control group, 5 from either end of the spectrum.[9] In later subsections, we will use additional variables such as governance indices and a measure of the extent of policy commitments. The sources and construction of those variables will be discussed in due course.

The two principal sets of regressions we use look at the effects on growth and investment at annual frequency. They take the following forms.

$$G_{i,t,s} = \log(GDP\ per\ capita)_{t-1} * \beta_0 + \sum_s \beta_s + \beta_i + \beta_t + \varepsilon_{i,t,s}, \text{ and}$$

$$\log(Inv/GDP)_{i,t,s} = \sum_s \beta_s + \beta_i + \beta_t + \varepsilon_{i,t,s}.$$

$G_{i,t,s}$ and $\log(Inv/GDP)_{i,t,s}$ are, respectively, annual growth of per capita GDP and log of investment/GDP ratio of country i, in year t, and s years away from accession. We refer to the set of s's as the time-profile of accession. In most of our specifications, s belongs to {null, -2, -1, 0, 1, 2, 3, 4, 5, beyond}. s is null if either the country is not in our treatment group or it would not accede until more than 2 years later. Correspondingly, β_s is set at zero when s is null. β_i and β_t are country and year fixed effects, respectively. The log of lagged per capita GDP is included in the growth regressions to take into account the long-term converging and short-term mean-reverting effects.

2.2 Benchmark Result (GATT/WTO Accessions during 1990-2001)

One of the objectives of the Uruguay Round was to raise the developing countries' obligations to adopt more open trade regimes. Even for countries that joined the GATT after the commencement but before the conclusion of the Uruguay Round, Subramanian and Wei

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[8] Note that although we exclude all OPEC countries, 8 out of the 28 non-member countries have a large share of output attributed to oil production (Azerbaijan, Equatorial Guinea, Kazakhstan, Russia, Sudan, Syria, Turkmenistan and Yemen).

[9] Note, however, that our results are in fact robust to inclusion of the outliers. We will report our benchmark results with and without inclusion of the outliers. The two sets of results are virtually the same.

(2005) show evidence that accessions have led them to become more liberalized relative to both pre-existing members as well as non-members. Guided by Subramanian and Wei's results, we focus on countries that acceded between 1990 and 2001. The summary statistics on growth, trade and investment for this group of countries before and after accession are reported in the first column of Table 2.

The first column of Table 3 shows the time-profile of the countries' growth performance before and after accession to the GATT/WTO. As mentioned before, country and year fixed effects are included in all regressions. The reported t-statistics are derived from robust standard errors clustered by country.

In the year before accession, countries are growing about 2.4 percentage points faster than before, relative to other countries. In fact, countries are growing faster than before by 1.9, 2.6, 3.3 and 1.5 percentage points respectively in the four subsequent years.

In a similar vein, the second column of the table shows the time profile of the countries' log of private investment to GDP ratio. While largely positive, none of the coefficient estimates is statistically significant. It seems that accessions might have little average impact on the countries' propensity to invest.

The last two columns of Table 3 report results from the same growth and investment regressions, but without exclusion of 10 outlying control-group countries in either case. Both the coefficient estimates and the significance level are virtually unaffected.

Figures 1 and 2 plot the trajectories of the changes in growth and investment, along with their 90% confidence intervals, based on the results reported in the first two columns of Table 3.

Article XXVI 5(c) v.s. non-Article XXVI 5(c) countries

However, the results in the Table 3 mask a substantial degree of heterogeneity among the countries in terms of their accession procedures. Before the WTO replaced the GATT in 1995, former colonies of the GATT members could, upon becoming independent, decide to invoke GATT Article XXVI 5(c). The article had allowed them to be converted to full members ("contracting parties") without having to undergo the kind of lengthy negotiations that often characterize the accession processes of other countries.[10]

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[10] The full text of Article XXVI 5 (c) is as follows: "*If any of the customs territories, in respect of which a contracting party has accepted this Agreement, possesses or acquires full autonomy in the conduct of its external commercial relations and of the other matters provided for in this Agreement, such territory shall, upon sponsorship through a declaration by the responsible contracting party establishing the above-mentioned fact, be deemed to be a contracting party.*"

Although once they had become full members they were required to fulfill more obligations (e.g., notifying GATT/WTO about any alteration of their trade policies to deal with balance of payments problems), policies of the countries acceding by Article XXVI 5(c) were not rigorously reviewed before being granted accession. As a result, the extent of policy reforms those countries are required to commit to is substantially less. It is arguably a main reason why a host of countries that were eligible for Article XXVI 5 (c) flocked to accede to the GATT immediately before the WTO was established.

Between 1990 and 1994, there were 18 countries which invoked Article XXVI 5(c) and acceded to the GATT, although they all had been eligible to do so even earlier. Table 4 lists the countries acceding by Article XXVI 5(c) and those by normal procedures. In terms of changes in economic performance before and after accessions, the two groups differ considerably. As shown below, accessions seem to have much stronger impacts on the non-Article XXVI 5(c) countries than on the others.

Share of acceding countries growing faster after the accession than before[11]:

	Grew Faster than Before
Non-Article XXVI5c Countries	72% (18/25)
Article XXVI5c Countries	47% (8/17)

Share of acceding countries investing more output after accession than before[12]:

	Invested More than Before
Non-Article XXVI5c Countries	59% (13/22)
Article XXVI5c Countries	38% (6/16)

Further summary statistics of ArticleXXVI5(c) and non-ArticleXXVI5(c) countries before and after accession are reported in the second and third columns of Table 2.

In view of the heterogeneity, we perform the same regressions as are reported in Table 3, except that we now assign a dummy to signify whether a country acceded to the world trade body through Article XXVI 5(c) or otherwise. The results are in the first two columns of Table 5.

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[11] The comparison is between annual growth averaging over 0 to 2 years after accession and annual growth averaging over 8 years before accession, after controlling for year fixed effects.

[12] The comparison is between Inv/GDP ratio averaging over 0 to 2 years after accession and Inv/GDP ratio averaging over 8 years before accession, after controlling for year fixed effects.

In contrast with the results for the whole sample, non-Article XXVI 5(c) countries grow significantly faster than before ever since 1 year before accession. The growth performance of non-Article XXVI 5(c) countries is generally stronger than that of the Article XXVI 5(c) countries. Moreover, the accession effect on growth seems long-lasting. Its economic and statistical significance persists even beyond the fifth year after accession.

On the other hand, accessions have only very weak effects, if at all, on the Article XXVI 5(c) countries. For instance, in the second year after accession, the Article XXVI 5(c) countries grew only 0.8 (4.7 − 3.9) percentage points faster than before, and it is not statistically significantly different from zero.[13]

Distinction between the two groups is also apparent in the second column of the table. Compared to before, non-Article XXVI 5(c) countries invested more of their output than before, relative to other countries. For example, in the third year after accession, this group of countries on average increased their investment/GDP ratio by 17.7% from before. In contrast, Article XXVI 5(c) countries on average increased their investment/GDP ratio by only 2.8% (17.7 − 14.9) from before in year 3 post-accession, and this increase is not statistically significant.[14] The results suggest that the extensive policy commitments a government has to make before accession appear to play an important role in raising output and investment.

Columns 3 and 4 of the table report results of the growth and investment regressions without exclusion of outliers from the control group. The results are basically unchanged from those in columns 1 and 2.

The differences in performance changes between the Article XXVI 5(c) and non-Article XXVI 5(c) countries is also graphically depicted in Figures 3 and 4. Here, we plot the trajectories of the changes in growth and investment separately for the two groups based on the results from the first two columns of Table 5.

2.3 Robustness Checks and Extensions

One might cast doubt on the exogeneity of incidence of accessions. Would countries that are more likely to experience stronger future growth self-select to accede to GATT/WTO?

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[13] The robust variances of the corresponding coefficient estimates are 0.000077 and 0.000170, respectively, and their robust covariance is −0.000076. The robust t-statistic of the sum is 0.82 (i.e., 0.008/(0.000077+0.000170-2*0.000076)^0.5).

[14] The robust variances of the corresponding coefficient estimates are 0.006 and 0.021, respectively, and their robust covariance is −0.006. The robust t-statistic of the sum is 0.23 (i.e., 0.028/(0.006+0.021-2*0.006)^0.5).

There are various reasons why the endogeneity is not likely to be responsible for our results at least qualitatively. First, transition economies are not the sole driver of our results. There are 10 transition economies (in Eastern Europe and former Soviet republics) in our sample of 25 non-Article XXVI 5(c) countries.[15] There is a possibility that the transition economies are different from other developing countries, and the growth effect of the WTO accession could be entirely due to this group of countries. While those countries became independent in 1990-91 and most applied to the GATT/WTO in 1993-94, they did not become members until an average of 5.6 years after their applications or 8.7 years after their independence. Such a long interval renders it unlikely that the direct effects of independence attribute much to the increases in growth and investment the new states experienced around the time of accessions. In any case, when we exclude the 10 new states from our sample (columns 5 and 6 of Table 5), we still find positive and significant effects of accessions on growth and investment.

Second, the time-profile of our results coincide closely with the timing of accession. In fact, even when we explicitly control for the timing of membership application – which can intuitively be interpreted as a signal of the government's reform intent – we still witness significant improvement in economic performance around the time of accession. The results are reported in Table 6, and in Figures 5 and 6. There is indeed an increase in growth and investment/GDP ratio in the 2 to 4 years after application, and this might be associated with the government's pursuit of various reforms that might or might not be related to WTO/GATT accessions. However, from that point on the improvement dies down as time progresses. Most interestingly, the positive effects pick up again as the country approaches the time of accession. The results strongly suggest that accessions have independent contribution in encouraging investment and raising output.[16]

Third, commitments made under accession negotiations should in any case be viewed as important and critical elements of any wider reforms an acceding country is simultaneously undertaking. The protracted and complex accession process is a result of the government's initial unwillingness to concede to the Working Party's original policy demands and subsequent lengthy negotiations between the two parties that involve substantial give-and-

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[15] The 10 newly independent states are Croatia, Czech Republic, Estonia, Georgia, Kyrgyz Republic, Latvia, Lithuania, Moldova, Slovak Republic and Slovenia.

[16] Alternatively, one might proxy for the government's willingness to reform (and thus its likelihood of carrying out wider reforms independent of the accession) by the time length of negotiations with the Working Party. Presumably, the less the government is ready to reform, the less likely it would accept the Working Party's terms and thus the lengthier the negotiations would become. However, though not reported here, we find no significant relationship between length of negotiations and growth. Also, including this variable does not alter the qualitative results of our regressions.

take. In other words, if left to its own devices, it is not likely that the government is prepared to engage in those policy changes prescribed in the WTO/GATT agreement.

Fourth, as we will later show, our results largely hold even after we take explicit account of countries' self-selection effects. The method we use to filter out the selection effects is essentially the standard Heckman 2-step procedures, with modifications for a panel context suggested by Wooldridge (2005). We find no evidence that there is quantitatively significant selection bias present in the data, indicating that the unobserved factors driving the countries' membership status are not likely to be responsible for our benchmark results.

Lastly, we will discuss how accessions have *differential* impacts on countries that differ in both their governance quality and the extent of commitments required under their respective accession negotiations. The results based on a joint-dissection of our sample along the two different dimensions reaffirm the idea that accession-induced policy reforms substantially benefit the countries.

Testing for selection bias

To the extent that WTO/GATT membership status might not be strictly exogenous, it is possible that our results are biased by some unobserved or omitted variables that affect both the membership status and changes in the countries' economic performance. To see whether this is the case, we employ a 2-step procedure pioneered by Heckman (1979) with modifications tailored for panel data as suggested by Wooldridge (1995).

Specifically, we first carry out a probit regression estimating the WTO/GATT membership status of a country (member or non-member) as a function of observable country features (the country's lagged log per capita GDP and lagged log trade to GDP ratio). The choice of the independent variables is meant to capture the idea that only when a country reaches a certain degree of development and trade openness would it decide (or be allowed by other countries) to join the world trade body. Then for each country-year observation we compute the inverse Mills ratio, which contains information about the unobserved factors that also affects the country's membership status in that particular year.

In the second stage, we add in the inverse Mills ratio as an independent variable in our estimation of growth or investment regressions. The inclusion of the ratio is supposed to control for the effects of the unobserved factors from the first stage on the dependent variable in the second stage, thus ensuring that the coefficient estimates in the second stage are purged of biases resulting from the endogenous nature of membership status. On the other hand, if selection bias is in fact absent – i.e., the dependent variable in the second stage is not affected by the unobserved factors affecting the membership status, the coefficient estimate of the inverse Mills ratio would not be statistically significantly different from zero. In such a case, our original specification would have little bias and our benchmark results would be valid.

The tests of the selection bias are presented in Table 7. In both growth and investment regressions in the first two columns, the coefficient estimates of the inverse Mills ratio are

not statistically significant (the p-values are 0.33 and 0.24, respectively). Therefore, there is no evidence of a quantitatively significant amount of selection bias present. This is perhaps not surprising as all recent accession cases (except those that were able to invoke Article XXVI 5(c)) involve substantial policy changes that the countries would not have embarked on if they had been left alone. In any case, as Table 7 shows, when we include the inverse Mills ratio from the selection equation, accessions still appear to have significant positive impacts on growth and investment.

In the last two columns of the table, we add to the second stage all the independent variables from the first stage to ensure that error terms from both stages are all orthogonal to these variables.[17] Again, we find no evidence of selection bias -- the coefficient estimates of the inverse Mills ratio are statistically insignificant (the p-values are 0.32 and 0.66, respectively).[18]

The subset of accession cases since 1995

After 1995, no country could invoke GATT Article XXVI 5(c) to avoid undertaking serious and wide-ranging reforms demanded by existing member countries before getting into the WTO. For these countries, we could utilize the Working Party reports available on the WTO website to determine the extent of reform commitments the acceding countries have to undertake. For this reason, we take a close look at this subset of countries.

After a country submits its application for the WTO membership, a Working Party composed of representatives from interested existing members is formed to access the qualification of the country and negotiate with the government a series of commitments. Any existing members can join the working party and make demands on the applicant.

There are basically two broad types of commitments. One is market-access commitments, whose schedules are annexed to the Protocol. These documents describe the timeframe and the extent to which the acceding government is expected to open the domestic markets for goods and services to other WTO members. The other type of commitments concerns the government's other internal policies that may be trade related but may also have considerable impacts on many other economic fronts. These commitments cover a wide range of topics, including investment policies, intellectual property rights protection, governance transparency, and so on. For instance, a country might be required to commit to i) not restrict any private firms' ability to import or export, ii) make transparent its future privatization plans, iii) refrain from providing certain subsidies, iv) abort state trading, v) eliminate price

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[17] Identification with the absence of an "exclusion instrument" in the selection regressions is possible because of the nonlinearity of the inverse Mills ratio.

[18] Results from jointly estimating the selection and main regressions with maximum likelihood method are essentially the same as those reported here.

controls, etc. While in negotiating the commitments the starting point of the Working Party might be primarily the trade benefits of the existing members, those commitments often turn out to have more wide-ranging implications including domestic private firms' ability to start and to grow. A recent report by the US Government Accountability Office commented that "China also has made a substantial number of important, specific commitments [in WTO accession negotiations] in the rule of law-related areas of transparency, judicial review, uniform enforcement of legal measures, and nondiscrimination in its commercial policy." (GAO-05-53, 2004). Drabek (1996) also discusses how the commitments required for WTO accessions might improve productivity and efficiency in transition economies.[19]

These commitments, stated in the Working Party report, provide a roadmap for future implementation of the country's promised policy changes. They are explicitly incorporated in the Protocol as an integral part of the formal accession agreement that is enforceable through WTO's dispute settlement mechanism. For example, in a notable dispute concerning a new member, the US filed a complaint with the WTO's dispute settlement body against China in 2004, arguing its differential VAT treatment of integrated-circuits manufacturers violated the terms of its accession Protocol (WT/DS309). China in the end had to agree to stop providing VAT rebates to the domestic producers. Therefore, unlike other statements made in a Working Party Report that are not incorporated in the Protocol, the stated commitments are legally binding. Acceding countries are not likely to easily agree to make an explicit commitment lest ceding too much "policy sovereignty."[20] On the other hand, many of the commitments prescribed in the Working Party Reports would not have been unilaterally pursued by the governments if they could freely choose. In fact, many new members lament the extent of requirements associated with accessions. As noted by Naray (2001), "… a number of countries' delegations recalled that in the accession process unreasonable conditions were required of, and imposed on, applicants…"

Policy commitments and Governance Quality

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[19] For instance, in July 2005 two US senators and Chevron tried to make a legal case blocking CNOOC's attempted acquisition of Unocal by citing that CNOOC's financing arrangement appeared to violate China's WTO commitments on loan subsidies for state-owned companies. ("*CNOOC Cheap Loans Questioned,*" The Standard, July 13, 2005.). Although their complaint was not officially reviewed, it added to the pressure on CNOOC to eventually withdraw its acquisition offer.

[20] In Saudi Arabia's recent accession negotiations, EU wanted Saudi Arabia to incorporate as a commitment to end its policy of fuel subsidy to the domestic firms. But Saudi Arabia had rigorously refused any such move. Similar situation happened with Russia's negotiations. Although eventually Russia agreed to incorporate language in the Working Party Report to the effect that energy prices should be determined by the market, it rejected to make an explicit commitment on the issue.

The stated commitments provide a rich source of information about the extent of policy reforms an acceding country is required to commit to. There is, however, hardly an absolutely objective way to quantify this information. Instead of relying on subjective judgment about how consequential each commitment is, we adopt a simple and transparent approach. We count the total number of commitments mentioned in the Working Party Report and incorporated in the Protocol. This number is our proxy for the degree of policy reform a country commits to as part of the accession requirement. The rather standardized format of the Working Party Reports after the WTO was established ensures that every commitment item is equally clearly stated in the documents across the various acceding countries. Each single commitment, whose exposition typically spans one paragraph in the Working Party Report, pinpoints one particular area of policies. Although it might be noisy and is by no means ideal, this measure is likely to embed a considerable amount of information about the *order* of the countries in terms of how stringent the policy requirements they were subject to.

There is substantial variability in the number of commitments a country makes in the accession negotiations. Working Party's areas of interests, the country's original legislations and the government's common practices differ across different accession cases. As the WTO website puts it, "… accessions to the WTO will be 'on terms to be agreed'… essentially a process of negotiations." There is therefore not a single one-size-fits-all set of commitments applied to every country seeking accession. The first column of Table 8 presents the number of explicit commitments made in the Working Party Reports and Protocols by the 15 countries acceding to the WTO between 1995 and 2001. Table 9 lists examples of policy commitments made under accession negotiations that might have important implications for domestic investment.

Another potential measure of the extent of the required policy reforms is the number of words contained in the Working Party Report. The more concerned the Working Party is about the country's policies and the more substantial changes the Working Party wants to be implemented, the more complex the negotiations and the lengthier the final Report would be. When we replaced the number of commitments with this measure, our results were essentially the same (these regressions are presented later this section).

Another crucial dimension along which the acceding countries differ is their governance quality. Suppose that the event of WTO accession implies not only a more liberalized trade regime but also extensive commitments to policy changes. To the extent that the policy commitments serve as some form of substitutes for governance, one would expect to observe interesting differential effects of accession on countries with different governance quality and different degree of policy commitments.

We proxy for a country's institutional or governance quality with World Bank's Governance Matters indices (Kaufmann, Kraay and Mastruzzi, 2005). The indices are based on 32 data sources compiled by 30 different organizations. They measure perceptions on a country's

governance along six dimensions. For our purpose, we pick two of the six dimensions that appear to be most relevant to investment decisions.[21] They are "Regulatory Burden" – measuring incidence of market-unfriendly policies, and "Rule of Law" – measuring the quality of contract enforcement.[22]

We use the indices published in the earliest edition, i.e., the 1996-97 edition. We will refer to 3 plus the sum of a country's indices in the two dimensions as the country's governance index. The higher the score, the better the governance quality is. The second column of Table 8 lists the governance index for our "treatment" sample of 15 countries. The summary statistics on growth, investment and trade before and after accession for this group of countries are shown in the last column of Table 2.

We redo the earlier regressions with only the sample of 15 countries that joined the WTO between 1995 and 2001 in our treatment group. We find that the results are broadly similar to our earlier findings for the "non-ArticleXXVI5c" countries.

Information on private investment is available for a smaller number of countries than total investment. Given our relatively small treatment sample, we will use total investment as our investment measure. Although the statistical significance of the estimates is somewhat smaller in the regression with private investment than that with total investment, the coefficient estimates of the two regressions are remarkably similar. It is useful to note that since our emphasis for this sample will be accession's *differential* effects on countries with different characteristics, the statistical significance level of accession's *average* effects on all acceding countries would not have any bearing on our main results that follow.

Average effects of commitments are shown in Table 10. We exclude the outlying China from our sample. China acceded to the WTO only after 15 years of on-and-off negotiations. There are as many as 147 commitments listed in its Working Party Report, while other countries in our sample have at most 29 commitments. The results on growth from the sample excluding China are in the first column. The effects of policy commitments now become more apparent. The coefficient estimates are all positive, and those on years -2, -1, 2 and 3 are statistically significant at 5% or 10% level.

In the second column of the table, we separate countries into two groups according to the number of commitments contained in their Working Party Reports. If and only if a country has more than 27 commitments -- the median number of commitments in our sample, we assign it a dummy of 1. Seven countries belong to the "Many Commitments" group and eight

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[21] These two dimensions are also more likely to be areas which the policy commitments made in the accession negotiations address.

[22] The other dimensions are: "Voice and Accountability", "Political Instability and Violence", "Government Effectiveness" and "Control of Corruption."

belong to "Few Commitments" group. We then interact the dummies with the time-profile of accessions. Even for this binary categorization, we continue to find that commitments have largely positive effects on growth. The effects are especially significant for the accession year and the year afterward.

The next two columns of Table 10 present results on the effects of commitments on countries' log(inv/GDP). Unlike the results for on growth, even if we exclude the outlying China (column 3) or discretize the commitment variables into 2 groups (column 4), there is little evidence that commitments significantly raised an acceding country's investment/GDP ratio.

This set of results on investment might appear to invalidate the ability of policy commitments to promote capital accumulation. However, as we will soon show, there is in fact evidence that policy commitments serve as an effective form of substitute for governance in promoting development.

Differential effects of policy commitments

By revealed preference, governments of countries with poor governance might not have intrinsic incentives to engage in better or more pro-market policies. For this group of countries, commitments made under the accession negotiations represent particularly strong forces pushing for binding credible policy changes, since non-delivery may result in enforcement through the WTO's dispute settlement mechanism which entails the threat of withdrawal of benefits by other WTO members. In contrast, countries whose governance is more favorably perceived are less likely to have to rely on such a third party as WTO for commitment device to implement desirable policy changes. Therefore, if the hypothesis that policy changes induced by accessions are an important element of accession benefits is indeed true, we should expect to see that the beneficial effects of commitments are especially pronounced for countries with poorer governance.

We interact the time-profiles of accessions with the interaction terms of our measure of extent of required policy reforms and the governance index. The results, presented in the first columns of Tables 11 and 12, give support to the hypothesis. The coefficient estimates on the interaction terms are significantly negative in both regressions, suggesting differential effects of commitments on countries with different governance.

To check our results against different measures of governance, we perform the same regressions but using Doing Business 2005 index of legal rights (the higher the index the better the legal rights) and Heritage Foundation's 1996 overall index of economic freedom (the higher the index the less the economic freedom). These two together with our preferred index are likely to capture different aspects of a country's governance quality, especially

considering that the Doing Business legal rights index and our preferred governance index are negatively correlated.[23]

As shown in the second and third columns of Tables 11 and 12, our basic results hold with different indices of governance. The broad conclusion remains that the policy commitments seem to have differential beneficial effects on countries with different governance quality.

Furthermore, the differential effects of commitments are observed mostly only along the governance dimension. When we use log(number of commitments)*log(1995 nominal income) or log(number of commitments)*log(employment rigidity index) in the place of the interaction terms used in Tables 11 and 12, we do not find significant differential effects of policy commitments.[24] Thus, policy commitments appear to serve as an important remedy for poor governance, and not some other country characteristics that are correlated with governance.

We now turn to the questions of 1) whether the negative coefficient estimates of the interaction terms are indeed due to stronger beneficial effects of commitments on countries with poorer governance, and 2) whether the results survive if we impose a discrete structure on our commitment and governance variables. For this purpose, we separate the countries into 3 different groups by their governance quality and the extent of reforms they commit to implement. Any countries with governance index above 3, which corresponds to the mean of all countries, are called "Good Governance" and the rest are called "Poor Governance." Within the "Poor Governance" group, any countries that have 28 or more commitments are called "Many Commitments" and those with fewer than 28 commitments are called "Few Commitments." By this categorization, we have 5 countries in the (Poor Governance, Many Commitments), 4 in the (Poor Governance, Few Commitments) and 6 in the (Good Governance) groups.

Results in the first three columns of Table 13 again confirm the hypothesis. The (Poor Governance, Many Commitments) group is the benchmark group. The results in the growth regression (first column) show that there is no significant difference between the (Good Governance) and (Poor Governance, Many Commitments) groups. However, the (Poor Governance, Few Commitments) group did significantly worse than the (Poor Governance, Many Commitments) group from 1 year before accession until 3 years after accession. The qualitative results are virtually the same when we use growth in PPP per capita as the dependent variable (second column).

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[23] Correlation coefficients for the pairs {log(legal rights index), log(governance index)}, {-log(Heritage index), log(governance index)} and {log(legal rights index), -log(Heritage index)} are –0.28, 0.83 and –0.31, respectively.

[24] Correlation coefficients for the pairs {log(1995 income), log(governance index)} and {-log(employment rigidity), log(governance index)} are 0.67 and -0.06, respectively.

Similarly, from the investment regression (the third column), the (Poor Governance, Few Commitments) group did not increase their Inv/GDP ratio by as much as those countries with poor governance but more commitments. The difference between the two groups is significant in the accession year and beyond. While the coefficient estimates on the (Good Governance) dummies are consistently negative and are significant in the second and third years after accession, their statistical and economic magnitudes are both generally smaller than those for the (Poor Governance, Few Commitments) group.[25]

We also note that the results are not driven by outliers. While 80% (4 out of 5) of the (Poor Governance, Many Commitments) countries grew faster after accession than before, only 50% (2 out of 4) of the (Poor Governance, Few Commitments) countries did so.[26] Similarly, all of the (Poor Governance, Many Commitments) countries experienced higher investment/GDP ratio after accession than before; but only half of the (Poor Governance, Few Commitments) invested at least as much output after accession as they did before.[27]

Furthermore, the beneficial effects of policy commitments do not appear to be directly associated with trade-related liberalizations. The fourth column of Table 13 shows the changes in log(trade/GDP) for the three different groups of countries. Unlike their

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[25] Among the 6 good governance countries, the 2 countries with the most number of commitments (Jordan and Lithuania) grew 4.2 percentage points faster per year in the second year following accessions than over the 8 years before accessions. On the other hand, the 3 countries with the least number of commitments (Latvia, Panama and Estonia) grew 5.0 percentage points faster than before during the same time frame, after controlling for year fixed effects. In addition, after controlling for year fixed effects, the 2 good governance countries with most number of commitments showed a *decline* in their Inv/GDP ratio of 13% while the other 3 with least number of commitments increased their Inv/GDP by 39% in the second year following accessions relative to over the 8 years before accessions. It thus seems that commitments might in fact have negative impacts on the good governance countries. The policy restrictions imposed by the accessions might too severely limit those countries' freedom to pursue optimal benevolent policies – the "hand-tying" might become a burden for them.

[26] The comparison is between annual growth averaging over 0 to 2 years after accession and annual growth averaging over 8 years before accession, after controlling for year fixed effects.

[27] The comparison is between the Inv/GDP ratio averaging over 0 to 2 years after accession and the same ratio averaging over 8 years before accession, after controlling for year fixed effects.

performance in growth and investment, the three groups of countries do not differ significantly in terms of the changes in their trade/GDP ratio before and after accessions.

To the extent that the more policy reforms a country has to make the more complex the accession negotiations would become, we use the word-length of the Working Party Reports as another proxy for the degree of policy commitments.[28] The median number of words contained in a Working Party Report is 27,139. Countries whose Working Party Reports contain more than the median number of words are now grouped as "Many Commitments," otherwise "Few Commitments." The categorization for "Good Governance" versus "Poor Governance" is the same as before. The results are in the last two columns of Table 13. Again, among the countries with poor governance, extent of policy commitments has significant positive impacts on growth and investment.[29]

Over all, these results lend further support to the view that the policy changes required by accessions particularly benefit countries with poor governance – of which the governments are likely to lack either motivation or credibility to engage in substantial reforms unilaterally without third-party enforcement.

3. Conclusions

This paper explores whether and how WTO/GATT accession since the start of the Uruguay Round affects a country's macroeconomic performance. Some developing countries were eligible to obtain membership without serious reforms. Most others would have to undertake a set of policy changes that concern not only trade-related issues but also broader policy regime. They span such diverse areas as market access, competition policy, price controls, investment policy, privatization plans, transparency requirement, etc. Not only do they directly or indirectly alter a country's openness to trade, these far-ranging obligations also inevitably have consequences for even the non-trade aspects of the economy.

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[28] The list of the number of words contained in the Working Party Reports is in the last column of Table 8.

[29] In contrast, based on the comparison of performance in the second year after accessions to the average performance over the 8 years before accessions, policy commitments do not seem to have as strong effects among good-governance countries. For growth, the 2 good-governance countries with lengthiest Working Party Reports (Jordan and Lithuania) grew 4.2 percentage points faster, while the 2 with shortest Working Party Reports (Estonia and Panama) grew 2.6 percentage points faster. The difference, 1.6 percentage points, is much lower than the difference (4.4 percentage points) between countries with lengthy and short reports in the poor-governance group. For investment, the 2 good-governance countries with lengthiest reports *decreased* their investment/GDP ratio by 13%, while the 2 with shortest reports increased their ratio by 30%.

Our empirical results show that WTO accessions are associated with significant increases in growth and investment for those acceding countries that have to undertake substantial reforms. We also find that the beneficial effects of policy commitments seem more pronounced among countries with poorer governance. This suggests that binding policy changes enforced by a credible third party (WTO) serve as a substitute for governance in promoting economic development. By focusing on the timing of improvement in the economic performance, taking account of the possibility of selection bias, and studying the effects of accessions at the intersection of two separate dimensions (namely, the degree of commitments and governance quality), our affirmative results of WTO benefits are unlikely to be tainted by an endogenous selection bias.

Due to data limitation, our analyses can only focus on a timeframe around the accessions in recent years. We are not able to distinguish a level effect from a growth effect. It would be interesting for future research to measure the longer-term effects of policy commitments and, more generally, accessions on economic development for a larger sample of countries.

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Table 1. List of Countries in the Samples and Their Accession Years

2000	Albania	1965	Gambia, The	2000	Oman
#1994	Angola	2000	Georgia	1997	Panama
1987	Antigua and Barbuda	1957	Ghana	#1994	Papua New Guinea
1967	Argentina	#1994	Grenada	1994	Paraguay
@	Azerbaijan, Rep. of	1991	Guatemala	1951	Peru
@	Bahamas, The	#1994	Guinea	1979	Philippines
#1993	Bahrain, Kingdom of	#1994	Guinea-Bissau	1967	Poland
1972	Bangladesh	1966	Guyana	1971	Romania
1967	Barbados	1950	Haiti	@	Russia
@	Belarus	1994	Honduras	1966	Rwanda
1983	Belize	1973	Hungary	@	Samoa
@	Bhutan	1962	Israel	@	São Tomé & Príncipe
1990	Bolivia	1963	Jamaica	1963	Senegal
1987	Botswana	2000	Jordan	@	Seychelles
1996	Bulgaria	@	Kazakhstan	1961	Sierra Leone
1965	Burundi	1964	Kenya	1973	Singapore
@	Cambodia	@	Kiribati	1993	Slovak Republic
1963	Cameroon	1967	Korea	1994	Slovenia
@	Cape Verde	1998	Kyrgyz Republic	#1994	Solomon Islands
1963	Central African Rep.	@	Lao People's Dem.Rep	#1994	St. Kitts and Nevis
1963	Chad	1999	Latvia	#1993	St. Lucia
2001	China,P.R.: Mainland	1988	Lesotho	#1993	St. Vincent & Grens.
1986	China,P.R.:Hong Kong	@	Liberia	@	Sudan
1981	Colombia	2001	Lithuania	1978	Suriname
1971	Congo, Dem. Rep. of	@	Macedonia, FYR	#1993	Swaziland
1963	Congo, Republic of	1963	Madagascar	@	Syrian Arab Republic
1990	Costa Rica	1964	Malawi	@	Tajikistan
1963	Côte d'Ivoire	1957	Malaysia	1961	Tanzania
2000	Croatia	1983	Maldives	1982	Thailand
1963	Cyprus	#1993	Mali	1964	Togo
1993	Czech Republic	1964	Malta	@	Tonga
#1994	Djibouti	1963	Mauritania	1962	Trinidad and Tobago
#1993	Dominica	1970	Mauritius	1990	Tunisia
1950	Dominican Republic	1986	Mexico	1951	Turkey
1996	Ecuador	2001	Moldova	@	Turkmenistan
1970	Egypt	1997	Mongolia	1962	Uganda
1991	El Salvador	1987	Morocco	@	Ukraine
@	Equatorial Guinea	#1992	Mozambique	1953	Uruguay
1999	Estonia	#1992	Namibia	@	Uzbekistan
@	Ethiopia	@	Nepal	@	Vanuatu
#1993	Fiji	1950	Nicaragua	@	Vietnam
1963	Gabon	1963	Niger	@	Yemen Arab Rep.
				1982	Zambia

Note:
  # denotes countries acceding to the GATT by Article XXVI 5(c) between 1990 and 1994
  @ denotes countries which never joined GATT/WTO before 2001

Table 2. Summary Statistics of Accession Countries

	All Accession Co's 1990-2001	Article XXVI 5c Co's	Non-Article XXVI 5c Co's	Accession Co's 1995-2001
Growth				
Pre-accession: avg over 8 yrs a/	-0.2%	1.5%	-1.3%	-0.4%
Post-accession: avg over 3 yrs	2.5%	1.3%	3.3%	4.1%
Average change in growth	2.7%	-0.2%	4.7%	4.4%
# Co's in sample	42	17	25	15
Private Investment/GDP				
Pre-accession: avg over 8 yrs a/	14.4%	14.5%	14.4%	13.7%
Post-accession: avg over 3 yrs	15.1%	14.0%	16.0%	15.9%
Average %change in ratio	6.6%	-3.0%	13.6%	15.3%
# Co's in sample	38	16	22	13
Total Investment/GDP				
Pre-accession: avg over 8 yrs a/	21.5%	23.7%	20.0%	19.5%
Post-accession: avg over 3 yrs	22.0%	22.5%	21.6%	21.8%
Average %change in ratio	2.7%	-6.0%	8.3%	10.8%
# Co's in sample	42	16	25	15
Total Trade/GDP				
Pre-accession: avg over 8 yrs a/	94.7%	108.9%	85.0%	86.0%
Post-accession: avg over 3 yrs	98.2%	110.2%	90.0%	95.7%
Average %change in ratio	7.3%	4.3%	9.3%	11.0%
# Co's in sample	42	16	25	15

Note: a/ For countries whose data are not available for earlier years, the average is over a smaller number of years before accession

Table 3. Changes in Growth and Investment Around Accessions

	1		2		3		4	
	Annual Growth Rate		Log(Pri Inv/GDP)		Annual Growth Rate		Log(Pri Inv/GDP)	
	Coef est.	*t-stat.*	*Coef est.*	*t-stat.*	*Coef est.*	*t-stat.*	*Coef est.*	*t-stat.*
Lagged log(GDP per capita)	-0.115	-4.74			-0.084	-4.75		
s = -2	0.009	0.91	0.045	0.64	0.010	0.99	0.028	0.39
-1	0.024	2.57	0.043	0.69	0.026	2.68	0.033	0.53
0	0.019	2.58	0.024	0.38	0.021	2.72	0.009	0.13
1	0.026	3.72	0.050	0.83	0.028	3.76	0.025	0.42
2	0.033	4.91	0.073	1.17	0.033	4.77	0.054	0.85
3	0.015	1.92	0.105	1.46	0.014	1.64	0.090	1.23
4	-0.002	-0.18	0.053	0.70	-0.004	-0.35	0.040	0.52
5	0.012	1.89	-0.011	-0.16	0.010	1.55	-0.018	-0.25
beyond	-0.002	-0.37	-0.078	-1.09	-0.005	-0.80	-0.077	-1.07
Country fixed effects	Y		Y		Y		Y	
Year fixed effects	Y		Y		Y		Y	
# Observations	2245		1823		2422		1994	
Adjusted R-sq.	0.19		0.54		0.19		0.53	

"Treatment" group: Countries acceding between 1990 and 2001
"Control" group: All developing countries
Beginning period: 8 years before accessions
t-statistcs are based on robust standard errors clustered by country

Note: Regressions 1 and 2 exclude 10 outliers from the control group
        Regressions 3 and 4 do not exclude any outliers from the control group

Figure 1. Change in Growth Around Accession
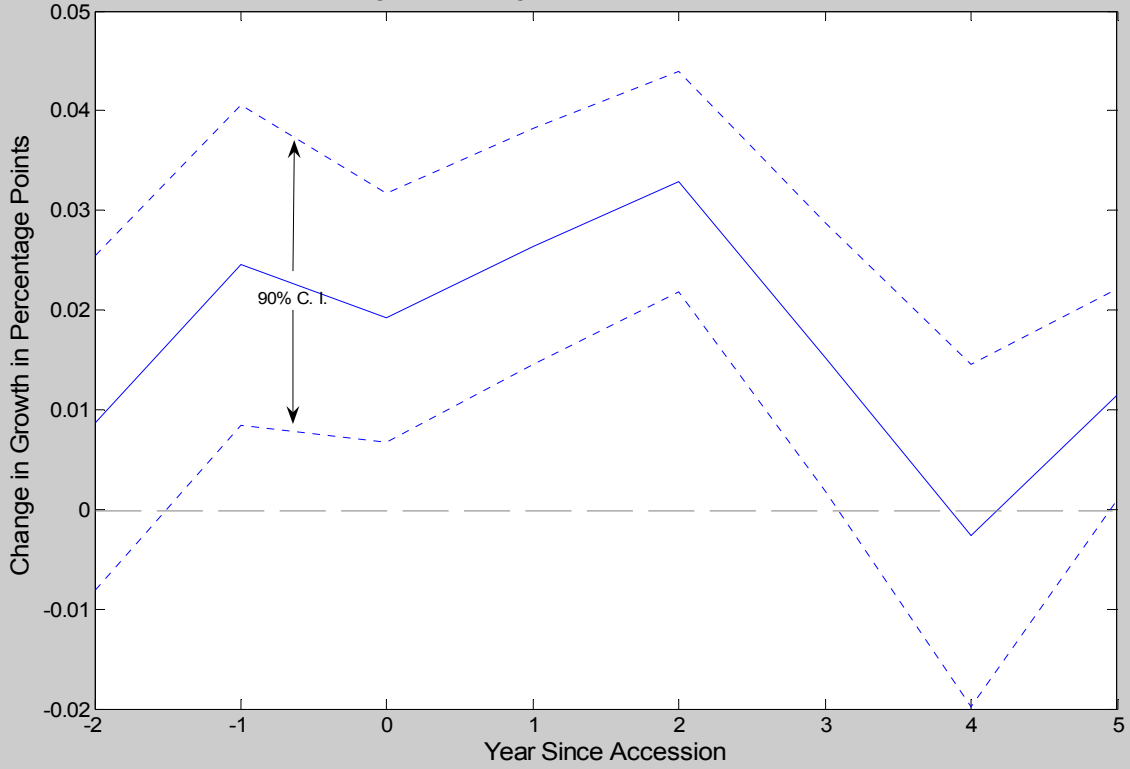
Figure 2. Change in Inv/GDP Around Accession
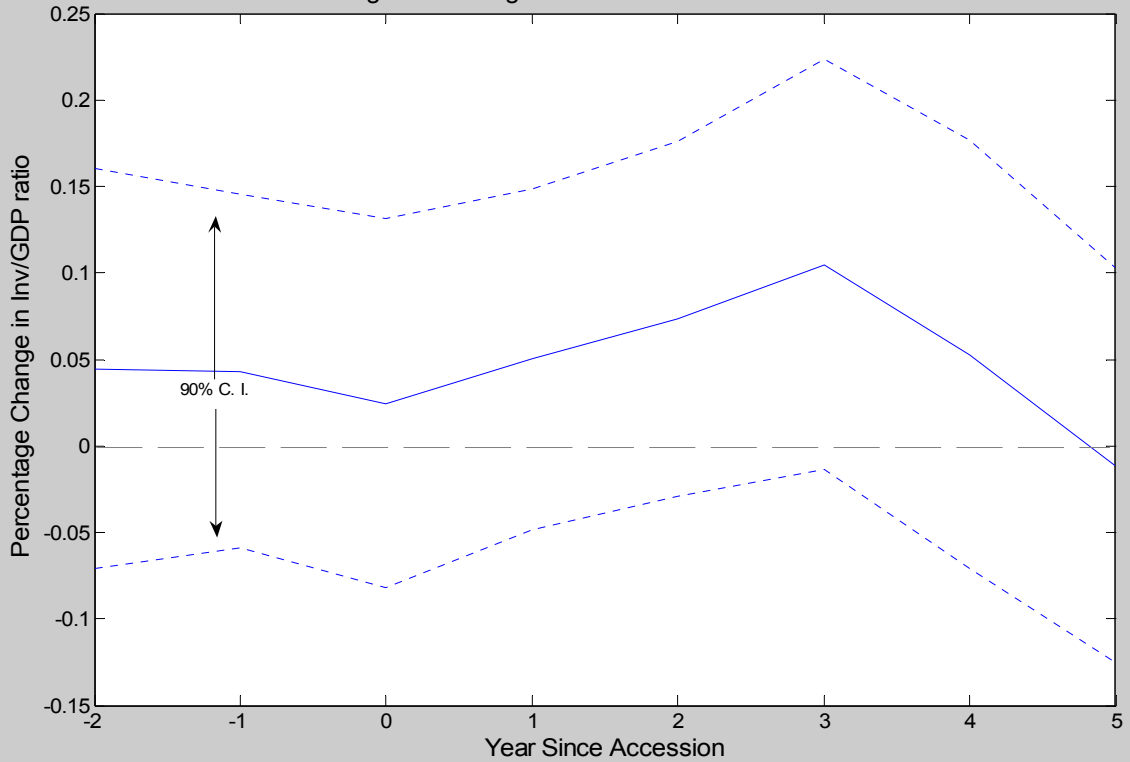
Table 4. Article XXVI 5(c) and non-Article XXVI 5(c) countries with Their Accession Years

Article XXVI 5(c) Countries		Non-Article XXVI 5(c) Countries				
	Accession Date		Application Date	Working Party Report Date	Accession Date	Interval b/w Application and Accession (months)
Angola	1994 Apr	Albania	1992 Nov	2000 Jul	2000 Sep	94
Bahrain	1993 Dec	Bolivia	1987 Oct	1989 Jul	1990 Aug	34
Djibouti	1994 Dec	Bulgaria	1990 Feb	1996 Sep	1996 Dec	82
Dominica	1993 Apr	Czech Republic*	1992 Dec	1993 Mar	1993 Apr	4
Fiji	1993 Nov	China	1987 Mar	2001 Oct	2001 Dec	177
Grenada	1994 Feb	Costa Rica	1987 Jun	1989 Oct	1990 Oct	40
Guinea	1994 Dec	Croatia	1993 Sep	2000 Jun	2000 Nov	86
Guinea-Bissau	1994 Mar	Ecuador	1992 Sep	1995 Jul	1996 Jan	40
Mali	1993 Jan	El Salvador	1988 Dec	1990 Nov	1991 Jan	13
Mozambique	1992 Aug	Estonia	1994 Mar	1999 Apr	1999 Nov	68
Namibia	1992 Sep	Georgia	1996 Jun	1999 Aug	2000 Jun	48
Papua New Guinea	1994 Dec	Guatemala	1990 Apr	1990 Nov	1991 Apr	12
Solomon Islands	1994 Dec	Honduras	1990 Oct	1993 Oct	1994 Apr	42
St. Kitts	1994 Mar	Jordan	1994 Jan	1999 Dec	2000 Apr	75
St. Lucia	1993 Apr	Kyrgyz	1996 Feb	1998 Jul	1998 Dec	34
St. Vincent	1993 May	Latvia	1993 Nov	1998 Sep	1999 Feb	63
Swaziland	1993 Feb	Lithuania	1994 Jan	2000 Nov	2001 May	88
UAE#	1994 Mar	Moldova	1993 Nov	2001 Jan	2001 July	92
		Mongolia	1991 Oct	1996 Jun	1997 Jan	63
		Oman	1996 Apr	2000 Sep	2000 Nov	55
		Panama	1991 Oct	1996 Sep	1997 Sep	71
		Paraguay	1989 Mar	1993 Apr	1994 Jan	58
		Slovak Republic*	1992 Dec	1993 Mar	1993 Apr	4
		Slovenia	1992 Jul	1994 Jul	1994 Oct	27
		Tunisia	1981 Nov	1987 Dec	1990 Jul	104
		Venezuela#	1989 Jun	1990 Jun	1990 Aug	14

Note: * Czech Republic and Slovak Republic acceded to the GATT following the breakup of Czechoslovakia
UAE and Venezuela are not in our samples (all OPEC countries are excluded)

Table 5. Changes in Growth, Investment and Trade: Article XXVI 5(c) v.s. non-Article XXVI 5(c) Countries

	1		2		3		4		5		6	
	Annual Growth Rate		Log(Pri Inv/GDP)		Annual Growth Rate		Log(Pri Inv/GDP)		Annual Growth Rate		Log(Pri Inv/GDP)	
	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.
Lagged log(GDP per capita)	-0.113	-4.66			-0.083	-4.67			-0.097	-4.12		
s = -2	0.007	0.53	0.012	0.17	0.008	0.57	0.009	0.13	-0.012	-0.71	0.006	0.07
-1	0.027	3.29	0.056	0.95	0.029	3.37	0.063	1.08	0.012	1.43	0.054	0.73
0	0.024	2.76	0.088	1.51	0.026	2.82	0.090	1.54	0.006	0.63	0.086	1.15
1	0.043	4.84	0.098	1.48	0.046	4.90	0.088	1.31	0.022	2.15	0.112	1.29
2	0.047	5.52	0.135	1.96	0.048	5.38	0.131	1.87	0.023	2.80	0.154	1.77
3	0.038	3.47	0.177	2.27	0.038	3.33	0.177	2.25	0.010	0.93	0.151	1.61
4	0.027	3.18	0.159	2.44	0.027	3.13	0.154	2.35	0.010	1.13	0.176	2.21
5	0.020	2.48	0.110	1.54	0.020	2.22	0.107	1.48	0.003	0.31	0.101	1.24
beyond	0.020	3.42	0.148	2.70	0.017	2.90	0.156	2.77	0.007	1.20	0.175	2.84
s*AXXVl5c Dummy: -2 * AXXVl5c	0.006	0.31	0.083	0.60	0.007	0.35	0.050	0.35	0.016	0.78	0.073	0.48
-1 * AXXVl5c	-0.007	-0.30	-0.029	-0.22	-0.007	-0.29	-0.070	-0.54	0.000	0.00	-0.043	-0.31
-0 * AXXVl5c	-0.013	-0.88	-0.152	-1.09	-0.013	-0.87	-0.194	-1.39	-0.001	-0.06	-0.162	-1.11
1 * AXXVl5c	-0.045	-3.33	-0.106	-0.86	-0.046	-3.35	-0.143	-1.15	-0.026	-1.76	-0.130	-0.97
2 * AXXVl5c	-0.039	-3.01	-0.137	-1.07	-0.040	-3.03	-0.175	-1.36	-0.014	-1.13	-0.160	-1.16
3 * AXXVl5c	-0.054	-3.98	-0.149	-1.03	-0.056	-3.98	-0.186	-1.28	-0.025	-1.79	-0.121	-0.79
4 * AXXVl5c	-0.063	-3.30	-0.200	-1.44	-0.066	-3.35	-0.219	-1.58	-0.044	-2.26	-0.207	-1.42
5 * AXXVl5c	-0.019	-1.67	-0.225	-1.81	-0.021	-1.70	-0.233	-1.87	-0.002	-0.19	-0.193	-1.48
beyond * AXXVl5c	-0.041	-4.61	-0.401	-3.40	-0.040	-4.50	-0.417	-3.53	-0.028	-3.10	-0.422	-3.48
Country fixed effects	Y		Y		Y		Y		Y		Y	
Year fixed effects	Y		Y		Y		Y		Y		Y	
# Observations	2245		1823		2422		1994		2150		1733	
Ajusted R-sq.	0.20		0.54		0.20		0.53		0.16		0.52	

"Treatment" group:
  For regressions 1 - 4, countries acceding between 1990 and 2001
  For regressions 5 and 6, countries acceding between 1990 and 2001 excluding Croatia, Kyrgyz, Georgia, Moldova, Lithuania, Estonia, Latvia, Slovak Rep and Slovenia.
"Control" group: All developing countries
Beginning period: 8 years before accessions
t-statistcs are based on robust standard errors clustered by country

Note: Regressions 2 and 3 do not exlcude 10 outliers from the control group

Figure 3. Change in Growth Around Accession: Article XXVI5c vs. Non-Article XXVI5c Countries
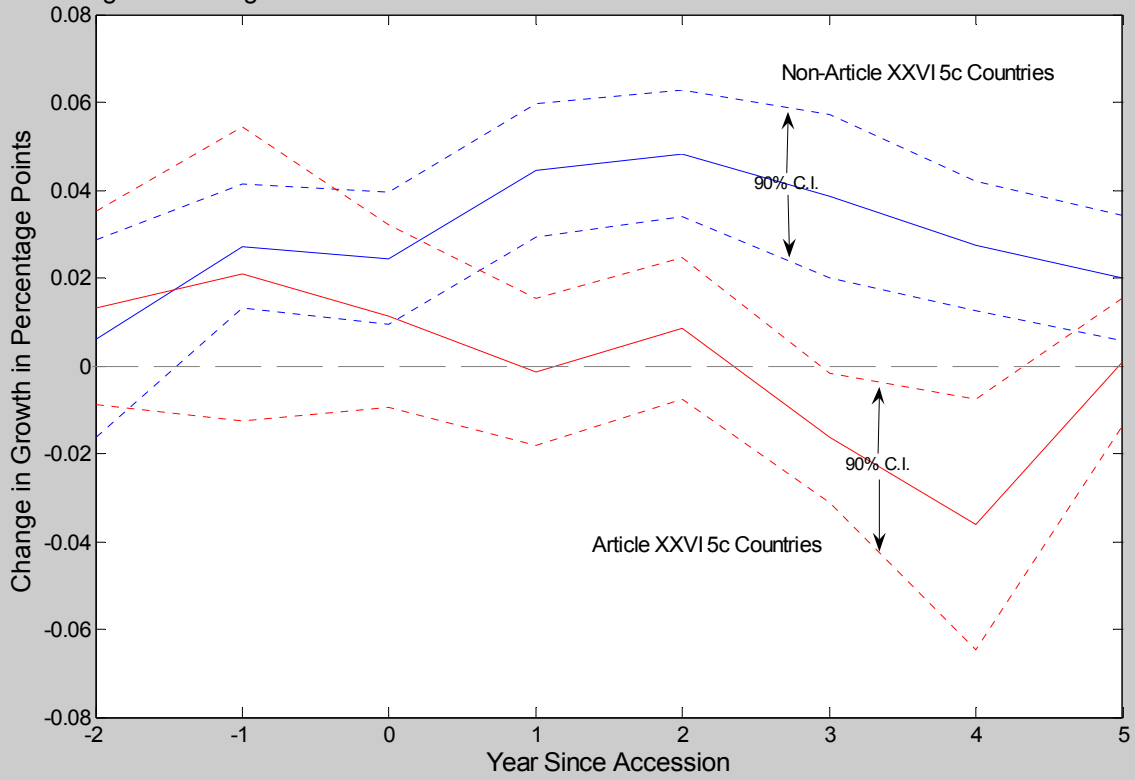
Figure 4. Change in Inv/GDP Around Accession: Article XXVI5c vs. Non-Article XXVI5c Countries
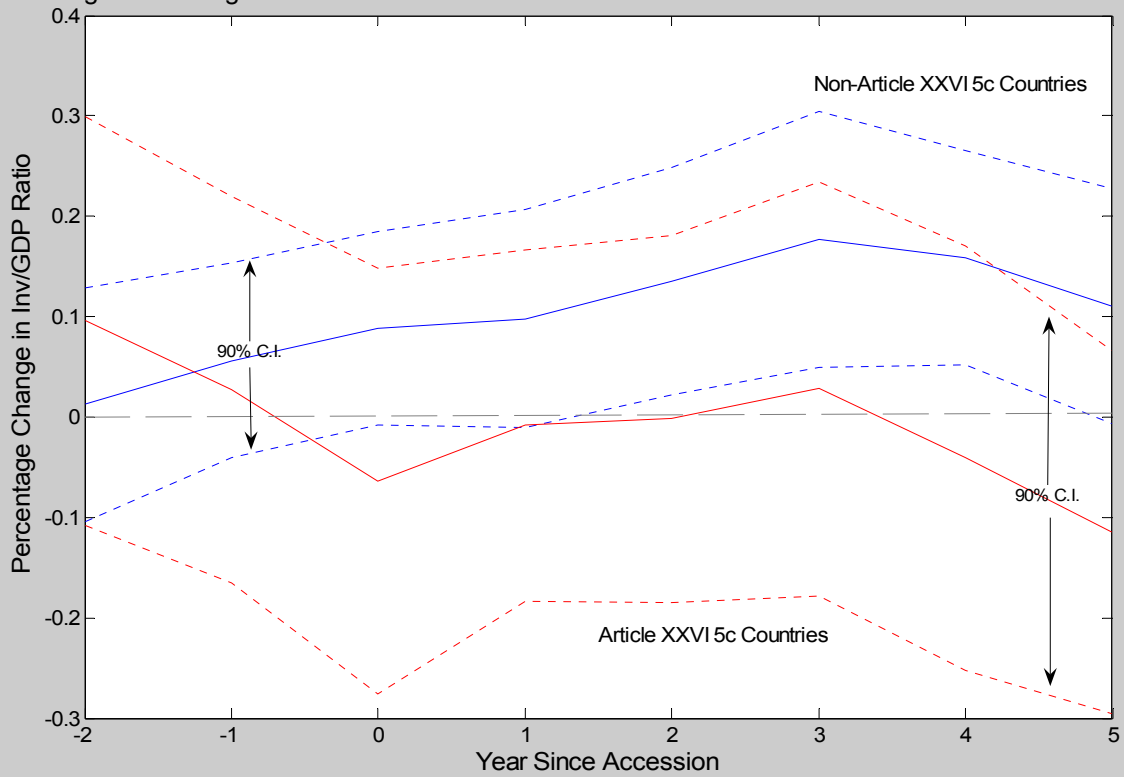
Table 6. Changes in Growth and Inv for non-AXXVl5c Co's Around Application and Accession

		1		2	
		Annual Growth Rate		Log(Pri inv/GDP)	
		Coef est.	*t-stat.*	*Coef est.*	*t-stat.*
Lagged log(GDP per capita)		-0.101	-3.89		
Year from application	0	0.013	0.92	-0.005	-0.04
	1	0.024	1.50	-0.003	-0.03
	2	0.029	2.57	0.017	0.12
	3	0.026	2.25	0.109	1.40
	4	0.009	0.71	0.126	2.03
	5	0.006	0.53	0.068	1.26
	6	-0.001	-0.07	0.005	0.10
s = a/	-2	0.014	1.11	-0.031	-0.39
	-1	0.030	3.52	0.006	0.10
	0	0.030	3.09	0.034	0.50
	1	0.050	4.69	0.056	0.72
	2	0.057	5.56	0.120	1.52
	3	0.048	3.59	0.159	1.67
	4	0.043	3.67	0.164	1.97
	5	0.035	2.84	0.106	1.16
	beyond	0.028	2.89	0.163	2.17
Country fixed effects		Y		Y	
Year fixed effects		Y		Y	
# Observations		1877		1470	
Ajusted R-sq.		0.19		0.56	

"Treatment" group: Countries acceding by normal procedures between 1990 and 2001
"Control" group: All developing countries
Beginning period: 4 years before application
t-statistcs are based on robust standard errors clustered by country

Note: a/ For countries that acceded to the WTO/GATT in fewer than 9 years since application,
for some years both application and accession time-profiles would simultaneously have non-zero dummie

Figure 5. Change in Growth Around Application and Accession

Figure 6. Change in Inv/GDP Around Application and Accession
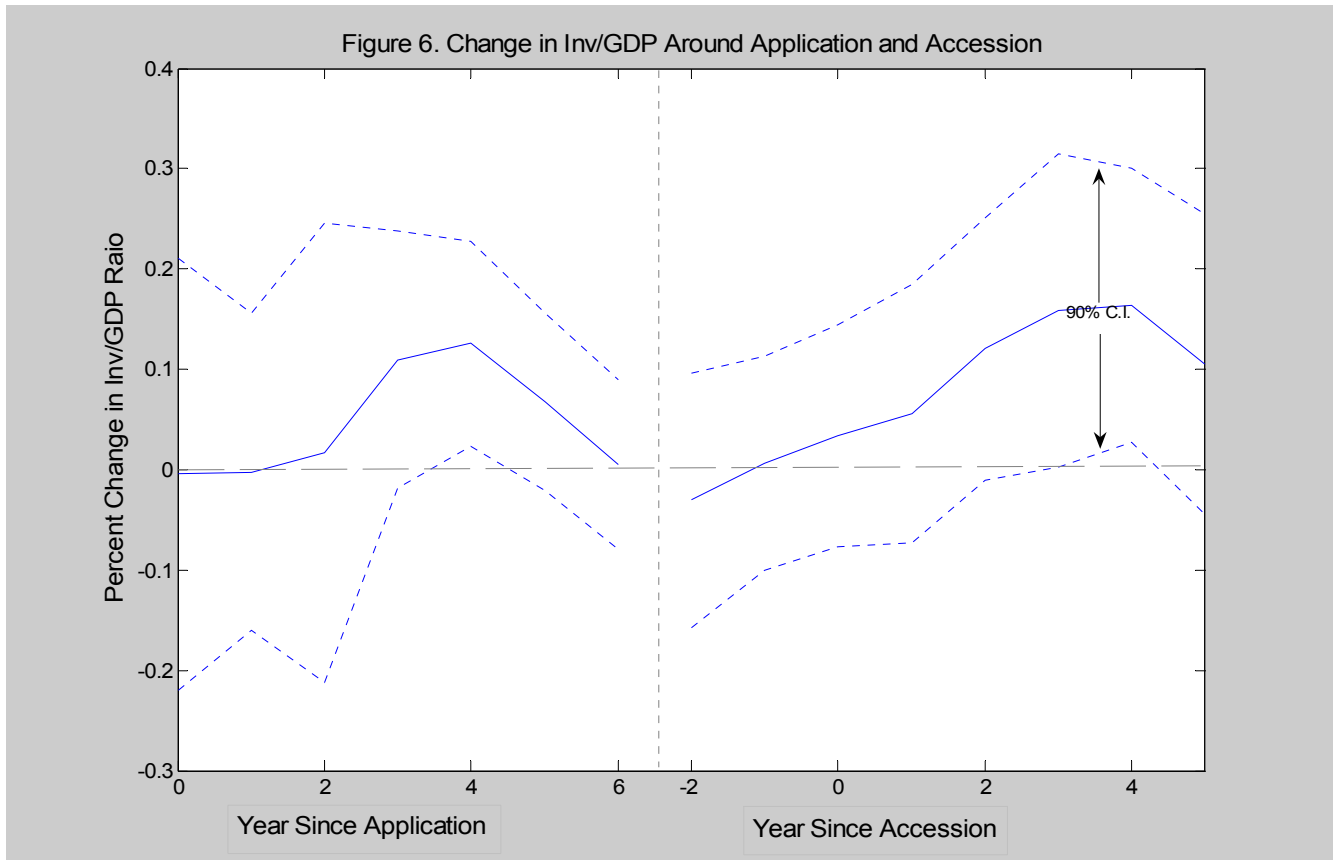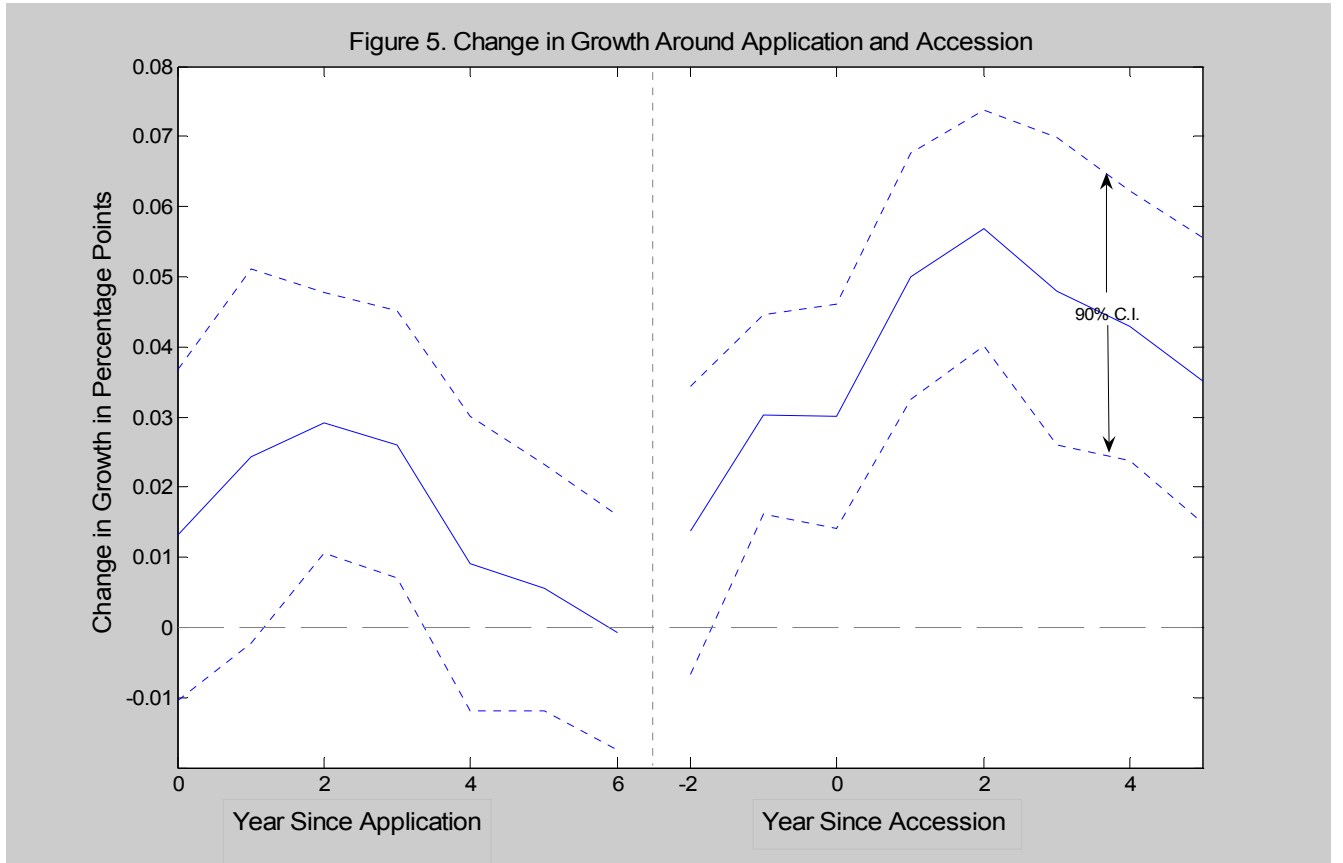
Table 7. Testing for Selection Bias

		1		2		3 b/		4 b/	
		Annual Growth Rate		Log(Pri Inv/GDP)		Annual Growth Rate		Log(Pri Inv/GDP)	
		Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.
Inverse Mills Ratio		**-0.002**	**-0.97**	**-0.033**	**-1.17**	**-0.002**	**-0.99**	**-0.011**	**-0.44**
s =	-2	-0.012	-0.82	0.053	0.58	-0.012	-0.78	-0.010	-0.11
	-1	0.009	1.28	0.108	1.06	0.010	1.40	0.088	0.84
	0	0.085	1.06	0.136	1.41	0.009	1.17	0.153	1.52
	1	0.027	4.14	0.143	1.58	0.028	4.24	0.121	1.28
	2	0.027	4.07	0.177	1.92	0.028	4.17	0.146	1.52
	3	0.015	1.74	0.185	1.88	0.016	1.86	0.147	1.39
	4	0.005	0.66	0.237	2.67	0.006	0.84	0.212	2.30
	5	-0.001	-0.13	0.160	1.78	0.000	0.02	0.136	1.45
	beyond	-0.001	-0.35	0.169	4.33	0.001	0.17	0.162	3.94
s*AXXVI5c Dummy:	-2 * AXXVI5c	0.035	1.82	0.015	0.10	0.034	1.76	-0.074	-0.48
	-1 * AXXVI5c	0.032	2.28	-0.163	-0.86	0.031	2.21	-0.324	-1.68
	-0 * AXXVI5c	0.001	0.06	-0.242	-1.14	0.000	0.00	-0.415	-1.86
	1 * AXXVI5c	-0.030	-2.46	-0.119	-0.77	-0.030	-2.50	-0.176	-1.09
	2 * AXXVI5c	-0.013	-1.37	-0.161	-0.94	-0.014	-1.42	-0.205	-1.13
	3 * AXXVI5c	-0.024	-2.06	-0.148	-0.89	-0.025	-2.12	-0.162	-0.94
	4 * AXXVI5c	-0.034	-1.60	-0.278	-1.47	-0.035	-1.63	-0.278	-1.52
	5 * AXXVI5c	0.011	0.94	-0.280	-1.75	0.010	0.89	-0.283	-1.63
	beyond * AXXVI5c	-0.014	-2.25	-0.463	-4.62	-0.015	-2.50	-0.440	-3.91
Country fixed effects a/		N		N		N		N	
Year fixed effects		Y		Y		Y		Y	
# Observations		2083		1796		2083		1796	

"Treatment" group: Countries acceding between 1990 and 2001
"Control" group: All developing countries
Beginning period: 8 years before accessions
t-statistcs are based on robust standard errors clustered by country

Note: a/ Following Wooldridge's (1995) suggestion for selection bias test for panel data, the second stage
      regressions are essentially pooled OLS.
   b/ Regressions 3 and 4 include as regressors also log(lagged per capita GDP) and log(lagged trade/GDP)

Table 8. Extent of Commitments and Governance Quality of Acceding Countries

	# Commitments in WPRs	Governance Index	# Words in WPRs
Bulgaria	27	2.83	24542
Albania	29	2.84	38829
China	147	2.49	78641
Croatia	27	2.39	38479
Ecuador	21	2.56	25835
Estonia	24	4.76	22920
Georgia	29	1.32	27139
Jordan	29	3.26	36608
Kyrgyz	29	2.15	32149
Latvia	22	3.72	25717
Lithuthania	28	3.23	43029
Moldova	28	2.87	43859
Mongolia	17	2.91	12055
Oman	26	4.73	24695
Panama	24	3.91	19558
mean			
incl. China	33.8	3.06	32937
excl. China	25.7		29672
median	27	2.87	27139
standard dev.			
incl. China	31.5	0.92	15537
excl. China	3.7		9370

Table 9. Examples of Policy Commitments in Areas that Might Have Important Implications for Domestic Investment

	Albania	Bulgaria	Croatia	Ecuador	Estonia	Georgia	Jordan	Kyrgyz	Latvia	Luthuthania	Moldova
Nondiscriminate Taxation	x		x	x	x						
Export Taxes		x	x			x					
Non-Tax Export Controls	x		x		x	x	x	x	x	x	x
Export Subsidy	x		x	x	x		x				
Other Internal Subsidy	x	x	x		x	x	x	x	x	x	x
Transparency of Privatization Plans	x	x	x		x	x		x	x	x	x
Transparency of Trade-related Laws		x			x	x		x		x	x
Price Controls	x	x	x	x	x	x	x	x	x	x	x
Nondiscriminate Trading Rights	x	x	x	x	x	x	x	x	x	x	x
State Trading Restriction	x	x	x	x	x	x	x	x	x	x	x
Govt Procurement Practices	x	x	x		x	x	x	x	x	x	x
Independent Tribunal for Trade-Related Disputes			x			x		x			
Centralized Policy Decisions	x		x		x	x	x	x	x	x	x
Compliance of Special Economic Zones	x		x			x	x	x	x		
Exchange Rate Modality			x								
Property Rights Pertaining to Foreigners			x	x							
TRIPS	x	x	x	x	x	x	x	x	x	x	x
TRIMs	x	x	x	x	x	x	x	x	x	x	x

Notes:

1 Mark "x" indicates that the country made some policy commitments related to that particular area

2 Other areas of commitments which might have less important implications for domestic investment include pre-shipment insepection, customs fees, national treatment principle applied to taxation (Article III GATT 1994), anti-dumping and safeguards measures, non-tariff barriers to imports, etc.

3 China made commitments in all the areas listed above, but with considerable qualifications in most.

Table 10. Average Effects of Policy Commitments on Changes in Growth and Investment

		1		2		3		4	
		Annual Growth Rate		Annual Growth Rate		Log(Inv/GDP)		Log(Inv/GDP)	
		Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.
Lagged log(GDP per capita)		-0.132	-9.77	-0.136	-10.10				
s =	-3	0.084	0.36						
	-2	-1.151	-2.18	-0.267	-0.88	-1.098	-0.95	-0.532	-0.77
	-1	-0.187	-0.82	0.111	0.97	-0.128	-0.11	-0.006	-0.01
	0	-0.227	-1.07	-0.095	-0.74	-0.552	-0.42	-0.054	-0.09
	1	-0.202	-0.91	-0.058	-0.46	0.845	0.60	0.427	0.67
	2	-0.19	-0.78	0.071	-0.53	1.144	0.83	0.830	1.33
	3	-0.427	-1.56	0.082	0.40	-0.192	-0.13	0.591	0.77
	4	-0.41	-1.89	-0.13	-0.75	0.317	0.26	0.113	0.17
	5	-0.243	-1.27			-1.744	-1.47		
	beyond	-0.298	-1.54	0.072	0.61	-3.896	-3.16	-1.933	-1.95
s*log(# Commitments):	-3 * log(# Com.)	-0.023	-0.26						
	-2 * log(# Com.)	0.338	2.31			0.211	0.55		
	-1 * log(# Com.)	0.128	1.84			0.020	0.05		
	-0 * log(# Com.)	0.107	1.62			0.242	0.57		
	1 * log(# Com.)	0.105	1.49			-0.086	-0.19		
	2 * log(# Com.)	0.122	1.66			-0.132	-0.31		
	3 * log(# Com.)	0.2	2.16			0.301	0.65		
	4 * log(# Com.)	0.111	1.71			0.094	0.26		
	5 * log(# Com.)	0.13	2.20			0.663	1.99		
	beyond * log(# Com.)	0.214	2.59			0.560	1.18		
s*Com. Dummy:	-3 * # Com. >27								
	-2 * # Com. >27			0.076	1.09			0.045	0.29
	-1 * # Com. >27			0.032	1.11			-0.015	-0.10
	-0 * # Com. >27			0.067	1.98			0.105	0.61
	1 * # Com. >27			0.06	1.75			0.043	0.21
	2 * # Com. >27			0.04	1.28			-0.041	-0.22
	3 * # Com. >27			0.049	1.03			0.073	0.28
	4 * # Com. >27			0.023	0.56			0.192	1.10
	5 * # Com. >27								
	beyond * # Com. >27			0.037	1.09			0.651	2.77
Country fixed effects		Y		Y		Y		Y	
Year fixed effects		Y		Y		Y		Y	
# Observations		1639		1650		1548		1560	
Adjusted R-sq.		0.29		0.28		0.48		0.48	

"Treatment" group:
  For regressions 1 and 3, countries acceding between 1995 and 2001 excluding China
  For regressions 2 and 4, all countries acceding between 1995 and 2001
"Control" group: All developing countries
Beginning period: 8 years before accessions
t-statistcs are based on robust standard errors clustered by country

Note: All regressions include the interaction of accession time-profile and log(1995 per capita GDP in USD) as regressors.

Table 11. Differential Effects of Policy Commitments on Changes in Growth

			1		2		3	
			Annual Growth Rate		Annual Growth Rate		Annual Growth Rate	
			Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.
Lagged log(GDP per capita)			-0.141	-8.68	-0.140	-8.42	-0.146	-8.49
s =	-2		-6.350	-2.27	-0.798	-0.33	22.800	3.79
	-1		-4.935	-3.23	-0.307	-0.28	15.372	3.31
	0		-3.558	-2.30	-2.054	-1.83	10.742	2.26
	1		-5.403	-3.59	-2.139	-1.94	14.082	2.77
	2		-5.309	-3.43	-2.731	-2.21	16.313	3.27
	3		-9.435	-6.26	-3.916	-2.78	22.412	3.65
	4		-5.354	-2.15	-5.162	-2.85	18.842	1.13
	5		-3.175	-1.71	0.490	0.21	3.846	0.51
	beyond		-13.454	-4.32	20.991	2.63	-7.011	-0.89
s*log(# Commitments):	-2 * log(#Com.)		1.936	2.30	0.236	0.32	-7.064	-3.77
	-1 * log(#Com.)		1.520	3.23	0.059	0.17	-4.804	-3.31
	-0 * log(#Com.)		1.097	2.31	0.630	1.79	-3.362	-2.26
	1 * log(#Com.)		1.655	3.58	0.663	1.93	-4.365	-2.75
	2 * log(#Com.)		1.642	3.45	0.831	2.13	-5.098	-3.27
	3 * log(#Com.)		2.890	6.25	1.185	2.65	-6.996	-3.65
	4 * log(#Com.)		1.635	2.12	1.624	2.81	-5.909	-1.13
	5 * log(#Com.)		1.012	1.76	-0.180	-0.24	-1.240	-0.53
	beyond * log(#Com.)		4.262	4.30	-6.899	-2.65	2.189	0.88
s *Governance Quality: a/	-2 * gov.		5.093	2.09	-0.050	-0.03	-19.071	-3.92
	-1 * gov.		4.400	2.99	0.089	0.13	-12.518	-3.34
	-0 * gov.		3.161	2.08	1.117	1.62	-8.794	-2.31
	1 * gov.		4.888	3.31	1.182	1.70	-11.497	-2.83
	2 * gov.		4.804	3.18	1.542	2.01	-13.284	-3.33
	3 * gov.		8.555	5.97	2.120	2.47	-18.327	-3.73
	4 * gov.		4.847	1.92	2.889	2.69	-15.466	-1.17
	5 * gov.		2.756	1.50	-0.407	-0.31	-3.450	-0.58
	beyond * gov.		12.449	4.26	-12.520	-2.63	5.198	0.83
s*log(# Com.)*Gov Quality: a/	-2 * log(#Com.) * gov.		-1.549	-2.10	0.026	0.06	5.908	3.90
	-1 * log(#Com.) * gov.		-1.351	-2.98	0.000	0.00	3.916	3.34
	-0 * log(#Com.) * gov.		-0.971	-2.08	-0.336	-1.56	2.757	2.32
	1 * log(#Com.) * gov.		-1.489	-3.27	-0.356	-1.66	3.573	2.81
	2 * log(#Com.) * gov.		-1.476	-3.18	-0.458	-1.91	4.162	3.33
	3 * log(#Com.) * gov.		-2.620	-5.94	-0.630	-2.33	5.726	3.73
	4 * log(#Com.) * gov.		-1.475	-1.88	-0.898	-2.65	4.862	1.17
	5 * log(#Com.) * gov.		-0.870	-1.52	0.150	0.35	1.123	0.60
	beyond * log(#Com.) * gov.		-3.933	-4.24	4.107	2.66	-1.610	-0.82
Country fixed effects			Y		Y		Y	
Year fixed effects			Y		Y		Y	
# Observations			1639		1639		1625	
Adjusted R-sq.			0.30		0.28		0.29	

"Treatment" group: Countries acceding between 1995 and 2001, excluding China
"Control" group: All developing countries
Beginning period: 8 years before accessions
t-statistcs are based on robust standard errors clustered by country

Note a/: Regression 1 uses Governance Index (the higher, the better the governance)
Regression 2 uses Legal Rights Index from "Doing Business" 2005 (the higher, the better legal rights)
Regression 3 uses Heritage Foundation (1996) overall index (the higher, the less the economic freedom)

Table 12. Differential Effects of Policy Commitments on Changes in Investment

		1		2		3	
		Log(Inv/GDP)		Log(Inv/GDP)		Log(Inv/GDP)	
		Coef est.	*t-stat.*	*Coef est.*	*t-stat.*	*Coef est.*	*t-stat.*
s =	-2	-18.401	-2.98	-13.408	-2.27	46.685	1.78
	-1	-27.196	-5.72	-14.191	-2.71	95.721	5.77
	0	-24.055	-4.30	-10.586	-1.76	103.174	5.86
	1	-28.075	-4.42	-8.357	-1.51	113.635	5.93
	2	-27.822	-4.67	-6.913	-1.39	117.400	6.59
	3	-33.259	-5.59	-13.965	-2.62	111.709	6.32
	4	-31.018	-4.18	-2.376	-0.36	124.456	2.87
	5	-8.443	-1.17	1.740	0.19	130.928	3.38
	beyond	52.534	3.73	-52.032	-0.95	197.649	5.07
s*log(# Commitments):	-2 * log(#Com.)	5.601	2.99	4.228	2.24	-14.269	-1.74
	-1 * log(#Com.)	8.363	5.80	4.311	2.61	-29.857	-5.77
	-0 * log(#Com.)	7.437	4.41	3.117	1.64	-32.290	-5.89
	1 * log(#Com.)	8.670	4.55	2.374	1.34	-35.502	-5.96
	2 * log(#Com.)	8.642	4.82	1.952	1.23	-36.694	-6.64
	3 * log(#Com.)	10.308	5.77	4.210	2.46	-34.915	-6.35
	4 * log(#Com.)	9.678	4.21	0.584	0.27	-38.964	-2.86
	5 * log(#Com.)	2.763	1.25	-0.551	-0.19	-41.146	-3.37
	beyond * log(#Com.)	-16.694	-3.68	17.086	0.96	-61.896	-5.05
s*Governance Quality: a/	-2 * gov.	16.432	2.70	8.258	2.22	-37.910	-1.80
	-1 * gov.	25.780	5.56	9.450	2.99	-77.060	-5.68
	-0 * gov.	22.176	3.93	6.967	1.90	-83.567	-5.78
	1 * gov.	26.975	4.12	6.425	1.92	-90.922	-5.77
	2 * gov.	27.096	4.48	5.637	1.93	-93.581	-6.38
	3 * gov.	31.301	5.12	9.030	2.99	-90.029	-6.26
	4 * gov.	30.180	4.05	2.379	0.62	-98.590	-2.86
	5 * gov.	6.081	0.84	-1.781	-0.34	-105.766	-3.42
	beyond * gov.	-53.677	-4.02	28.292	0.87	-160.467	-5.17
s*log(# Com.)*Gov Quality: a/	-2 * log(#Com.) * gov.	-4.976	-2.68	-2.576	-2.18	11.599	1.77
	-1 * log(#Com.) * gov.	-7.917	-5.62	-2.849	-2.87	24.064	5.68
	-0 * log(#Com.) * gov.	-6.845	-4.00	-2.039	-1.77	26.177	5.80
	1 * log(#Com.) * gov.	-8.309	-4.19	-1.830	-1.72	28.439	5.80
	2 * log(#Com.) * gov.	-8.378	-4.56	-1.592	-1.72	29.295	6.43
	3 * log(#Com.) * gov.	-9.656	-5.20	-2.673	-2.78	28.198	6.29
	4 * log(#Com.) * gov.	-9.383	-4.05	-0.607	-0.50	30.894	2.85
	5 * log(#Com.) * gov.	-1.966	-0.88	0.591	0.35	33.279	3.42
	beyond * log(#Com.) * gov.	17.081	3.98	-9.253	-0.88	50.289	5.15
Country fixed effects		Y		Y		Y	
Year fixed effects		Y		Y		Y	
# Observations		1548		1548		1537	
Adjusted R-sq.		0.48		0.50		0.48	

"Treatment" group:　　Countries acceding between 1995 and 2001, excluding China
"Control" group:　　All developing countries
Beginning period:　　8 years before accessions
t-statistcs are based on robust standard errors clustered by country

Note a/:　　Regression 1 uses Governance Index (the higher, the better the governance)
　　Regression 2 uses Legal Rights Index from "Doing Business" 2005 (the higher, the better legal rights)
　　Regression 3 uses Heritage Foundation (1996) overall index (the higher, the less the economic freedom)

Table 13. Effects of Policy Commitments for Different Groups of Countries

		1 Annual Growth Rate		2 Annual Growth Rate (PPP)		3 Log(Inv/GDP)		4 Log(Total Trade/GDP)		5 Annual Growth Rate		6 Log(Inv/GDP)	
		Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.	Coef est.	t-stat.
Lagged log(GDP per capita)		-0.142	-8.63	-0.140	-8.39					-0.139	-10.14		
s =	-2	0.054	2.28	0.059	2.53	0.205	1.43	-0.067	-0.95	0.050	2.22	0.111	1.05
	-1	0.069	3.24	0.080	3.50	0.226	1.67	0.030	0.37	0.053	2.41	0.183	1.50
	0	0.061	3.13	0.070	3.48	0.298	1.98	0.081	0.96	0.063	3.25	0.280	2.25
	1	0.085	4.01	0.075	3.86	0.395	2.58	0.113	1.40	0.073	3.65	0.339	3.10
	2	0.084	3.94	0.087	4.30	0.447	3.21	0.138	1.54	0.075	4.32	0.427	3.18
	3	0.109	2.95	0.113	3.12	0.613	3.65	0.052	0.55	0.070	3.67	0.395	3.57
	4	0.039	1.58	0.044	2.14	0.491	3.99	0.015	0.17	0.022	0.92	0.382	3.43
	beyond	0.091	3.70	0.102	4.96	0.480	3.87	-0.027	-0.32	0.074	3.01		
s*Good Gov:	-2 * Good Gov.	-0.027	-0.85	-0.030	-0.97	-0.035	-0.20	0.052	0.57	-0.014	-0.48	-0.007	-0.06
	-1 * Good Gov.	-0.046	-1.68	-0.044	-1.53	-0.091	-0.59	-0.063	-0.63	-0.022	-0.77	-0.136	-0.94
	-0 * Good Gov.	-0.030	-1.23	-0.031	-1.24	-0.219	-1.28	-0.137	-1.41	-0.024	-0.96	-0.176	-1.11
	1 * Good Gov.	-0.022	-0.86	-0.007	-0.26	-0.260	-1.41	-0.152	-1.47	-0.003	-0.12	-0.214	-1.43
	2 * Good Gov.	-0.030	-1.00	-0.022	-0.77	-0.289	-1.66	-0.196	-1.81	-0.013	-0.46	-0.234	-1.41
	3 * Good Gov.	-0.056	-1.21	-0.066	-1.47	-0.389	-1.99	-0.153	-1.39	-0.010	-0.30	-0.170	-1.19
	4 * Good Gov.	0.022	0.57	0.038	0.87	-0.234	-1.50	-0.134	-1.08	0.046	1.24	-0.237	-1.34
	beyond * Good Gov.	-0.076	-2.73	-0.086	-3.40	-0.290	-1.52	-0.294	-3.21	-0.045	-1.44		
s*(Poor Gov, Few Com.):	-2 * (Poor, Few)	-0.089	-1.62	-0.044	-1.54	-0.264	-1.48	-0.095	-0.84	-0.072	-1.24	-0.160	-1.13
	-1 * (Poor, Few)	-0.081	-2.99	-0.092	-3.53	-0.242	-1.43	-0.176	-1.49	-0.037	-1.24	-0.287	-1.79
	-0 * (Poor, Few)	-0.082	-2.34	-0.090	-3.01	-0.369	-1.98	-0.117	-0.92	-0.079	-2.14	-0.377	-1.97
	1 * (Poor, Few)	-0.101	-3.14	-0.081	-2.68	-0.457	-2.13	-0.121	-0.96	-0.068	-1.75	-0.334	-1.94
	2 * (Poor, Few)	-0.073	-2.77	-0.066	-2.71	-0.395	-2.00	-0.183	-1.43	-0.044	-1.45	-0.367	-1.88
	3 * (Poor, Few)	-0.131	-2.97	-0.124	-2.82	-0.539	-2.51	-0.040	-0.32	-0.055	-1.15	-0.361	-2.71
	4 * (Poor, Few)	-0.036	-1.17	-0.038	-1.40	-0.421	-2.84	0.114	1.10	-0.013	-0.41	-0.367	-2.53
	beyond * (Poor, Few)	-0.072	-2.62	-0.067	-2.64	-0.428	-2.69	0.082	0.74	-0.049	-1.74		
Country fixed effects		Y		Y		Y		Y		Y		Y	
Year fixed effects		Y		Y		Y		Y		Y		Y	
# Observations		1650		1657		1560		1620		1650		1560	
Adjusted R-sq.		0.29		0.29		0.49		0.90		0.30		0.47	

"Treatment" group: Countries acceding between 1995 and 2001
"Control" group: All developing countries
Beginning period: 8 years before accessions
t-statistics are based on robust standard errors clustered by country

Note: For regressions 1 to 4, countries made more than 27 commitmens belong to (Many Commitments), otherwise (Few Commitments)
For regressions 5 and 6, countries whose Working Party reports contain 27139 words or more belong to (Many Commitments), otherwise (Few Commitments)